Maryland Institute for Emergency Medical Services Systems

2010 -2011 ANNUAL REPORT

MARYLAND

MIEMSS

The Maryland Institute for Emergency Medical Services Systems (MIEMSS) oversees and coordinates all components of the statewide EMS system (including planning, operations, evaluation, and research), provides leadership and medical direction, conducts and/or supports EMS educational programs, operates and maintains a statewide communications system, designates trauma and specialty centers, licenses and regulates commercial ambulance services, and participates in EMS-related public education and prevention programs.

MIEMSS provides the executive support for the EMS Board in reviewing and approving the budgets for agencies receiving funds from the EMS Operations Fund, developing and promulgating regulations and protocols, proposing EMS system legislation, licensing/certifying and disciplining EMS providers, and conducting other EMS Board business. MIEMSS also provides the administrative and staff support for the Statewide EMS Advisory Council (SEMSAC) and five EMS regional councils.

2010–2011 ANNUAL REPORT

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Mission/Vision/Key Goals

MISSION

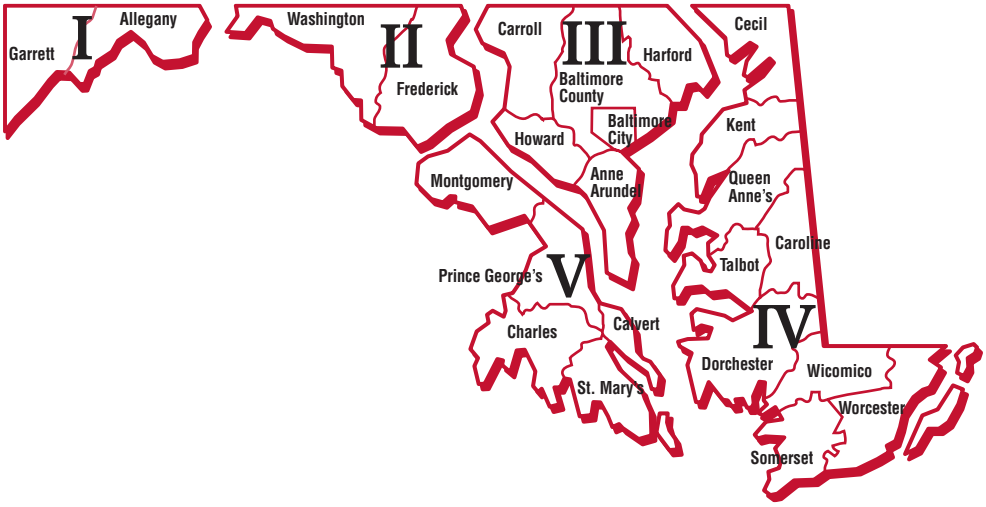
Consistent with Maryland law and guided by the EMS Plan, to provide the resources (communications, infrastructure, grants, and training), leadership (vision, expertise, and coordination), and oversight (medical, regulatory, and administrative) necessary for Maryland's statewide emergency medical services (EMS) system to function optimally and to provide effective care to patients by reducing preventable deaths, disability, and discomfort.

VISION

To be a state EMS system acknowledged as a leader for providing the highest quality patient care and that is sought out to help other EMS systems attain the same level of quality care.

KEY GOALS

- Provide high quality medical care to individuals receiving emergency medical services.
- Maintain a well-functioning emergency medical services system.



FROM THE EMS BOARD CHAIRMAN

Donald L. DeVries, Jr., Esq.
Chairman, EMS Board

We are in the midst of major changes that will advance the practice of prehospital emergency medical care in Maryland, further integrate the operation of the statewide EMS system with other components of Maryland's health care system, and strengthen our public safety roots.

New national standards for EMS education are changing prehospital care throughout the country. Maryland's transition to the new national standards for EMS providers and for EMS educational programs began several years ago. The new national EMS education standards define the competencies for each level of EMS certification / licensure and integrate the skills and knowledge taught as part of the new education standards into each certification level. They will also increase state-to-state consistency among the various levels of EMS providers throughout the country. Additional changes will come in the next several years as Advanced Life Support educational programs in Maryland work to achieve national accreditation. Transition to the new national standards will help to keep Maryland on the cutting edge of state EMS systems in the United States for the foreseeable future. As we continue our efforts to ensure the implementation of these new standards, we will also continue to remain responsive to the unique needs of Maryland's EMS System.

Our EMS system continues to build on the results of medical research into the effectiveness of prehospital care and to further integrate with other components of Maryland's health care system. We have brought increased focus to treatment for emergency patients who are at special risk, including stroke and cardiac patients. The designation of hospitals as "Cardiac Interventional Centers" is the latest achievement in our efforts to improve outcome for cardiac patients and was preceded by designation of hospitals as "Primary Stroke Centers" for treatment of stroke patients. Thus, EMS providers can rapidly assess these life-threatening conditions in the field, use sophisticated communications equipment to alert the closest designated hospital as to patient condition, and rapidly transport the patient to the appropriate hospital for treatment. As soon as they are notified, the designated hospital will mobilize the necessary medical expertise and hospital equipment for swift and effective treatment of these time-critical conditions.

Also during the past year, planning for the replacement of the medevac helicopter fleet was completed with the approval of a State contract for the purchase of new helicopters. The first two of the new helicopters, expected to be delivered in the spring of 2012, will begin the transition to a modern fleet with up-to-date avionics, medical equipment, and safety enhancements.

In addition, an evaluation of the needs of our statewide communications system began this year that will help identify the next generation of the MIEMSS communications system. The system, which handles nearly 400,000 radio and phone calls each year with EMS providers who provide emergency care at the scene, is outmoded and many components are nearing obsolescence. The ongoing operation of the communications system is a vital linchpin to the operation of the entire statewide EMS system and its replacement will be a focus of our efforts as we move forward.

From its creation nearly two decades ago, Maryland's current EMS system continues its evolution to ensure that it fully meets the challenges of today and tomorrow. Our past successes are due to the hard work and dedication of our many partners, and the spirit of cooperative excellence that is so evident in their efforts.

Robert R. Bass, MD, FACEP
Executive Director, MIEMSS

MIEMSS
FROM THE EXECUTIVE DIRECTOR

We are so fortunate to live in Maryland where our statewide emergency medical system has been heralded as a model for the nation. Our EMS system is a highly integrated and well-coordinated emergency care network that operates statewide to ensure that critically ill and injured patients receive the rapid and effective treatment they need. This system incorporates and benefits from the work of thousands of volunteer and career EMS providers, medical and nursing personnel, county and local governments throughout the state, sophisticated communication and transportation systems, and emergency departments and specialty care hospitals designated expressly for the purpose of treating a myriad of life-threatening and time-critical emergency conditions. The success of our system is the result of literally decades of hard work by these entities and individuals.

Over the past year, we have continued efforts to further develop our statewide EMS system and to bring focus to initiatives to increase its effectiveness. Implementation of our eMEDS (electronic Maryland EMS data system) represents an enormous step forward in bringing electronic patient record-keeping to Maryland. eMEDS will simplify and bring uniformity to collection and tracking of information on pre-hospital patient care rendered by EMS providers throughout the state and will ensure compliance with national EMS data collection requirements. An electronic patient care record is created as each patient is treated and treatment information is available electronically to the emergency physicians and hospital that receives the patient. Using eMEDS, EMS programs are better to track and trend the types of emergencies seen, as well as information on EMS provider interventions, ambulance usage, response times and other factors.

Also during the year, working with our partners, the MIEMSS Ambulance Safety Task Force was formed to consider ways to increase ambulance safety. Ambulance crashes are a significant risk for EMS personnel and for the patients they transport: while many crashes are minor, some are not. The Ambulance Safety Task Force developed consensus guidelines with recommendations on ways to increase ambulance safety and reduce ambulance crashes across the state. The Task Force recommendations, including best practices, will released at a Statewide Ambulance Safety Summit to be held in the fall of 2011.

We continue to expand and refine our use of the HC Standard project. Originally implemented in 2009, HC Standard integrates information from many of our partners involved in providing emergency care. This year, the project has been expanded to provide a Health and Medical Dashboard which provides a central portal to view, monitor and access emergency health applications, including the Health Alert Network and WebEOC. The Electronic Patient Tracking System component was used to track patients during large-scale incidents, including health facility evacuations during significant weather events. The tracking system provides maps showing real-time patient location, as well as what medical treatment was provided to the patient. The patient tracking system proved invaluable to emergency operations in several jurisdictions tasked with responding to these incidents.

Also during the year, we continued expansion of the educational offerings on our Learning Management System (LMS) that provides training modules on specific topics of interest to EMS providers. The LMS has been especially helpful as EMS providers work to ensure that they meet annual protocol update requirements as part of their initial and subsequent certification / licensure. Over the next year, MIEMSS plans to broaden efforts to help ensure that providers meet these annual update requirements.

During the next year, MIEMSS will continue to work with our many partners on these and other initiatives that will help further distinguish Maryland EMS as a leader. The strong foundation provided by the efforts of these individuals and entities will ensure our continued success. We look forward to a bright future.

MIEMSS

ADMINISTRATION

Mission: To provide comprehensive accounting, personnel and administrative resources in compliance with all applicable State laws, regulations and policies in support of MIEMSS operations and overall mission.

The Administration Office is responsible for the accounting, procurement, grant administration, and human resources functions of MIEMSS.

The Accounting unit is responsible for providing guidance to management on various fiscal and budgetary matters. The staff develops the budget, tracks and monitors expenditures, processes accounts payables and receivables, maintains employee leave records, processes payroll and deposits cash receipts The staff administers special, federal grant, and reimbursable fund appropriations.

The Procurement unit is responsible for obtaining all necessary supplies, materials, and services required by MIEMSS to fulfill its mission in accordance with all applicable State procurement laws and regulations. The unit is also responsible for contract and grant administration.

The Personnel unit coordinates all areas of human resources for MIEMSS. This includes setting policy and procedural guidelines to ensure compliance with State personnel law and regulations. The staff is responsible for recruitment and hiring, salary determination, position classification and promotion, benefits and retirement coordination, employee assistance, ADA compliance, and the employee evaluation process.

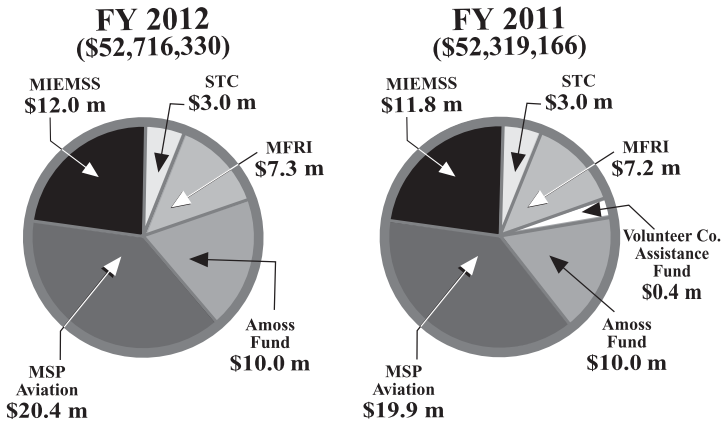
The Administration Office is also responsible for inventory control, fleet management, travel services, and building operations and maintenance.

MIEMSS budget information is displayed by state object code and department in the charts below.

MIEMSS FY 2011 EMS Operations Fund Appropriation by Department

Administrative Offices	
Executive Director, Legal Office	$643,504
Financial & Human Resources Administration	1,228,033
Planning/Program Development/Total Quality Management	214,849
Communications	
Equipment	1,320,874
Maintenance	1,746,178
EMRC/SYSCOM	1,284,026
Education/Support Services	
Education, Licensure, & Certification/Compliance	1,399,469
Educational Support Services	490,267
Information Technology	1,388,917
Medical Services	
Office of Medical Director	522,200
Office of Hospital Programs	321,111
EMS-Children	156,518
Regional Administration	1,009,384
TOTAL	$11,725,330

EMS Operations Fund



MFRI = Maryland Fire & Rescue Institute
STC = R Adams Cowley Shock Trauma Center
MSP = Maryland State Police

MIEMSS FY 2011 Expenditure by Object Code (Includes All Funds)

FY 2011	Actual
Number of Positions	94.1
Salaries and Wages	$7,728,162
Technical/Special Fees	658,516
Communication	1,324,609
Travel	160,283
Fuel and Utilities	100,505
Motor Vehicle Operation and Maintenance	229,060
Contractual Services	2,138,905
Supplies and Materials	117,311
Equipment—Replacement	154,461
Equipment—Additional	66,327
Fixed Charges	102,487
Grants	1,270,700
Total Expenditure	$14,051,326

AEROMEDICAL OPERATIONS

Mission: To provide the physician medical support necessary for the Maryland State Police Aviation Command to meet the emergency helicopter needs of Maryland's citizens. The State Aeromedical Director is actively involved in the ongoing training and verification of skill proficiency for the State Police flight paramedics. He provides around the clock consultation support to SYSCOM for medevac requests and medical direction and is actively involved in the development of new patient care protocols and the oversight of ongoing care.

In FY 2011 there were 2,333 patients transported by the Maryland State Police (MSP) Aviation Command. Of these patients, 2,267 (97%) were transported from the scene of injury at the request of the local fire services, and 66 (3%) were transported between hospitals to a higher level of care.

Types of calls included the following:

• Motor vehicle crashes	1010
• Falls	432
• Pedestrians	105
• Burns	58
• Gunshot wounds	47
• Assaults	46
• Stabbings	43
• Industrial accidents	21
• Hand injuries	8
• Drownings	6
• Hyperbaric patients	5
• Eye injuries	3

The Aviation Command continued its participation in the Adult and Pediatric Rapid Sequence Intubation (RSI) pilot programs. Designed to address the needs of patients with severe head injuries, these RSI pilot protocols allow MSP flight paramedics to use neuromuscular blocking agents in the field to provide endotracheal intubation for patients who are not breathing adequately.

Scenario-based simulation training was utilized for MSP flight paramedics in verification of advanced skill proficiency. These exercises, also used for recertification in Pediatric Advanced Life Support (PALS), allowed life-like simulation of patient care situations as would be faced by flight paramedics in the course of their normal duties.

ATTORNEY GENERAL'S OFFICE

Mission: To provide legal advice to the EMS Board, the Statewide EMS Advisory Council, and MIEMSS in connection with all aspects of emergency medical services, the ongoing administrative functions of the agency, and the regulation of commercial ambulance services. The Attorney General's Office also serves as the administrative prosecutor for cases involving allegations of prohibited acts by EMS providers before the EMS Provider Review Panel, the EMS Board, the Office of Administrative Hearings, and the courts.

During the past fiscal year, the Attorney General's Office continued to support MIEMSS in promulgating and implementing the agency's regulations, procurement, and contracts, including technology initiatives.

The Attorney General's Office reviewed and prosecuted 41 cases of alleged prohibited acts by EMS providers and applicants and provided legal advice and support to the State Office of Commercial Ambulance Licensing and Regulation in all compliance matters, including contested cases. In addition, responses were prepared to 28 public information act requests and six subpoenas.

The Attorney General's Office participated in a variety of committees, task forces, and work groups, including the task force on the clinical aspects of Telemedicine. The Attorney General's Office worked with MIEMSS to institute regulations for the designation of comprehensive stroke centers, perinatal centers, and acute cardiac interventional centers, and to implement changes to licensing and certification regulations. The Attorney General's Office also provided support to MIEMSS in its legislative initiatives.

The Attorney General's Office also oversaw the participation of MIEMSS in the development of the Maryland Orders for Life Sustaining Treatment (MOLST) legislation and program.

The Attorney General's Office made educational presentations at several venues, including EMS Care, the Medical Director's Symposium, Advanced Disaster Life Support training, and Pyramid. In addition, the Attorney General's Office developed a video on due process for Quality Assurance Officers.

The Attorney General's Office participated in drafting several information technology procurements, including a request for a data logging recorder. In addition, the office participated in drafting information technology agreements for a dashboard health care data reporting system and a patient tracking system.

The Attorney's General's Office assisted in the administration of several state and federal grant programs.

COMMUNICATIONS ENGINEERING SERVICES

Mission: Provide the equipment, support, and expertise necessary to operate the statewide emergency medical services communications systems and to support public safety interoperability.

Fiscal year 2011 brought the retirement of three long-term employees – Tony Dowhite, Wade Taylor, and Sandy Cheek – of the Communications Engineering Services department. The departure of these essential employees created a severe manpower deficit impacting the department's ability to accomplish many of our goals for the year. We anticipate a successful recruitment effort and plan to have new personnel in place during FY 2012.

Communications Engineering Services continued to meet its core goal of supporting the existing communication systems in support of the medevac helicopters and field providers. The department continues to investigate next generation technologies to provide a more robust and survivable communications system to support our customers. MIEMSS contracted a communication consultant to evaluate the current legacy systems and technologies used by MIEMSS and to chart a course of action for upgrades to the vital systems. The consultants preliminary report identified several critical failure points in the communication system with the most significant being an aging cable below the streets of Baltimore. This independent evaluation allowed MIEMSS to obtain the additional funds needed to engineer a replacement solution.

The department completed an internal vulnerability assessment of the critical infrastructure within the MIEMSS building located in Baltimore. The assessment identified several defects in the original generator installation and fuel system. These installation defects have been corrected and repairs to the emergency generator and fuel supply system have brought the installation to acceptable standards. In addition, several electrical upgrades were completed to allow a portable generator to be easily connected, if the primary generator fails. The enterprise Uninterruptable Power Supply's (UPS) capacitors and batteries were replaced to extend its life until a replacement can be procured.

Communications Engineering Services continues to lead in the design, implementation, and maintenance of the Statewide Public Safety Microwave System. During the past fiscal year, the department engineered and deployed several new microwave systems in the state. The department has continued its partnership role with other state agencies by designing and implementing communication circuits in support of MIEMSS, the Maryland State Police (MSP) and the Department of Natural Resources' (DNR) new narrowband high-band radio system. MIEMSS continues to play a leadership role in the day-to-day maintenance of the Public Safety Microwave System.

The Agency continues to be an active partner in the State's 700 MHz radio system initiative with Communications Engineering Services participating in the SIEC Executive Technical Committees to build-out the needed tower and microwave infrastructure in order to support the 700 MHz radio system. Since the contract award for the new statewide radio system, MIEMSS has been an active participant in the initial design review with the vendor and key stake holders of the 700 system. These efforts are ongoing and are expected to last for the next eight years until the system is fully deployed. As part of the system design, MIEMSS is ensuring that the communications needs of the medevac system and field providers are addressed in the initial system design.

During FY 2011, Communications Engineering Services continued efforts to replace non-narrowband-capable mobiles and portables assigned to field providers through a 100% reimbursable Radio Grant process. This grant process will allow the EMS community to be prepared for the Federal Communications Commission's January 1, 2013 deadline to operate in a narrowband mode. The department will begin transitioning the regional EMRC's UHF radio system beginning July 2012 with a completion date prior to the FCC deadline.

Communications Engineering Services continues to perform site surveys and deploy wireless links, routers, switches, and IP phones throughout the State as part of a Public Safety Interoperable Communications (PSIC) grant with the goal of establishing PSInet connectivity and deploying Digital Emergency Medical System Telephones (DEMSTel) phones to every hospital, county Public Safety Answering Point (PSAP), and county Emergency Operations Center (EOC). To date, the department has deployed DEMSTel and PSInet to 62 hospital locations, 14 law enforcement locations, 49 health locations, 56 emergency management locations, and two transportation locations. The department is currently working with the State Highway Administration to tie DEMSTel to each State Highway shop. The department received a one-year extension of the grant period to allow for the completion of this grant.

Communications Engineering Services continues to lead in the deployment, administration, and maintenance of the Public Safety Interoperability network (PSInet). PSInet is a statewide private IP-based public safety network composed of fiber, microwave, and wireless links supporting critical data and voice communications managed by MIEMSS. Funding sources include Public Safety Interoperable Communications (PSIC) grants, Urban Area Security Initiative (UASI)

grants, MIEMSS operating funds, Maryland First project, the Maryland Department of Health & Mental Hygiene, and local interoperability project funds. It is a network deployed to MSP Barracks, MIEMSS regional operating centers, jurisdictional emergency operations centers (EOCs) and primary/backup public safety answering points (PSAP/9-1-1), state and jurisdictional health departments, hospitals, and other allied agencies. Applications that currently are operating on PSInet include: Digital Emergency Medical Services Telephone (DEMSTel), Central Maryland Area Radio Communications (CMARC), Maryland Eastern Shore Interoperability Network (MESIN), Washington-Allegany-Garrett Interoperable Network (WAGIN), Coordinated Highways Action Response Team (CHART), Maryland Incident Management Interoperability Communications System (MIMICS), Maryland First, and systems monitoring/controlling the state's public safety microwave network and tower infrastructure.

The department completed the integration of Washington County into the Western EMRC. Along with this integration, MIEMSS developed new connectivity needed to relocate Washington County Hospital into the new Meritus location.

Communications Engineering Services has released an RFP to purchase the latest IP base multimedia logging recorder technologies in support of the MIEMSS Public Safety Interoperable Communications (PSIC) grant. MIEMSS Communications is working with the successful vendor and expects to have the new multimedia recorder in support of the PSIC grant and the DEMSTel IP phone system in FY 2012.

COMPLIANCE OFFICE

Mission: To ensure the health, safety, and welfare of the public as it relates to the delivery of emergency medical services by Emergency Medical Services Providers throughout Maryland. To that end, the Compliance Office is responsible for ensuring quality of care by investigating complaints and allegations of prohibited conduct.

The Compliance Office works closely with the Provider Review Panel (PRP) (the 13-member panel composed of all levels of EMS providers; physicians representing the Maryland Board of Physicians, the Maryland Medical Chirurgical Society, and the EMS Operational Program Medical Directors; the State EMS Medical Director; the MIEMSS Executive Director; the EMS Board; and the Attorney General's Office). The PRP reviews complaints, as well as the results of the investigations conducted by the Compliance Office, and recommends to the EMS Board any further action.

ACTIVITY REPORT OF THE INCIDENT REVIEW COMMITTEE (IRC), EMS PROVIDER REVIEW PANEL (PRP), THE EMS BOARD, AND THE OFFICE OF ADMINISTRATIVE HEARINGS (OAH) DURING FY 2011

• Criminal Background Checks Completed	2873
• Incidents Reported to IRC	563
• IRC Investigations Initiated	351
• IRC Investigations Conducted	331
• IRC Investigations (FY 2010) Continued	21
• IRC Complaints Forwarded to PRP	44
• Complaints Dismissed by PRP	3
• Complaints Forwarded to EMS Board	41

EMS Board Action

• Reprimands	4
• Probation	21
• Suspensions	1
• Revocations	9
• Remedial training	3
• Surrenders	1
• Evaluations	2
• Applications Denied	2
• Case Resolution Conferences	10
• Dismissed	4
• Counseling	2
• Rehab	12
• Random Testing	12

OAH Hearings requested	10
OAH Hearings conducted	2
OAH Hearings defaulted	1

DO NOT RESUSCITATE PROGRAM

The current EMS/DNR form is maintained on the MIEMSS website where it may be downloaded by the public for use. MIEMSS provides copies to individuals without access to the internet. MIEMSS also provides plastic bracelets for use with an EMS/DNR Order insert to the public without any charge. Additionally, the EMS/DNR program responded to phone calls from the public for assistance in obtaining and using the forms. In-service presentations were provided on the EMS/DNR form at health care facilities around the State.

MIEMSS staff participated in a work group to develop the Maryland Order for Life Sustaining Treatment (MOLST) form which will incorporate and replace the current EMS/DNR form.

EDUCATIONAL SUPPORT SERVICES

Mission: To contribute to MIEMSS' vision of eliminating preventable death and disability by providing to the public essential information on how to recognize an emergency, summon an EMS response, and incorporate injury prevention methods in their daily lives, as well as designing and developing educational programs for EMS providers through state-of-the-art technology.

The Educational Support Services Office provides education and information to Maryland's Emergency Medical Services community and the general public through training modules and informative programs. The Office develops, designs, and produces programs that are distributed statewide.

The Office is responsible for the design, photography, and editorial content of the MIEMSS Annual Report, MIEMSS web page, and the "Maryland EMS News." The EMS newsletter is currently sent out in an "electronic" format and can be downloaded from the MIEMSS website. It is emailed to hospital, prehospital, and emergency services personnel. Printed copies are also sent to each fire station in the State. The newsletter keeps emergency medical services personnel in touch with local, state, and national EMS issues. Recent topics included updates on Maryland events such as the annual EMS Stars of Life Awards and updated protocol and medical issues. MIEMSS continues to contribute information to the "Maryland Fire Dispatch," which also allows for an additional outlet for the dissemination of information to Maryland's emergency services community. An update of the "Maryland Medical Protocols for EMS Providers" was completed, including editing, layout, and design. These documents can be found on the MIEMSS web page. The 2011 pocket version of the "Maryland Medical Protocols for EMS Providers" was also designed, printed, and a copy was distributed to each EMS provider in the State.

This year the annual EMS Week Stars of Life Awards Ceremony was held in Annapolis in the Miller Senate Office Building during EMS Week. Both the EMS for Children "Right Care When It Counts" Awards and the Stars of Life Awards were presented. Delegate Norman Conway participated in the presentations. Governor's proclamations in recognition of EMS for Children Day and EMS Week were also presented. Press releases were distributed statewide, and media coverage obtained on the award winners.

An updated version of the EMS video "Meet the Protocols" was produced to explain the changes and additions to the "2011 Maryland Medical Protocols" manual to EMS providers. The interactive dialogue format with Medical Directors and an EMS provider host was used again this year. The production was placed on the MIEMSS Learning Management System, which allows EMS providers to acquire continuing education through the MIEMSS web page. CD versions were also produced for company drill distribution. Video production and graphics were produced to assist with these training methods.

Media events and press releases were also produced during the year on many EMS-related issues, including Yellow Alerts and hospital emergency department overcrowding. Press releases regarding a high-risk danger to infants and young children—hyperthermia secondary to being left alone in a vehicle—were done for following the first death of a child from hyperthermia. This year, in conjunction with Safe Kids, Safe Kids Maryland, US Lacrosse, the Johns Hopkins Pediatric Trauma Center, and the Maryland Chapter of the Emergency Nurses Association (ENA); a major press conference was held during a national rollout stressing sports safety and concussions. Another major EMS news event occurred in May when the National EMS Memorial Bike Ride came through Maryland again this year during EMS Week. Through the assistance of multiple agencies, the EMS riders from around the country gathered at the Taneytown Volunteer Fire Department in Carroll County on May 21 for a recognition of Maryland's EMS providers that gave the ultimate sacrifice. Three Maryland EMS providers were among the riders. Involvement in the Baltimore Area Public Safety Media Council continues to promote good working relationships between the press and public safety public information officers.

Many tours of MIEMSS were conducted for local, national, and international visitors. Tour participants viewed the Maryland EMS System overview video, visited EMRC and SYSCOM, and listened to overviews of the statewide system presented by various MIEMSS personnel. Visitors from England, India, Germany, Korea, and Ireland were among the international audience that came to learn about Maryland's EMS System.

The Office assists with conference planning, as well as technical and audiovisual support to MIEMSS-sponsored continuing education programs. These regional and statewide conferences allow providers to update their certification and licensure by attending courses. Design and production of printed materials, photographs, computer-assisted programs, and video productions assist with the learning process.

MIEMSS exhibits are utilized to spread information about the EMS System and prevention topics. Exhibits were used at the Maryland State Firemen's Association (MSFA) Convention, many EMS conferences, open houses, and the annual Maryland Association of County Governments Convention.

Several training modules were produced during the past year. These included the "Meet the Protocols: The 2011 Prehospital Protocol Update." These modules were produced on compact discs and DVDs and include printed materials. The office provided satellite down-linking and taping of many informational programs, including topics such as infection control and bioterrorism issues. Assistance and support with web conferencing, video conferencing, and teleconferencing were done in conjunction with MIEMSS and the EMS for Children programs.

Video projects included the documentation of various multi-casualty disaster drills throughout the State. Other projects included filming a Public Service Announcement (PSA) in conjunction with Governor O'Malley, the Maryland Transportation Authority Police, Maryland State Police, and Baltimore County Fire Department regarding the new Maryland "Move Over" law. Multiple PSAs were produced on various prevention topics. Other productions included the "Mid-Atlantic Life Safety Conference Opening Production," and the video portions of the protocol updates. In addition, the Office staff produced the annual MSFA Convention's Memorial Service program, video eulogies, and slide show. A new video production regarding texting while driving was produced in conjunction with the Maryland State Police, Baltimore County Fire Department, Chestnut Ridge Volunteer Fire Department, and the Center for Injury Prevention and Policy at the R Adams Cowley Shock Trauma Center. A major premiere of the show was held at the R Adams Cowley Shock Trauma Center auditorium, followed by a panel forum of both national and local highway safety professionals. The video is intended to be shown to new drivers. Although the video focused on younger drivers, distracted driving is a major safety problem for all Marylanders.

Statewide prevention initiatives were developed through partnerships with other State and local government agencies. Participation with the Impaired Driving Task Force, Occupant Protection Task Force, the Motorcycle Safety Task Force, the Pedestrian Safety Task Force, the Impaired Drivers Coalition, the American Red Cross Hometown Heroes Program, the Maryland Partnership for a Safer Maryland, the American Trauma Society, the Maryland Committee on Trauma, and the Center for Injury Prevention and Policy at the R Adams Cowley Shock Trauma Center allowed the Office to work collaboratively on multiple projects. Membership on the State Highway's Diversity in Traffic Safety Program raises the awareness for diversity in public education efforts. Projects were completed with representation of Maryland's growing diverse population.

EMERGENCY HEALTH SERVICES DEPARTMENT

UNIVERSITY OF MARYLAND AT BALTIMORE COUNTY

Mission: To provide leadership in the field of emergency health services through excellence in education. This educational excellence is supported by an active research agenda, service to the University and EMS communities, and provision of professional continuing education. The EHS Department recognizes as constituents the University of Maryland at Baltimore County, MIEMSS, and the Maryland, national, and international EMS communities.

The paramedic program has continued to grow over the past few years, resulting in a full class for the upcoming academic year. The number and quality of students continues to thrive, including a large cohort of international students who come to UMBC and Maryland seeking excellence in EMS education. The program is currently transitioning to a revised curriculum as we meet the new national educational guidelines, expanding the depth and breadth of knowledge for the entry level paramedic. The department is excited by the addition of two laboratory classrooms which will be used for adult and pediatric simulations. The purchase of new computer interactive simulation manikins will allow instructors to challenge students, while providing them with a realistic patient that will respond to their assessment and treatments.

Over the past year, the paramedic program prepared its Self-Study Report for the Commission on Accreditation of Allied Health Education Programs (CoAEMSP). Following the submission of the Self-

Study, a Site Visit team traveled to Baltimore in February 2011. Following two days of meetings, data verification, and visits with field and clinical internship preceptors; a very positive report was generated by the team. The program is awaiting its official notification of re-accreditation in the near future.

The EHS management program also continues to grow with more students entering the field with interests in local and federal employment opportunities. In May, the program saw the departure of Kurt Krumperman as the management program director. Mr. Krumperman returned to New Mexico to serve as the director of a regional EMS program in Albuquerque. Student interns continue to be placed in excellent internship sites such as MIEMSS, MEMA, American Red Cross, and other regional locations.

The EHS Graduate Program continued in 2010-2011 to provide master's degree education in the areas of EMS system design; development and management; public health issues in EHS; education of EMS providers; and emergency management. The makeup of students is gradually changing away from domestic students coming directly out of undergraduate studies toward older mid-career students, many of whom already have physician or other graduate-level degrees. There is also an increase in international students. Such students are moving into impressive positions throughout the US and abroad. For example, recent graduate Andy Gienapp became the EMS Administrator for the State of Wyoming.

Graduate faculty and students completed and published research on the following topics: health sector effects of the earthquake in Chile; MRSA colonization among EMS providers; injuries to EMS personnel, and; political distribution of disaster declarations in the United States. Clinical Associate Professor Brian Maguire accepted a director position in the EMS degree program at Charles Sturt University in Australia, leaving the EHS Graduate Program in spring 2011. Dr. Maguire's expertise as an international researcher in the area of EMS injury prevention will be greatly missed by the department and the EMS community.

The department's Critical Care Emergency Medical Transport Program (CCEMTP) continues to expand, now having served over 10,000 students through approximately 800 courses offered nationwide and internationally. The program has grown to 52 educational sites across the country and continues to grow with additional sites being negotiated monthly. The program saw publication of its Critical Care Transport textbook in November 2009, to be used in conjunction with the CCEMT Program. The textbook is published by Jones and Bartlett and is reviewed by the American Academy of Orthopaedic Surgeons (AAOS).

The Pediatric and Neonatal Critical Care Transport (PNCCT) program continues to expand nationwide and recently received organizational endorsement by the International Association of Flight Paramedics (IAFP). This recognition brings with it the first official IAFP recognition of a course of this kind. The PNCCT has now served more than 750 students; it is offered at 11 sites across the country and will soon be offered in Arizona and Ohio.

Additionally, the program continues to expand its paramedic training with paramedic refreshers, 12-lead, and capnography workshops, as well as the traditional ABC level courses. The program continues to draw participants from places as far as Trinidad and Canada, and is becoming another nationally talked about program with support of the IAFP and eJEMS. There is much expectation that the course will be offered soon in South America.

The Professional and Continuing Education (PACE) program strives to promote critical-care-related education while continuing to meet the needs of the 9-1-1 provider and other affiliated healthcare professions. The Program has continued to strengthen its relationship with the University of Maryland, Department of Emergency Medicine by partnering with the residents to review course materials and serve as guest lecturers.

EMERGENCY MEDICAL SERVICES FOR CHILDREN

Mission: To provide the leadership, direction, and expertise in the coordination of resources that focus on the unique needs of children and their families in a manner that facilitates the efficient and effective delivery of out-of-hospital, hospital, and restorative care throughout the state. These resources include injury and illness prevention, clinical protocols, standards of care and facility regulation, quality improvement initiatives, interagency collaboration, and initial and continuing education for providers across the continuum of care that will promote the health and well-being of children in Maryland.

The Emergency Medical Services for Children (EMSC) Program is responsible for the development of statewide guidelines, regulations and resources for pediatric care; quality review of pediatric emergency care and implementing pediatric facility regulations and designation; coordination of pediatric education programs, and collaboration with other agencies and organizations focused on childhood health and illness and injury prevention. The EMSC Program coordinates the State Pediatric Emergency Medical Advisory Committee (PEMAC) and its subcommittees, the state

Pediatric Quality Improvement Committee (QIC) and Pediatric Base Station programs, the pediatric activities within the five Regional EMS Advisory Councils. Grants related to the children and families in EMS are coordinated through the EMSC Program including: federal EMSC Partnership grant continuously funded since 1994, EMSC related research activities in Maryland as part of the PECARN/ CARN node, the Child Passenger Safety & Occupant Protection Healthcare grant project continuously funded since 2001, the Safe Kids Maryland state coalition with eight local coalitions and four local chapters, and the Maryland RISK WATCH Subcommittee with 14 local communities.

National Appointments in EMS & EMSC

Joseph L. Wright MD, MPH, FAAP, Associate State EMS Pediatric Medical Director at MIEMSS, was appointed in spring 2011 as a member of the National Quality Forum's (NQF's) Steering Committee for the Regionalized Emergency Medical Care Services: Phase I project functions as a unique public-private collaborative venture whose mission is to improve the quality of healthcare by standardizing the measurement and reporting of quality-related information and by otherwise promoting quality improvement. This project seeks to expand NQF's previous work in the emergency care arena by identifying approaches for systematically regionalizing emergency care services at the national, state, and regional levels. It encompasses an environmental scan and a commissioned report; included in this report will be a framework to assess current regionalized emergency medical care services' measures and guide future measure development, while identifying measure gaps. Dr. Wright continues service on the Pediatric Advisory Committee of the Food and Drug Administration (FDA). The committee advises the FDA commissioner on pediatric issues, including research priorities, ethics of clinical trials, labeling, and adverse events. Dr. Wright has also been reappointed by U.S. Transportation Secretary Ray LaHood to a second term as a member of the National Emergency Medical Services Advisory Council (NEMSAC) representing the pediatric emergency services sector. The NEMSAC provides advice and counsel on national EMS initiatives and offers a forum for the deliberation of national EMS issues. This past spring, Dr. Wright was invited by the Division of Injury Response at the Center for Disease Control to join the National Expert Panel on Field Triage as the panel prepares to update the "Guidelines for Field Triage of Injured Patients" most recently published in 2009.

During the 2010- 2011 year, two members of the MIEMSS EMSC Program remained active on the National Highway Safety Administration (NHTSA) Solutions for Safely Transporting Children in Emergency Vehicles work group: the MIEMSS EMSC Director Cynthia Wright-Johnson, MSN, RN, representing the Emergency Nurses Association, and Associate State EMS Pediatric Medical Director Joseph L. Wright, MD, MPH, FAAP, representing EMSC National Resource Center. Both also remain active participants with the American Academy of Pediatrics (AAP) Committee on Pediatric Emergency Medicine (COPEM). Dr. Wright is serving a second two-year term on the COPEM in his role as Senior Vice-President of the Child Health Advocacy Institute at the Children's National Medical Center in D.C., and Ms. Wright-Johnson is the National Association of State EMS Officials' Pediatric Emergency Care (PEC) Council Liaison Representative. In addition, Ms. Wright- Johnson was appointed to the National Association of EMS Officials (NASEMSO) Highway Incident Traffic Safety (HITS) Committee to serve on a workgroup focused on the Highway Mass Casualty Readiness Project that is focused on development of assessment and evaluation tools and processes to maximize a state or local communities response preparedness for mass casualty motor vehicle crashes on rural highways. Ms. Wright-Johnson joined the NASEMSO PEC steering committee as the liaison for the EAST states. She is serving in her second year on the Emergency Nursing Association Annual Conference Planning Committee.

EMSC Program Activities

The state PEMAC Committee continued to meet on a bimonthly basis throughout FY 2011 with the inclusion of web-based meeting capabilities and the expansion of the website for PEMAC that includes meeting handouts, state and federal resources for EMSC, and relevant publications. PEMAC has standing subcommittees: Pediatric Protocol Development; Education & PEPP Steering; Prevention & Life Safety; Research & Data; and Family Centered Care. In spring 2011, the EMSC program launched a formal Family Advisory Network (FAN) Committee with the inaugural meeting held to review the "Right Care When It Counts" award nominations. There are also working Task Forces that meet on a regular basis, as documents and procedures are updated: Volunteer Ambulance Inspection Program (VAIP), Interfacility Transport and Transfer, and Pediatric Emergency Department Facility Recognition (www.miemss.org/home/PEMAC/tabid/167/Default.aspx). Afternoon forums are held in conjunction with PEMAC meetings with the following topic schedule based upon faculty availability: January – Transport; May – Family Centered Care; July – Protocol; September – Injury Control & Prevention; November – Pediatric Research.

Through the Maryland Medical Protocol review process, current state-of-the-art clinical approaches to managing childhood emergencies continue to be developed and implemented. Protocol revisions were based upon a comprehensive evidence review and expert consensus process of the PEMAC.

On May 17, 2011, EMS for Children's Day was celebrated through the recognition of children and youth in Maryland who had demonstrated one of the 10 Steps to Take in an Emergency or one of the 10 Ways to be Better Prepared for an Emergency. Four young Marylanders received awards for their actions that ensured anther person would receive "The Right Care When It Counts." Public service announcements and a Maryland EMSC Day poster are available in English and Spanish to continue the public education message promoting injury prevention, family preparedness, and appropriate emergency actions. More information can be found at www.miemss.org/EMSCwww/RightCare.html. Also on May 17, Ms. Teresa Ann Crisman received the Maryland EMS for Children Award in recognition for her statewide leadership in injury prevention, fire safety and advocacy for children and families in high risk communities. Teresa is the Safe Kids Prince George's County coalition coordinator and has been a champion of the Risk Watch program for 10 years. For the past five years, she has supported the expansion of the MSFA life safety educational displays at the convention and has been a key member of the planning committee for the spring Public Education and Life Safety conference. Ms. Crisman has re- invigorated the Child Passenger Safety program in Prince George's County and piloted a pedestrian photo journalism program. At the State level, Teresa Ann has been one of the strongest voices who advocate for a ban on novelty lighters, educating everyone about the serious dangers of these lighters to small children.

The Pediatric QIC continues to coordinate the training for the professional teams at the Pediatric Base Stations and the Pediatric Transport Teams. The two Pediatric Base Stations at Children's National Medical Center and Johns Hopkins Children's Center provide statewide coverage for online and off-line pediatric medical direction with a primary focus on prehospital communication and education and a dual commitment to consultation for the community hospital and adult trauma center emergency departments across Maryland. Through ongoing quality improvement activities, recommendations are made that directly impact protocol development, revision, and advancement, as well as targeted pediatric education at conferences and seminars. In collaboration with the two Pediatric Burn Centers and the Adult Burn Center at Hopkins Bayview, the state has established a unique statewide centralized burn data registry with new reports to assist local communities with their prevention activities. An outpatient registry has been designed that will capture both emergency department treat and released cases, along with initial and follow-up Burn Clinic visits, allowing Maryland to accurately describe the impact of burns on the citizens.

EMSC Grant Activities

Federal EMSC grants are coordinated through the Maryland EMSC Program Office, involving statewide projects, specialized targeted issues, projects, and research initiatives at academic universities. The Maryland EMSC Program continued to provide leadership in the coordination of the Atlantic (now 10 states) EMSC Region. The Atlantic EMSC group includes South Carolina, North Carolina, Virginia, West Virginia, the District of Columbia, Maryland, Delaware, Pennsylvania, New Jersey, and New York. The 10 EMSC coordinators meet in May and December to share resources as all states work on the federal EMSC Performance Measures and continue to promote pediatric educational programs within state and local conferences.

The federal EMSC research agenda continues to be implemented through the national Pediatric Emergency Care Applied Research Network (PECARN). The Network has established data linkage projects and the structure to apply for and implement pediatric EMS and emergency department research initiatives. MIEMSS has participated in the project for the "Development of Research Partnerships with EMS Agencies and Descriptive Study of EMS Pediatric Population within PECARN." MIEMSS continues to work with the Chesapeake-Atlantic Research Network (CARN) node of PECARN on prehospital research capacity building, including monthly conference calls; focus groups on Asthma Scoring tool development; and serving on the Community Advisory Board for CARN. Two EMSC-targeted grants are ongoing within Maryland pediatric specialty centers: (1) Children's Research Institute of Children's National Medical Center (CNMC): Family Presence During Pediatric Trauma Team Activation (Principal Investigator: Karen O'Connell, MD); and (2) University of Maryland participation with the Medical College of Wisconsin: Educational Pediatric Pain Management Program for the EMT-P (Principal Investigator: Halim Hennes, MD and Co-Principal Investigator: Richard Lichtenstein, MD).

MIEMSS is in the sixth year of a six-year EMSC State Partnership Grant from the Maternal Child Health Bureau/Heath Resources Services Administration of the U.S. Department of Health and Human Services. The 2009–2012 EMSC Partnership Grant focuses on

the continued integration of EMSC into the statewide EMS System utilizing the federal EMSC Performance Measures as targeted projects. The specific grant goals include:

1. Continue to implement system enhancements with EMSC initiatives that will move toward achieving targets for the federal EMSC performance measures that support the state's operational capacity to provide pediatric emergency care and the established permanence of EMSC in the state/territory EMS system within organizational structure and statutes or regulations.
2. Continue to implement system enhancements with EMSC initiatives that will move toward achieving targets for the federal EMSC performance measures focused on pediatric education for emergency service providers at each level of practice and supporting the availability of pediatric education for emergency departments and specialty centers.
3. Expand the statewide EMSC data activities and analysis to include the ongoing progress toward National EMS Information System (NEMSIS) compliant EMS data sets and the expansion of pediatric data reporting for system evaluation and specific regional quality improvement initiatives.

During the 2010-2011 year, the Maryland EMSC team has focused on specific Performance Measure where development and implementation is still needed. The program continues to advocate for the adoption of all of the patient assessment and treatment equipment

Month and Location	Conference Title	Pediatric Components
September 2010 Ocean City, MD	Peninsula Regional Medical Center Trauma Conference	**Displays:** SECURE Ambulance Safety and Child Passenger Safety
October 2010 Solomons, MD	Pyramid 2010	**Preconference:** Pediatric Vascular Access Workshop was offered twice to allow for nurses and physicians to attend in addition to ALS providers. **Workshops:** Pediatric Stroke, No Leg to Stand On – Lower Extremity Splinting, The Deadly Combo – CO & Children, Pediatric Case Reviews – Communication is Critical. **Displays:** Pediatric Ambulance Equipment Display, Child Passenger Safety (CPS) & Occupant Protection (OP) Healthcare Project**Display:** CPS & OP Healthcare Project
October 2010 Laurel, MD	Emergency Nurses Association Barbara Proctor Conference	**Displays:** CPS & OP Healthcare Project **Presentation:** : Children in Danger-Shaken Baby Syndrome and Other Abuse
January 2011 Tilghman Island, MD	Winterfest Conference 2011	**Preconference:** Pediatric Emergency Assessment, Recognition and Stabilization (PEARS) Workshop in collaboration with Shore Health Systems **Workshops:** Special Deliveries, A Little Wheezer and Helping the Air Go In & Out **Displays:** Pediatric Ambulance Equipment Display, CPS & OP Healthcare Project
March 2011 Baltimore, MD	JEMS 2011	**Preconference:** Pediatric Vascular Access Workshop
March 2011 Rocky Gap, MD	Miltenberger Emergency Services Seminar 2011	**Preconference:** Pediatric Vascular Access Workshop **Workshops:** Sugar Babies-Handling Diabetic Emergencies in Children, Pediatric Trauma Case Reviews, Commotio Cordis: Sudden Death of the Young Athlete, Seizures in Children **Displays:** Pediatric Ambulance Equipment Display, CPS & OP Healthcare Project
March 2011 Phoenix	National Life Savers 2011	**Poster Presentation:** Child Passenger Safety & Occupant Protection Education: Partnering with Hospitals
May 2011 Linthicum, MD	ENA by the Bay 2011	**Presentations:** : ENA Institute for Quality, Safety & Injury Prevention (IQSIP): What's New and What's Ready to Put into Practice, The Injured Young Athlete: Case Studies **Display:** CPS & OP Healthcare Project
June 2011 Ocean City, MD	Maryland State Firemen's Convention	**Child and Family Interactive Displays:** Risk Watch – Steps to Safety – Focus on Sports Safety, Child Passenger Safety, Fire Safety, Make the Right Call and Senior Adult Safety.

for Ambulance Transport Vehicles as recommended by the national EMSC Program and professional organizations. The grant project leaders, Allen Walker, MD, MBA, Associate State EMS Medical Director for Pediatrics at MIEMSS, and Cynthia Wright Johnson, RN, MSN, met with each of the five Regional Councils and hospitals within the regions to review the national Guidelines for the Care of Children in Emergency Departments, and are drafting recognition criteria that will include specific Pediatric levels for each hospital in Maryland.

Pediatric EMS & Hospital Education

During each of the EMS and Emergency Nursing educational seminars and conferences in Maryland for 2010-2011, pediatric displays and/or pediatric topics were presented to highlight both protocol changes and findings from ongoing EMSC PECARN studies. Pediatric Topics are listed in the annual continuing education chart. The EMSC Program staff and medical directors from PEMAC continue to support the Maryland Enhanced PEPP courses and to coordinate the statewide PEPP Steering Committee to facilitate sharing of faculty resources, on-site pediatric medical directors, and identify material that correlates with the Maryland EMS Medical Protocols. Updates and information for coordinators and faculty can be found at www.miemss.org/EMSCwww/PEPPEnhanced2.htm

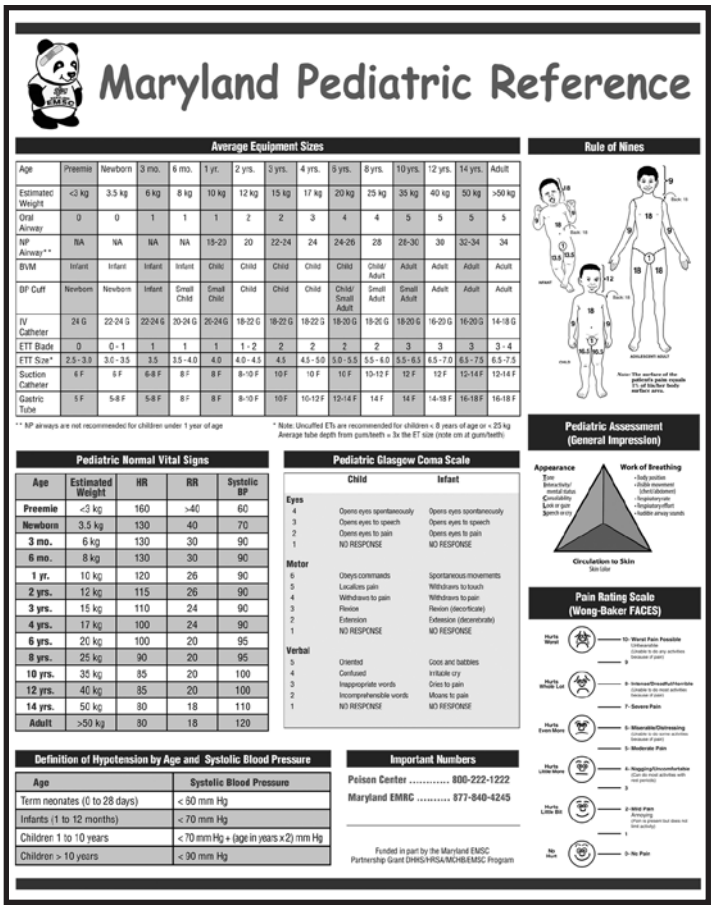
In the past year, MIEMSS has partnered with PALS training programs to introduce the Pediatric Emergency Assessment, Recognition and Stabilization (PEARS) American Heart Association (AHA) program that reaches out to BLS providers, school health providers and outpatient health care professionals. Shore Health System, Children's National Medical Center and Johns Hopkins Children's Center programs have partnered with EMSC to offer these courses attached to conferences and as stand alone courses. We anticipate new PALS and PEARS curriculum packages with 2010 AHA guidelines in late 2011 for updates in 2012.

The EMSC program distributed the new training DVD entitled: "Establishing Intraosseous Access," that has been the basis for the development of the NEW Pediatric Vascular Access Workshop offered as an eight hour pre-conference or stand-alone workshop. Learning Management System training modules have been identified and a pilot pediatric module is under final editing for release this summer.

As part of the EMSC Performance Measures on ambulance equipment and EMS provider continuing education, the PEMAC education subcommittee developed a Pediatric Reference Card and Poster focused on pediatric assessment and recommended equipment sizes for infants through adults. These resources are posted on the website and are available upon request. Danielle Dunn MS, NREMTP, EMSC Education Coordinator, managed these projects in partnership with the MIEMSS Educational Support Team.

Child Passenger Safety & Occupant Protection Healthcare Project

The EMSC Program continues to provide leadership for the tenth year of a Maryland Department of Transportation Highway Safety Grant focused on improving the Child Passenger Safety (CPS) and Occupant Protection (OP) resources within Maryland hospitals, health care professional practices, and throughout the EMS and Fire Community. This grant year, the Project continues to provide CPS & OP resources to primary care practices; to hospital units including emergency, pediatric, nursery and NICU; to school health professionals; and to EMS and Fire companies across the state. Presentations have been provided at hospitals, nursing conferences, EMS conferences and at the 2011 National Life Savers Conference in Phoenix, Az. Quarterly CPS & OP Conference Calls are hosted each year with 2009-2011 topics including:



Maryland Pediatric Reference

Average Equipment Sizes

Age	Preemie	Newborn	3 mo.	6 mo.	1 yr.	2 yrs.	3 yrs.	4 yrs.	6 yrs.	8 yrs.	10 yrs.	12 yrs.	14 yrs.	Adult
Estimated Weight	<3 kg	3.5 kg	6 kg	8 kg	10 kg	12 kg	15 kg	17 kg	20 kg	25 kg	35 kg	40 kg	50 kg	>50 kg
Oral Airway	0	0	1	1	1	2	2	3	4	4	5	5	5	5
NP Airway**	NA	NA	NA	NA	18-20	20	22-24	24	24-26	28	28-30	30	32-34	34
BVM	Infant	Infant	Infant	Infant	Child	Child	Child	Child	Child	Child/ Adult	Adult	Adult	Adult	Adult
BP Cuff	Newborn	Newborn	Infant	Small Child	Small Child	Child	Child	Child	Child/ Small Adult	Small Adult	Small Adult	Adult	Adult	Adult
IV Catheter	24 G	22-24 G	22-24 G	20-24 G	20-24 G	18-22 G	18-22 G	18-22 G	18-20 G	18-20 G	18-20 G	16-20 G	16-20 G	14-18 G
ETT Blade	0	0 - 1	1	1	1	1 - 2	2	2	2	2	3	3	3	3 - 4
ETT Size*	2.5 - 3.0	3.0 - 3.5	3.5	3.5 - 4.0	4.0	4.0 - 4.5	4.5	4.5 - 5.0	5.0 - 5.5	5.5 - 6.0	5.5 - 6.5	6.5 - 7.0	6.5 - 7.5	6.5 - 7.5
Suction Catheter	6 F	6 F	6-8 F	8 F	8 F	8-10 F	10 F	10 F	10 F	10-12 F	12 F	12 F	12-14 F	12-14 F
Gastric Tube	5 F	5-8 F	5-8 F	8 F	8 F	8-10 F	10 F	10-12 F	12-14 F	14 F	14 F	14-18 F	16-18 F	16-18 F

** NP airways are not recommended for children under 1 year of age

* Note: Uncuffed ETs are recommended for children < 8 years of age or < 25 kg
Average tube depth from gum/teeth = 3x the ET size (note cm at gum/teeth)

Rule of Nines

Pediatric Assessment (General Impression)

Appearance
Tone
Interactivity/ mental status
Consolability
Look or gaze
Speech or cry

Work of Breathing
• Body position
• Visible movement (chest/abdomen)
• Respiratory rate
• Respiratory effort
• Audible airway sounds

Circulation to Skin
Skin color

Pediatric Normal Vital Signs

Age	Estimated Weight	HR	RR	Systolic BP
Preemie	<3 kg	160	>40	60
Newborn	3.5 kg	130	40	70
3 mo.	6 kg	130	30	90
6 mo.	8 kg	130	30	90
1 yr.	10 kg	120	26	90
2 yrs.	12 kg	115	26	90
3 yrs.	15 kg	110	24	90
4 yrs.	17 kg	100	24	90
6 yrs.	20 kg	100	20	95
8 yrs.	25 kg	90	20	95
10 yrs.	35 kg	85	20	100
12 yrs.	40 kg	85	20	100
14 yrs.	50 kg	80	18	110
Adult	>50 kg	80	18	120

Pediatric Glasgow Coma Scale

		Child	Infant
Eyes	4	Opens eyes spontaneously	Opens eyes spontaneously
	3	Opens eyes to speech	Opens eyes to speech
	2	Opens eyes to pain	Opens eyes to pain
	1	NO RESPONSE	NO RESPONSE
Motor	6	Obeys commands	Spontaneous movements
	5	Localizes pain	Withdraws to touch
	4	Withdraws to pain	Withdraws to pain
	3	Flexion	Flexion (decorticate)
	2	Extension	Extension (decerebrate)
	1	NO RESPONSE	NO RESPONSE
Verbal	5	Oriented	Goos and babbles
	4	Confused	Irritable cry
	3	Inappropriate words	Cries to pain
	2	Incomprehensible words	Moans to pain
	1	NO RESPONSE	NO RESPONSE

Pain Rating Scale (Wong-Baker FACES)

Hurts Worst — 10- Worst Pain Possible (Unbearable (Unable to do any activities because of pain))
9
Hurts Much Less — 8- Intense/Unbearable/Horrible (Unable to do most activities because of pain)
7- Severe Pain
Hurts Even More — 6- Miserable/Distressing (Unable to do some activities because of pain)
5- Moderate Pain
Hurts Little More — 4- Nagging/Uncomfortable (Can do most activities with few periods)
3
Hurts Little Bit — 2- Mild Pain Annoying (Pain is present but does not limit activity)
1
No Hurt — 0- No Pain

Definition of Hypotension by Age and Systolic Blood Pressure

Age	Systolic Blood Pressure
Term neonates (0 to 28 days)	< 60 mm Hg
Infants (1 to 12 months)	< 70 mm Hg
Children 1 to 10 years	< 70 mm Hg + (age in years x 2) mm Hg
Children > 10 years	< 90 mm Hg

Important Numbers

Poison Center 800-222-1222
Maryland EMRC 877-840-4245

Funded in part by the Maryland EMSC Partnership Grant DHHS/HRSA/MCHB/EMSC Program

The Infant Car Seat Challenge, Seat Belt Fit: With and Without Boosters, Higher-Weight Harness Options, Vehicular Hyperthermia in Children, and an update on the latest child passenger safety products. Each conference call is available on the website with audio portion included in the Power Point presentations. Conference Calls are approved by Safe Kids USA for one continuing education unit (CEU) for Child Passenger Safety Technicians that listen to the presentation live or online. In early 2010, a training DVD entitled "The Infant Car Seat Challenge" was finalized and distributed to all neonatal intensive care units and newborn nurseries at hospitals across the state. The DVD continues to be the most requested product from the Project's available resources, with hospitals from New York State to Alaska requesting copies for use in educating nurses and physicians. Presentations on the educational DVD for healthcare providers were provided at hospitals in four of the State's five EMS Regions, with plans to continue offering presentations as hospitals request them.

The Project continues to expand the focus on EMS vehicle safety with both interactive displays (SECURE) and a statewide campaign to "Buckle Up – Every Ride Every Time" that promoted education for providers and the public during the fall and spring "Click It or Ticket" law enforcement campaign. "SECURE" interactive displays have been conducted at each EMS regional and state conference in collaboration with the MIEMSS State Office of Commercial Ambulance Licensing & Regulation and the MIEMSS Educational Support Department. In June 2011, at the MSFA Convention, the Project offered a brand new display designed to equip Fire and EMS providers with the tools and resources necessary to educate the public on occupant protection across the lifespan. All of these educational programs provide best practices for securing children, their families, EMS and hospital providers, and equipment within EMS transport vehicles. Public Safety vehicle crash data is being analyzed with the National Study Center research team. Posters for both SECURE and Buckle Up continue to be available and can be ordered from the website at: www.miemss.org/EMSCwww/CPSHome.htm.

The CPS & OP Healthcare Project also included the following ongoing activities:

1. Updating resources on the Project website: www.miemss.org/EMSCwww/CPSHome.htm;
2. Maintaining a network of hospital contacts and CPS technicians in both the maternal/child health units and the emergency departments of hospitals in Maryland;
3. Participating in the state Child Passenger Safety Board's development of guidelines and resources;
4. CPS & OP healthcare informational displays and demonstrations of the project products at EMS, nursing, and pediatric conferences across the state; and
5. Partnering with state and local agencies to provide CPS certification training across to healthcare providers, EMS, fire and law enforcement professionals, and health educators across the state.

Injury Prevention and Life Safety

The EMSC Program staff participates in national, state, and local Safe Kids coalitions; the Maryland division of the American Trauma Society (ATS); the Maryland Occupant Task Force; and the Child Passenger Safety Board coordinated by the State Highway Administration. This collaboration provides a consistent flow of information to the five regional pediatric committees and the state PEMAC on injury prevention resources and initiatives. EMSC continues to liaison with the Child Fatality Review Committee in collaboration with the Maternal Child Health Department and serves on the Board of the Partnership for a Safer Maryland led by the Department of Health and Mental Hygiene (DHMH) and funded by a Centers for Disease Control (CDC) grant. In September 2010, PEMAC and the Partnership jointly held a prevention forum featuring faculty all three Maryland Burn Centers sharing the research and innovative programs they are implementing in the community.

The Maryland Risk Watch Community is led by the MIEMSS EMSC Program and Region V Office in collaboration with the Office of the State Fire Marshal and the Maryland State Firemen's Association (MSFA) Fire Prevention & Life Safety Committee, along with the Maryland and local Safe Kids coalitions. Other partners in RISK WATCH include the State Highway Administration, the Maryland State Police, the Maryland and National Capital Poison Centers, the Maryland Chapter of the American Trauma Society (ATS), and the Maryland Department of Natural Resources. During the ten years of the Risk Watch in Maryland, communities have placed the Risk Watch program into classrooms, before- and after-school programs, summer camps, hospital child and parent educational programs, and injury prevention programs. There are 14 communities working with Risk Watch materials and planning for 2010-2011 in school, after-school, day-care, and department programs. These include:

- **Carroll County** has Risk Watch Injury Prevention programs at two Elementary Schools.
- **Cecil County Emergency Services** has Risk Watch resources with the Emergency Operations Center leading the program and joining Safe Kids as a chapter in 2011.
- **Frederick County** has Risk Watch resources for after-school programs in both private and public programs.
- **Howard County's Parks and Recreation** has the Risk Watch materials for education in before- and after-school programs
- **Johns Hopkins Children's Center** Pediatric ED and Child Life use Risk Watch with families on safety education.
- **Kent Island Volunteer Fire Department** is the newest member of the Risk Watch team. They received an Office of the State Fire Marshal / Maryland State Firemen's Association (MSFA) grant to purchase the prevention curriculum, won the disaster preparedness curriculum at the March Public Education and Life Safety conference and have a Risk Watch Tool kit from the MSFA committee.
- **Montgomery County Fire & Rescue** is involved in public, private, and home schools; library programs; Risk Watch Recess; child care centers; and programs in hospitals. Each library and fire station has the curriculum.
- **Prince George's Special Education Centers** have four schools located in special centers and are mentoring new programs as they develop in other counties to modify the Risk Watch tools for children with different abilities.
- **Prince George's County Fire Association** is using Risk Watch in their work with Family Day Care Centers in Forestville.
- **Prince George's County Fire & EMS Department** continues to expand its Risk Watch program with over 70 day-care programs and focused on disaster preparedness during the past school year.
- **Calvert County** is looking into incorporating Risk Watch with St. Leonard Voluntary Fire Department's community activities.
- **Garrett County** is using the Risk Watch resources at Northern Garrett Rescue and is exploring other school and the community programs.
- **Rock Hall VRF** is interested in restarting Risk Watch activities both in the school and the community programs.
- **Tilghman Island's** after-school program is interested in starting a new Risk Watch program using both fire and life safety and disaster preparedness materials which have been donated to their school and public library that are co-located on the lsland.

Interactive displays for Risk Watch Injury Prevention, Safe Kids Injury Prevention, Home Safety Council, and CDC Falls Prevention were at the MSFA Convention in Ocean City with educational materials for families and children. Over 275 families with infants, toddlers, young children, and tweens visited part or all of the "Steps to Safety" display, which was featured at the top of the second floor of the convention center. Again this year the team provided specific "How To Do Prevention" resources to prevention educators, parents and grandparents, and departmental and county level life safety officers. At this convention, the Department of Health & Mental Hygiene, Partnership for Safer Maryland was also featured and reached out to hundreds of Maryland public safety providers. The "steps" included the following stations:

- **Burns: What's Hot & What's not** – New display created for burn prevention
- **Child Passenger Safety: What's New –** Focus on Booster Seat test and new American Academy of Pediatrics recommendations for car seat and booster with support from Safe Kids Lower Shore
- **Falls: Safety for Seniors** – Display with Center for Disease Control (CDC) materials for seniors
- **Fire! Get out & Stay out** – New display house built for ease of travel and use
- **Make the Right Call** – 9-1-1 Simulator
- **Sports Safety – Prevention, Preparedness & Play** – Safe Kids display with concussion information
- **References for Adults** – parents, teachers, life safety educators including handouts on building kits and displays
- **Partnership for Safer Maryland** – CDC grant information and networking opportunities

The EMSC Program of MIEMSS is the lead for the coordination of the **Safe Kids Maryland Coalition** and holds quarterly meetings in partnership with the

Occupant Protection Task Force at Maryland Highway Safety Office. The state coalition website (www.safekidsmd.org) has been expanded to include online resources and the electronic mailing list for more than 700 members. In addition, the website has been expanded to include meeting minutes and will have links to the local coalitions and subcommittee risk-area agency contacts. For 2010-2011, the coalition meetings have included risk-area topic presentations. Both meetings have also added the capabilities for conference call in and Go To Meeting web based platform to enable more participation. Meetings have traveled across the state to feature local program accomplishments. In 2011, the Maryland and National Safe Kids programs dedicated website and press releases to a very important and high risk danger to infants and young children – Hyperthermia secondary to being left in a vehicle alone. Again this year the campaign slogan is: "Never Leave Your Child Alone." The overall goal of the campaign is to make family members and child care providers aware of the deadly risks to children when they were left unattended in a vehicle. More information is available on the website at www.safekidsmd.org and an educational webcast was held in June 2011. This is located on the MIEMSS CPS & OP website listed under that grant activity. In April 2011, MIEMSS hosted a press conference with Safe Kids Maryland, Johns Hopkins Children's Center, Maryland ENA, and US Lacrosse to highlight Sports Safety Week and the importance of Preparing, Prevention and Play. Key messages included:

- **Pre-Season Medical Screening:** To detect any underlying conditions the young athlete may have and therefore prevent a potential medical emergency.
- **Proper Conditioning:** To prevent acute and overuse injuries, young athletes need proper routines for both warm-ups and cool-downs before and after practice and play. This can help prevent sports-related injuries such as muscle tears or sprains.
- **Safety gear:** To prevent acute injuries, children playing sports should have access to and consistently use well-maintained safety equipment during both practices and games.
- **Hydration:** Encouraged to drink fluids 30 minutes before the activity begins and every 15-20 minutes during activity.
- **Rest:** Should encourage them to rest as this valuable recovery time can help prevent acute and overuse injuries.
- **Concussion:** Awareness of coaches, school personnel, students, and parents or guardians of the risk of concussions and head injuries; a requirement to remove a youth from play when a concussion or head injury is suspected; and a requirement that any player removed from play must receive an evaluation and written clearance by a licensed health care provider before return to play.
- **Qualified coaching:** Trained in both first aid and CPR, have a plan for responding to emergencies and have current knowledge of proper hydration methods and concussion prevention, recognition and response.
- **Sudden Cardiac Arrest:** CPR training for coaches, teachers and parents and youth is important as well as the availability of an AED whenever children and youth are involved in physical activities.

Through partnership with the MSFA Safety Committee and funding resource from the Maryland Highway Safety Office, MIEMSS has been a leader in the "BUCKLE UP" educational campaign to ensure that EMS, Fire, & Rescue providers are setting an example of buckling up day and night and are reminding the driving public of the importance of 100% use of seat belts, car seats, and booster seats.

EMRC/SYSCOM

Mission: The Maryland EMS Communications Center is a statewide coordination and operation center for Maryland's EMS system that functions 24 hours every day. The communications center has two integrated components which include System Communications (SYSCOM) and the Emergency Medical Resource Center (EMRC).

SYSCOM is a partnership between and jointly staffed by the Maryland Institute for Emergency Medical Services Systems (MIEMSS) and the Maryland State Police (MSP) to receive requests for, dispatch the most appropriate, and coordinate helicopter resources for missions including Medevac, search and rescue, law enforcement, homeland security, and disaster assessment.

EMRC is staffed by MIEMSS and has a three-fold mission including:

1. *Providing communications linkages and facilitating medical consultations between prehospital EMS providers and emergency departments, trauma centers, and specialty centers.*
2. *Maintaining and sharing situational awareness of the capabilities and capacities of the prehospital system and hospitals.*

3. *Providing initial alerting, as well as the coordination, of resources and the distribution of patients during major medical incidents.*

In FY 2011, the Emergency Medical Resource Center (EMRC) handled 205,204 telephone calls and 156,473 radio calls. Of these 361,677 calls, 135,455 were communications involving a patient or incidents with multiple patients, while 17,116 of these calls involved on-line medical direction.

In FY 2011, the System Communications Center (SYSCOM) handled 25,486 telephone calls and 2,367 radio calls. Of these 27,853 calls, 4,310 were related to requests for med-evac helicopters.

EMRC/SYSCOM continued participation in the National Disaster Medical System (NDMS). Utilizing the Facility Resource Emergency Database (FRED), EMRC/SYSCOM obtained hospital bed status information for several events and routine quarterly exercises.

The FRED system was also utilized by EMRC/SYSCOM in support of local emergencies and exercises conducted statewide.

As part of a cooperative agreement, EMRC/SYSCOM answered over 650 calls for the Maryland Department of Health and Mental Hygiene (DHMH) 24-hour Duty Officer.

OFFICE OF GOVERNMENT AFFAIRS

Each year, MIEMSS Office of Government Affairs works to assist the Executive and Legislative branches of State government in developing effective statutory approaches and solutions to a variety of emergency care needs. MIEMSS works on proposed legislation that affects all the various components of the statewide EMS System, the emergency care system, as well as Maryland's health care system in general. In this effort, MIEMSS partners with EMS providers, physicians, nurses, hospitals and other health care providers to ensure that EMS system issues are accounted for in legislation considered by the Maryland General Assembly.

During the 2011 Legislative Session, EMS-related legislation included the following bills that were passed by the General Assembly and signed into law by the Governor:

- The nomenclature for EMS providers' licensure and certification levels to align Maryland with other states and the National Registry.

  The changes are:
  - o First Responder changed to Emergency Medical Responder;
  - o Emergency Medical Technician-Basic changed to EMT; and
  - o Emergency Medical Technician-Paramedic changed to Paramedic.
  - o No change was made to nomenclature for Cardiac Rescue Technicians or Emergency Medical Dispatchers.
- Current law was clarified to recognize law enforcement officers who have completed: 1) CPR/AED training approved by a nationally recognized program; 2) training that meets national guidelines for emergency medical responders; or 3) training for law enforcement officers that has been approved by the EMS Board as individuals who can provide emergency medical care under certain circumstances without being certified as an EMS provider.
- The newly-created "Medical Orders for Life-Sustaining Treatment" (MOLST) Form was given the same effect as the previously-existing Emergency Medical Services "Do Not Resuscitate" (DNR) Form. Health care providers, including EMS personnel, are authorized to comply with the medical orders contained in the MOLST Form which standardizes orders for life-sustaining treatments, including code status, across the health care system.

Also during the Session, the viability of the EMS Operations Fund, which supports MIEMSS and many components of the statewide EMS System, resulted in budgetary language to provide additional revenue to the Fund starting in 2014.

Over the next year, MIEMSS will submit several studies to the Legislature, including a report to evaluate the state's network of trauma and specialty centers, as well as an evaluation of the feasibility of insurance provider billing for medevac scene transports.

HEALTHCARE FACILITIES & SPECIAL PROGRAMS

Office of Hospital Programs

Mission: To implement the designation and verification processes for trauma and specialty referral centers, to provide continuing evaluation of these centers for compliance with the regulations and standards in COMAR 30.08 et seq., and to ensure ongoing quality monitoring of the trauma/specialty care system.

Primary Stroke Centers

The designation of Primary Stroke Centers throughout Maryland was a direct result of a call to action from the Maryland Heart Disease and Stroke Council to address systems changes in stroke prevention and coordination of the delivery of care to the acute stroke. Stroke is the fourth leading cause of death in Maryland. The estimated direct and indirect cost of stroke in the United States for 2010 was $71.7 billion (American Stroke Association). The goal of designating Primary Stroke Centers is to coordinate the delivery of care for the acute stroke.

The Office's responsibility is to carry out the designation of Primary Stroke Centers as specialty referral centers statewide. The EMS Board promulgated regulations establishing the standards for these centers and they went into effect in May 2006. The standards are based on the recommendations of the Brain Attack Coalition, whose peer-reviewed recommendations for acute stroke care were published in the Journal of the American Medical Association. Currently, 35 Primary Stroke Centers have been designated. (See page 37 for a complete list of primary stroke centers.)

The department supports the meetings of the Stroke Quality Improvement Committee (QIC). The Stroke QIC is an advisory body to MIEMSS for quality improvement issues affecting the care of patients with acute stroke and the designation of specialty centers to provide stroke care. The advisory body is comprised of one designated representative from each Primary Stroke Center.

MIEMSS worked closely with various stakeholders, including the American Heart Association, the Executive Committee of the Maryland Stroke Alliance, physicians, and hospitals, on the development of the regulations establishing the standards for Comprehensive Stroke Center designation. The standards are based on the recommendations of the Brain Attack Coalition, whose peer-reviewed recommendations for acute stroke care were published in the Journal of the American Medical Association. Draft regulations for Comprehensive Stroke Center designation were approved by the EMS Board in June. The draft regulations were published in the July 15, 2011 issue of the Maryland Register for public comment. The regulations include structural and functional requirements for a hospital wishing to be designated as a Comprehensive Stroke Center.

EMS Base Stations

Office staff continued to collaborate with the Office of the Medical Director on EMS Base Station verification during FY 2011. Management activities included issuing certifications to Emergency Department personnel completing the Base Station Communications course as well as monitoring and certifying new Base Station instructors. During FY 2011, 19 hospitals applied for and received redesignation as a MIEMSS-approved Base Station.

Trauma System

The Office of Hospital Programs staff continues to support the Trauma Quality Improvement Council. This Council has a representative from each designated trauma center. Its purpose is to identify opportunities for trauma system improvement and make recommendations to MIEMSS. The Council has met regularly over the past fiscal year to address system improvement issues. The Council has reviewed data related to the field triage of trauma patients and mode of transport from the scene. The Council has continued work updating and revising the Maryland Trauma Registry to be compatible with the National Trauma Data Bank (NTDB) data elements and definition requirements. The office staff continues to work with trauma centers on specific performance improvement issues.

MIEMSS staff coordinated revisions and updates to the Maryland Trauma Registry Data Dictionary working closely with the Maryland Trauma Centers' Trauma Managers and Registrars. In addition, a plan was created for a complete upgrade for the Maryland Trauma Registry that would keep the Maryland Trauma Registry current and compliant with the National Trauma Data Bank (NTDB) that will facilitate Maryland Trauma Centers to submit trauma data to the NTDB.

MIEMSS staff coordinated and participated in the Johns Hopkins Hospital Wilmer Eye Trauma Center and the JHH Children's Pediatric Trauma and Burn Center reverification process.

Perinatal Referral Centers

MIEMSS has worked closely with the Department of Health and Mental Hygiene (DHMH) regarding the designation of perinatal centers in Maryland. DHMH provides grant funds to support a full-time position to coordinate the perinatal programs in the MIEMSS' Division of Health Care Facilities and Special Programs.

In January 2011, MIEMSS completed the process of incorporating the revised Maryland Perinatal System Standards into COMAR Regulations. With the new COMAR Regulations approved and in place MIEMSS has initiated the second five year cycle for the redesignation of Level III Perinatal Referral Centers. (See page 37 for a complete list of perinatal centers.)

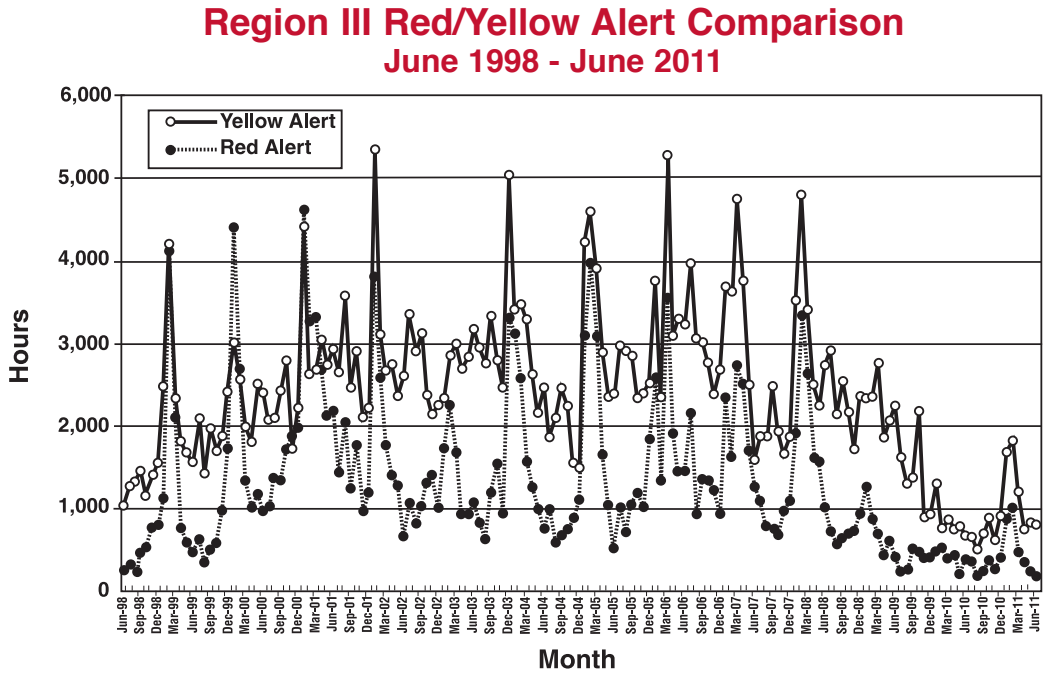
Hospitals participating in the Maryland Perinatal System submit patient care data to the Maryland Department of Health and Mental Hygiene (DHMH) and MIEMSS as appropriate, for system and quality management. All Level III Perinatal Referral Centers submit an annual perinatal indicator report which provides statistics beyond mortality data and focuses on striving for clinical excellence, patient safety and reliably with zero preventable adverse outcomes. Defined maternal and neonatal indicators include:

Maternal Indicators:

1. Total number of live births.
2. Number transport admissions
   a. to a higher level of care
   b. from a non-obstetrics providing facility.
3. Number transports OUT
4. Number maternal deaths
5. Number of uterine ruptures
6. Number of cesarean hysterectomy And postpartum hysterectomy
7. Number of eclampsia/seizures
8. Number of maternal admission to Intensive Care Unit
9. Number of inpatients returned to OR/L&D following delivery, returned for a complication
10. Number requiring blood transfusions
11. Number of 3rd/4th degree episiotomy
12. Number of neonatal birth trauma
13. Number of fetal deaths
    a. of 20 weeks or greater
    b. of 37 completed weeks of gestation or greater
14. Number of intrapartum deaths >500 gms
15. Number of neonatal deaths in the delivery room
16. Number of Primary C/S deliveries
17. Number of repeat C/S deliveries
18. Number of VBAC deliveries
19. Number of TOTAL deliveries
20. Number maternal re-admission patients returned to OR (same facility)
21. Number of maternal re-admissions (to the same facility)
22. Number with HIV diagnosed and/or treated intrapartum as well as prenatally
23. Number that have not received any prenatal care

Neonatal Indicators:

1. Number and percentage of admissions transferred back to birth or local hospital
2. Number and percentage of admissions transferred to another NICU for higher level or specialty care.



3. Number and percentage of nosocomial infections-blood stream infections only
4. Number and percentage of pneumothoraces
5. Number and percentage of severe intra-ventricular hemorrhage
6. Admission Temperature to NICU
7. Charts with adequate documentation of Immunization status

MIEMSS continues to work closely with DHMH in supporting all perinatal centers with the ability to participate in the Vermont Oxford Nightingale Internet Reporting System. This system allows each perinatal center the ability to compare their centers data to data at all group centers using the same system.

Office of Special Programs

Mission: To develop and implement policies, regulations, and programs for the enhancement and improvement of the statewide emergency medical services system and the community.

Hospital Alert Utilization/Emergency Department Overcrowding

MIEMSS continues to monitor statewide alert activity via the County Hospital Alert Tracking System (CHATS). Live CHATS screens showing hospital alert activity in all regions may be viewed 24/7 as well as online reports containing individual hospital alert activity; these are available on the MIEMSS webpage at www.MIEMSS.org. Additionally, MIEMSS monitors emergency medical services (EMS) return to service times recorded on the MAIS (Maryland Ambulance Information System) runsheets or from EMAIS®. The "return to service" time is defined as the amount of time a provider is at an emergency department (ED) with a patient before returning to service. Return to service time is a good indicator of the impact of ED crowding on the EMS system.

Yellow alerts peaked in 2006 and have since been declining especially during the last two years. Part of the decrease in alert utilization may be attributed to improvements in emergency department through-put. EMS ReRoute utilization and Return to Service times also appear to be slightly decreased also indicating hospitals are processing EMS patients more efficiently.

MIEMSS provides weekly yellow alert utilization reports to DHMH throughout the year. Additionally, during the flu season, MIEMSS monitors alert activity on a daily basis and provides reports to the regions to assist in decision-making regarding implementation of strategies from the Maryland Hospital & EMS Emergency Department Overload Mitigation Plan. No strategies from the Plan were required to be implemented during the 2010-2011 flu season.

Public Access Automated External Defibrillator Program

The Maryland Public Access Automated External Defibrillator (AED) Program was created in 1999 under Annotated Code of Maryland, Education Article 13-517 and continues to flourish throughout Maryland. With the exception of Public High Schools, which are required to have AEDs, Maryland's Public Access Defibrillation ("PAD") program is voluntary, and permits non-healthcare facilities that meet certain requirements to have an AED onsite to be used by trained laypersons in the event of a sudden cardiac arrest until EMS arrives. In FY 2011, MIEMSS processed 137 new applications and 229 renewal applications for a total of 366 AED program approvals. Currently, there are over 1,300 approved programs in the state, totaling approximately 3,200 actively registered locations with AEDs onsite and thousands of individuals trained in CPR and AED use. A list of AED facilities and program information can be viewed in the public information section of the MIEMSS webpage.

The Maryland Facility AED Program has had 63 successful AED uses out of 309 reported incidents (20%). Success is measured by the patient having a return of pulse at EMS arrival or during EMS arrival or during EMS transport. Of the overall arrests, 180 were witnessed, and 51 of those witnessed arrests regained a pulse at the time of EMS arrival for a 28% save rate for witnessed cardiac arrests.

At the 2011 EMS Star of Life Awards Ceremony, MIEMSS was proud to present the Director's Award for Excellence in EMS to Baltimore County Fire Department's Captain Steve Adelsberger for his work with CPR and public access defibrillation. In 2006, Baltimore County began a Public Access Defibrillation Program, which Captain Adelsberger chairs. Under his leadership, several thousand AEDs have been deployed throughout the County. In 2010,

he began efforts to implement a program in Baltimore County high schools to teach approximately 8000 students CPR and AED.

Captain Adelsberger also began coordinating an annual Sudden Cardiac Arrest Survivor Ceremony during CPR/AED Awareness week which was held for the third year in June. The event features survivors and their rescuers. Lastly, Steve is currently working to make AEDs available at every athletic event in Baltimore County in an effort to prevent deaths in young athletes who are victims of sudden cardiac arrest each year.

STEMI System Development

MIEMSS has designated 23 Maryland Hospitals as Cardiac Interventional Centers. Additionally, MIEMSS has entered into Memoranda of Understanding with three out of state hospitals. (See page 37 for a complete list of Cardiac Interventional Centers.)

Designation as a "Cardiac Interventional Center" indicates that a hospital complies with State standards to receive patients transported by EMS who are experiencing the most common type of heart attack called an ST-elevation myocardial infarction, or "STEMI". For these patients, primary Percutaneous Coronary Intervention (pPCI) (also know as "balloon angioplasty") is recognized by the American College of Cardiology and the American Heart Association as the treatment of choice and is generally associated with fewer complications and better outcomes than other forms of treatment.

It has also been well established that the sooner that a patient is treated to relieve the blockage causing the STEMI, the better the heart muscle will recover. Reducing the time from the onset of symptoms to treatment requires that there be a high degree of coordination and integration of care between that provided by EMS providers in the field and that provided medical staff in the hospital.

As a result of these designations, effective April 1, 2011, EMS providers who have identified a STEMI patient may transport those patients to the closest designated Cardiac Interventional Center, bypassing non-designated hospitals in accordance with the *Maryland Medical Protocols for EMS Providers*. In instances however when a Cardiac Interventional Center is not within an additional 30 minute drive time, patients may be transported to the closest emergency department for rapid assessment and transfer to a Cardiac Interventional Center when indicated.

In developing the designation standards for Cardiac Interventional Centers, MIEMSS worked closely with the Maryland Health Care Commission, American Heart Association, Maryland Chapter of the American College of Cardiology, Maryland hospitals and EMS providers, with the goal of improving care for STEMI patients throughout Maryland.

Regional STEMI Committees have been formed and have been meeting regularly to address the treatment of STEMI patients in Maryland. Regional committees were charged to address the following three objectives:

1. Assess the current status of STEMI care in the region, including availability of resources within and adjacent to the region.
2. Develop a regional based plan for optimizing outcomes of STEMI patients consistent with the Maryland Medical Protocols for EMS Providers and COMAR Title 30.
3. Continue to meet on a regular basis, as necessary, to monitor data and the implementation of the plan.

The Regional STEMI Plans are available on the MIEMSS webpage. The Regional Committees will continue to meet to evaluate the status and outcome of the plans and STEMI care on a regional basis.

INFORMATION TECHNOLOGY

Mission: To provide leadership, support, and guidance to the Institute and Maryland's EMS community on the use of information technology to improve Maryland's emergency medical services.

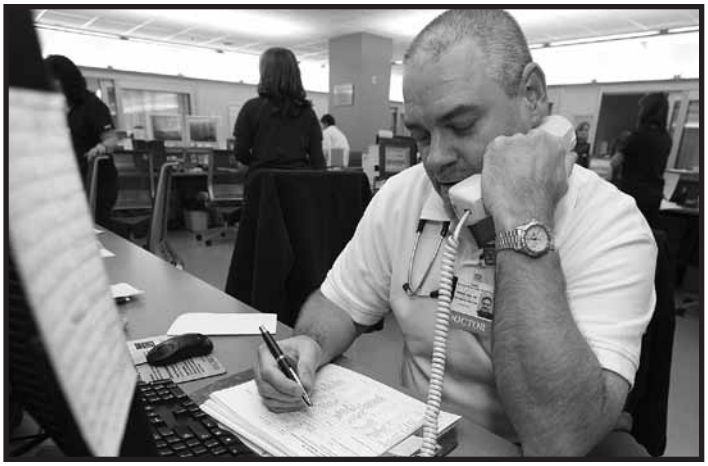
Major focus in FY 2011

The Information Technology (IT) Department worked on four major areas of growth and improvement in FY 2011. The aim of these efforts was to improve services and resources for the EMS community and the agency, and to make those services more reliable and secure.

eMEDS

A major focus for the MIEMSS IT department, in FY 2011 has been to configure, test and begin the statewide deployment of eMEDS. eMEDS is the Electronic Maryland EMS Data System, a modern, state-of-the-art replacement for the aging EMAIS® data collection system, used to collect patient care reports from emergency medical service providers.

eMEDS is a commercial-off-the-shelf software provided by ImageTrend, Inc., of Lakeville, MN. ImageTrend is the industry leader for this type of software, currently providing statewide patient care reporting systems to 26 states and hundreds of local counties and fire departments. MIEMSS initiated the



selection process for the system in 2009, receiving bids from five vendors in early 2010. ImageTrend proved to be both technically superior and the low bidder. The Board of Public Works approved a contract with ImageTrend on June 9, 2010. The acquisition of eMEDS was made possible by a Maryland Highway Safety Office grant and agency funds. The system is licensed for statewide use permitting EMS Operating Programs (EMSOPs) to use eMEDS at no cost.

The goals of eMEDS are to improve data collection and reporting on prehospital medical care provided by emergency medical personnel; to become compliant with reporting to the National EMS Information System (NEMSIS); to support research and improvements to medical care by analysis of better data; and to support quality improvement of emergency medical care by EMSOPs by allowing medical directors and local leadership to analyze EMS response data.

The eMEDS system is a web-based program available to providers statewide at all times. There is also a client version called "Field Bridge" that runs on laptops allowing data collection even when no internet connection is available. For reliability, the system is hosted in a secure, professional data center in Minneapolis, with a copy of the data, refreshed daily, stored at MIEMSS. Data entered into the system is available to the EMSOP, the receiving hospital and MIEMSS almost immediately after it is entered.

The user interface of the system incorporates intuitive design, automatic entry of answers when possible (e.g. automatic time-stamping of medical procedures), and context-sensitive appearance of forms and data fields based on the type of case being treated. These features aim to improve the ease and speed of data entry so that emergency medical providers can focus on patient care and get back in service quickly.

MIEMSS chose to implement the eMEDS system by first conducting a 30-day pilot with three counties. The EMSOPs participating in the pilot were Harford, Queen Anne's, and Cecil Counties. MIEMSS prepared the pilot counties for eMEDS deployment by training a small group of department leadership, who in turn trained all their personnel. This "Train the Trainer" model worked very well with these counties. The pilot counties began collecting live data on February 1, 2011. To date, the results have been excellent, with no major problems or interruptions of service. Providers and commanders are very satisfied with the new system. These jurisdictions have successfully collected reports for over 35,000 ambulance calls with eMEDS.

In spring 2011, MIEMSS started the statewide deployment of eMEDS. Most Maryland counties have expressed interest in participating in eMEDS. It is expected that the majority of county EMSOPs statewide will be utilizing eMEDS system by the end of calendar year 2011. eMEDS is also being either implemented or considered by the State's Commercial EMSOPs.

Expanding Capabilities

National Study Center (NSC) Collaboration

The MIEMSS IT and Data Departments advanced the agency's ability to analyze and report on collected data through continuing its collaboration with the National Study Center for Trauma and Emergency Medical Systems (NSC). The NSC has assisted MIEMSS in developing EMS system performance reports, GIS maps for evaluating STEMI transport times, reports for producing evidence-based guidelines for EMS care, EMS vehicle crash data, and other important analysis projects.

Leave Tracking and Inventory

At the request of the agency's Director of Finance, MIEMSS IT assisted in acquiring and implementing a new electronic leave tracking system, and a network-based inventory management system. The new leave tracking system greatly improved the agency's recordkeeping capabilities. IT anticipates the new inventory management system will increase the accuracy of the agency's inventory records and reduce the effort associated with maintaining inventory records.

Wireless Network

MIEMSS IT acquired and implemented a secure wireless network system throughout MIEMSS HQ. This new network includes both a private channel for

MIEMSS employees to access network resources, and a public channel to permit visitors and meeting attendees to use wireless access to the internet.

VoIP Phone System

MIEMSS IT completed networking upgrades and a pilot implementation necessary to convert MIEMSS' aging phone system to the University of Maryland Cisco Voice over IP (VoIP) network phone system. MIEMSS plans to migrate to a fully VoIP system by the end of calendar year 2011.

Increasing network security and stability

In FY 2011, the IT Department continued to migrate network servers to VMware and update the configuration of servers and network switches. VMware virtual environments were expanded with additional servers and storage to accommodate upgrades and improvements to network servers and storage. The result is that critical servers now run in a redundant fail-over mode to greatly improve uptime on critical applications and enhance security on those systems. The VMware architecture provides a solid foundation on which MIEMSS can continue to make network and continuity of operations improvements in FY 2012.

Improving internal services and support for end users

In FY 2011, the IT Department continued to apply project management services to various departmental initiatives. Help desk services were consolidated and improved, and a process of modernizing end user hardware and software was begun.

Continuing Missions

The IT Department continued to support existing programs in FY 2011. Highlights include:

electronic Maryland Ambulance Information System (eMAIS®)

The electronic Maryland Ambulance Information System (eMAIS) was still employed by 16 counties, nine EMS Operational Programs and seven commercial services in FY 2011.

As noted above, eMEDS, the new system to replace EMAIS® will be deployed in FY 2012. EMAIS® will continue to be accessible until all users are transitioned onto the new eMEDS system and will then continue to be available in a "read only" capacity.

The IT Department continued to scan patient care reports during FY 2011 for those jurisdictions that have not converted to electronic patient care reporting. By scanning data and capturing images of prehospital care forms, it is possible to link the electronic images of records to the MAIS database, making it possible to review the text portions of the forms that are not otherwise captured electronically. As more jurisdictions move toward a paperless environment by utilizing the eMEDS system or other third party electronic patient care record systems, scanning MAIS forms will decline and come to an end completely. MIEMSS expects to discontinue scanning operations during FY 2012.

County/City Hospital Alert Tracking System (CHATS)

The CHATS, web-based application provided by Global Emergency Resources (GER), shows healthcare providers the status of hospitals throughout Maryland and in surrounding jurisdictions. In FY 2010, CHATS was upgraded when the agency moved to HC Standard 3.0, making it more robust and more accessible to healthcare providers. MIEMSS IT continues to support CHATS for use by hospitals throughout Maryland.

Facility Resource Emergency Database (FRED)

FRED 2.0, in use since 2004, alerts all health care response partners of an incident and allows them to indicate what resources they have to lend to the response. The number of users has nearly doubled with the addition of long-term care facilities. In FY 2010, FRED was migrated into the HC Standard 3.0 application, making it more robust and more accessible to healthcare providers and integrating FRED alert messages with HC Standard messaging to hospitals and healthcare providers. MIEMSS IT continues to support FRED for use by hospitals throughout Maryland.

Help Desk and User Support

A major ongoing mission for MIEMSS IT is support of end users, both agency staff and EMS providers statewide, in using their PC equipment and applications. A dedicated and skilled support staff provides quick resolution to PC and application software issues. The IT department continued to provide technical support to EMRC/SYSCOM, in coordination with the MIEMSS Communications Department.

Project Management

MIEMSS IT provides Project Management (PM) services throughout the agency for consideration and development of needed applications and services. Specific PM efforts planned for FY 2012 include an Ambulance Inspection program and database, Emergency Medical Technician Skills Inspection program and database, Hospital Designation program and database, major updates to Trauma Registries, and a document management and data retention initiative.

Trauma Registries

There are three registries currently included under the Maryland State Trauma Registry reporting process: (1) The Maryland Trauma Registry, which includes nine adult and two pediatric designated trauma centers; (2) the Maryland Eye Registry for our single designated eye trauma center; and (3) the National TRACS (Trauma Registry American College of Surgeons) American Burn Association Registry, which represents records from the designated adult burn center and will eventually include data from the two designated pediatric burn centers. The data from the registries are forwarded to MIEMSS monthly, quarterly, and annually for reporting purposes.

Initiatives for FY 2012

Continue development of eMEDS

MIEMSS IT plans to continue work with EMSOP system managers to improve eMEDS and make sure it supports local operational needs as well as State data analysis needs. MIEMSS is seeking to build on the success of eMEDS by adding additional features that will make EMS reporting more effective. Through the Maryland Highway Safety Office, grant funds have been awarded to counties to facilitate Computer Aided Dispatch (CAD) integration so that 9-1-1 data and call times are automatically imported to patient care reports. MIEMSS plans to add a National Fire Incident Reporting System (NFIRS) module to eMEDS to allow EMS calls to be included with NFIRS reporting. In FY 2012, eMEDS will be integrated with the Maryland State Police (MSP) Flight Operations CAD and MIEMSS' HC Standard Patient Tracking System (PTS) to facilitate patient care reporting in MCI Mass Casualty Incident (MCI) situations. MIEMSS is also working on acquisition of Image Trend's Strategic Triggers, Alerting, and Reporting System (STARS) for eMEDS, which will enable automatic statewide alerting from eMEDS based on unusual trends in illness or injury.

Provider Database System for MIEMSS Licensure & Certification (L&C)

The Maryland Prehospital Provider Registry (MPPR) system is currently used to track the certifications, education and affiliations of EMS providers throughout the state. The system is technologically outdated, requires extensive maintenance and troubleshooting, and no longer meets the operational needs of MIEMSS or the EMS community. As part of the original eMEDS Request for Proposal (RFP) and contract, MIEMSS secured the right to buy ImageTrend's Licensure system to replace MPPR. MIEMSS IT will assist MIEMSS L&C in acquiring and deploying the new system in FY 2012. The new system will provide a web-based portal for extensive self-service by the EMS community and county medical directors. It will also automate many processes now handled manually in L&C, resulting in much greater efficiency, better customer service, and cost reduction in tracking provider certifications and training. It will automatically

Number of EMDs & FRs *(Includes Current, Extended, Jeopardy, Military, and Inactive)*

Level	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
EMD	832	794	995	1,027	1,099
FR	9,306	9,033	5,922	4,795	4,594

Number of EMTBs CRT99s, and EMTPs *(Includes Current, Extended, Jeopardy, Military, and Inactive)*

EMT-B	15,993	16,917	16,778	17,241	18,325
CRT-99	619	825	889	882	898
EMT-P	2,364	2,437	2,529	2,713	2,753
TOTAL	**18,976**	**20,179**	**20,196**	**20,836**	**21,976**

synchronize staff records with eMEDS so that both systems always have up to date information on provider certification status.

Computer Resources, Network Reliability, and Disaster Preparedness

MIEMSS IT will implement computer hardware, email, and office application upgrades during the year. Upgrades include Windows 7, Exchange 2010, and Microsoft Office 2010. EMRC/SYSCOM computer will be replaced and deployed using VMware Workstation and VMware View virtual desktops to improve system reliability. With support from MIEMSS Communication Engineering Services, MIEMSS IT will equip and migrate to a new data center to house the agency's server, network, and communications resources. The new data center will include a modern cooling system, a more powerful UPS, increased physical security, and greater data protection for computer servers. MIEMSS IT will also develop and implement the first stage of an off-site backup data center to provide redundancy and data protection in the event that the primary data center at MIEMSS HQ unavailable.

LICENSURE AND CERTIFICATION

Mission: To coordinate a variety of services to protect the public and promote and facilitate the development of knowledgeable, skilled, and proficient prehospital professionals who deliver emergency care in the Maryland EMS system.

During FY 2011, the total number of Maryland EMT-Basics, CRT-99s, and Paramedics continued to rise and is the highest it has been over the last five fiscal years. The breakdown of Maryland providers for the last five fiscal years is shown on the tables on page 24.

Throughout FY 2011, the Office of Licensure and Certification had a steady workload and issued 2,634 initial licenses and certificates, as well as renewed 6,457 prehospital provider licenses and certificates. The number of renewed certifications and licenses issued for FY 2011 increased this past fiscal year, compared to previous fiscal years. The Office worked with other departments throughout the agency by supplying provider data and trends to various statewide committees, with the purpose of analyzing trends pertaining to the recruitment and retention of prehospital professionals.

The Office continues initiatives to implement the components of the national document "EMS Education Agenda for the Future: A Systems Approach." MIEMSS formed an EMS education standards committee to review and prepare for implementation of the standards by 2012. The standards are the primary document depicting the content and depth of content covered in future EMS education courses and programs. In implementing the new standards, Maryland has adopted the Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), and Paramedic levels of the national EMS education standards. Three subcommittees; the Advanced Life Support Committee of the State EMS Advisory Council (SEMSAC), the Basic Life Support Committee of SEMSAC, and the EMS Regulations Committee, continue to work on the implementation of these new education standards. An additional pilot program for the new education standards was run at Anne Arundel Community College. This pilot ran a semester in length, more in keeping with the timeframe of a conventional EMT program, to compare with the previous pilots conducted as condensed summer programs. The student outcomes were consistent with the results seen from the previous pilot programs done by that facility. The college has continued to run EMT programs at the new educational stands level. Information on the National EMS Education Standards can be found at www.EMS.gov.

In addition to continuing support of the MIEMSS Instructors Corner, the Office of Licensure and Certification has expanded and refined the capabilities of the agency's learning management system, the Online Training Center. This distance learning system provides continuing education opportunities to nearly 20,000 registered users across the state. During FY 2011, MIEMSS developed several new distance learning courses, including the 2011 Protocol Update for providers and hospital base stations. With a commitment to continuous quality improvement, MIEMSS will continually strive to produce distance learning, synchronous and asynchronous, that is interesting, interactive, and educationally sound.

Two new recertification options have been implemented at the EMT-Basic level. An EMT-B in Maryland can now utilize a valid NREMT-Basic certification to renew their Maryland certification. Also, a Skills Competency Verification option is available in lieu of the 12-hour skills portion. EMT-B's now have four options to renew their certification: 1) a 24-hour refresher course; 2) a 12-hour skills class and 12 hours of approved continuing education (online is

available); 3) NREMT-B current certification; or 4) 12 hours of approved continuing education (online is available) and a Skills Competency Verification. Additional information on certification renewal can be found on the MIEMSS website.

MARYLAND CRITICAL INCIDENT STRESS MANAGEMENT PROGRAM

Mission: To offer psychological support services to firefighters, emergency medical technicians, police, and other emergency services personnel involved in emergency operations under extreme stress, and to help accelerate recovery of those persons exhibiting symptoms of severe stress reaction.

The Maryland Critical Incident Stress Management (MCISM) program offers education, defusings, and debriefings conducted by a statewide team of trained volunteers. The team consists of volunteer doctoral or master-level psychosocial clinicians interested in working with emergency services personnel, and fire/rescue/law enforcement peer-support persons trained in the process. Volunteer regional coordinators are responsible for specific geographic areas of the state and serve as the points of contact, through local 9-1-1 centers and SYSCOM, for critical incident stress management.

MEDICAL DIRECTOR'S OFFICE

Mission: To provide leadership and coordination for State medical programs, protocols, and quality assurance, to liaison with the regional programs and clinical facilities, and to promote creative, responsive, and scientifically sound programs for the delivery of medical care to all citizens.

In response to a request from St. Mary's County Commissioners, Richard Alcorta, M.D., State EMS Medical Director, is serving as an independent facilitator to the St. Mary's SWOT (Strengths, Weaknesses, Opportunities, and Threats). Through an all inclusive process, he is assisting the participants of the St. Mary's SWOT to identify, evaluate, and recommend strategies to improve the quality and delivery of EMS throughout the county.

The 16th Annual EMS Medical Directors' Symposium was attended by Regional, Jurisdictional and Commercial Ambulance Service Medical Directors, Base Station Physicians and Coordinators, the highest jurisdictional officials, and MIEMSS personnel. This year's guest speaker was Kevin Seaman, M.D., Medical Director, Howard County Department of Fire and Rescue Services. Dr. Seaman presented, "Resuscitate! Howard County's Effort to Improve Cardiac Arrest Survival in Our Community." Participants found not only his lecture interesting, but he and Company 8 from Howard County EMS provided a practical demonstration of "High Performance" CPR, which was both interesting and informative. Other presentations included:

- "State of the State" presented by MIEMSS Executive Director, Robert Bass, MD
- "MOLST Law Update," presented by MIEMSS State EMS Medical Director, Richard Alcorta, MD
- "Cardiac Intervention Center Designation and STEMI Update," presented by Lisa Myers, RN, Director Special Programs, MIEMSS
- "Pediatric Top Five Articles That Will Change Practice," presented by Joseph Wright, MD, PPH, FAAP; Allen Walker, MD, MBA, FAAP; and Cynthia Wright-Johnson, MSN, RNC
- "Crisis Standards of Care Managing Dramatic Surges in Patient Flow," presented by Lee Daugherty, MD, MPH, Medical Control Officer, Johns Hopkins Hospital and School of Medicine
- "Current System Monitoring Tools and Surge Plan for the Health Care System," presented by Richard Alcorta, MD, FACEP and MIEMSS Chief, Regional Programs/Emergency Operations, John Donohue, BS, EMT-P
- "Early Helicopter Activation," presented by MIEMSS State Aeromedical Director, Douglas Floccare, MD, MPH, FACEP

The EMS System in Maryland is internationally viewed as a premier system. The Office of the Medical Director discussed system design and EMS delivery models with a delegation from Mexico in an effort to integrate law enforcement, rescue, and ambulances with EMT's. Physicians from Korea were provided an overview of the Maryland System with special focus on the MSP helicopter utiliza-

tion and communications system. The United States Air Force Deputy Surgeon and his delegation toured SYSCOM/EMRC and were provided an overview of the Maryland EMS System by Dr. Alcorta.

The 2011 "Meet the Protocols" protocol updates became available February 1, 2011 and were offered in three formats for use (online learning center, classroom setting and the ability to post the course content directly on an EMS Operational Program's learning management system giving them tighter control of exactly who has completed the training). All EMS personnel were expected to complete the 2011 protocol update before June 1, 2011. MIEMSS has received feedback that the EMS providers found this standardized training to be an enjoyable and effective method of updating the changes contained in the 2011 protocols.

The Office of the Medical Director supported the Centers for Disease Control and Prevention and the American College of Emergency Physicians "Disaster Readiness and Response – Orientation and Training," held at Howard Community College which was well attended. Several hospitals and EMS programs were recruited to participate in the validation of a disaster planning and preparedness national model template

With the many natural disasters occurring around the world, Dr. Alcorta presented "Shake, Rattle and Roll" at EMS Care 2011. The presentation highlighted the EMS preparedness, management, and types of injuries associated with different naturally occurring disasters.

In an effort to improve EMS provider communications skills, Dr. Alcorta presented the "60 Second Radio Report: What physicians want to hear (So you can get the orders you need)," several times around the State including the R Adams Cowley Shock Trauma Center Teleconference which was recorded and is now posted as an on-line learning resource.

One of the great advances in standardization of care is the joint (MIEMSS and the Office of Health Care Quality) development of the Medical Orders for Life Sustaining Treatment (MOLST) order form which replaces the old EMS/DNR form and the Life Sustaining Treatment template from the Department of Health and Mental Hygiene (DHMH). The MOLST form will require nursing homes, assisted living, dialysis centers and inpatients at hospitals that are being transferred to extended health care facilities to have a MOLST order form completed. These orders, which address essential patient wishes, will accompany the patient across the spectrum of health care throughout Maryland. MIEMSS and OHCQ are conducting multiple Train the Trainer programs across Maryland as well as providing on-line learning management training for EMS providers.

MIEMSS and the Maryland Regional National Disaster Life Support (NDLS) Coalition continue to provide programs to the health care community. Dr. Alcorta serves as the Medical Director and Course Director. The Maryland Regional NDLS Coalition is composed of Johns Hopkins' Critical Event Preparedness and Response (CEPAR), the Maryland Fire and Rescue Institute (MFRI), MIEMSS, the R Adams Cowley Shock Trauma Center, and the University of Maryland Baltimore County's Center for Emergency Education & Disaster Research (CEEDR). There were 177 participants who successfully completed the one-day Basic Disaster Life Support (BDLS) Course and 47 who successfully completed the two-day hands–on Advanced Disaster Life Support Course (ADLS) with a total of 224 participants during the fiscal year. These courses were provided at no charge to the students. The course textbooks were provided through a Maryland Department of Health & Mental Hygiene (DHMH) grant.

Maryland has adopted the Image Trend electronic Patient Care Reporting System (ePCR), which is built upon the National EMS Information Systems (NEMSIS) data set. In an effort to reduce medication errors, improve documentation of care rendered, and provide a quick reference for EMS providers, Dr. Alcorta has built into the ePCR comprehensive protocol templates that are easily referenced when completing the patient care report. The templates are also available when the provider is at the patient's side with the field bridge to get precise mg/kg dosing.

QUALITY MANAGEMENT

Mission: To support MIEMSS and the EMS community in their continuous quality improvement initiatives and their commitment to a customer-based way of doing business. Successfully accomplishing this is not simply dependent upon recognizing that the ultimate customer is a patient in need of timely, proficient, and compassionate care, but understanding and improving the processes that maintain a well-functioning EMS system for the delivery of quality medical care.

MIEMSS initiated its quality management implementation through the development of an EMS-specific, Juran-based program. Over the years MIEMSS has taken advantage of state-supported

resources and those individuals practicing quality management principles within the state EMS community in its efforts to improve upon its services and customer relationships.

Managing for Results (MFR)

For the past 13 years, MIEMSS, like all State agencies, has been required to submit Managing for Results (MFR) updates along with its fiscal year budget requests to the Maryland Department of Budget and Management. This phased-in planning process began with the submission of MIEMSS Vision, Mission, and Principles statement through a customer-focus strategic planning process. MIEMSS has again met those requirements; these include re-evaluation of key goals, establishment of subsequent objectives and strategies, development of associate action plans, and creation and monitoring of performance indicators.

MIEMSS has identified two strategic goals and three associated objectives. Two objectives are outcome oriented and the third is quality-based. Each objective included performance indicators, which will help both system and jurisdictional quality management initiatives in establishing benchmarks for future quality control and quality improvement efforts.

KEY GOALS AND OBJECTIVES

Goal 1. Provide high quality medical care to individuals receiving emergency medical services.

Objective 1.1 Maryland will maintain its trauma patient care performance above the national norm at a 95% or higher statistical level of confidence.

Objective 1.2 Through 2011, increase by 5% annually, the number of prehospital acute ischemic stroke patients receiving TPA medication upon hospital arrival within 3 hours of symptom onset.

Goal 2. Maintain a well-functioning emergency medical services system.

Objective 2.1 Transport at least 89% of seriously injured patients to a designated trauma center throughout 2011.

Team EMS

An innovative approach to Quality Management education and application in the real world of EMS management was developed in conjunction with the MIEMSS Region V administration. Implemented in 1996 and updated to present standards, MIEMSS staff and a cadre of volunteer instructors from the EMS community present ways for company and jurisdictional managers to plan for, measure, maintain, and improve quality services. Techniques taught range from brainstorming causal relationships to data analysis interpretation and include topics from quality improvement team creation to meeting quality assurance standards established under state law. Jurisdictions and Regional EMS Advisory Councils have utilized this training for planning purposes, and more than 400 providers have attended statewide and special training sessions for Emergency Medical System Operational Programs (EMSOP) on a variety of subjects from indicator development to data interpretation.

Beginning in Calendar Year 2002, and in accordance with Title 30 regulations, all Maryland jurisdictional programs have implemented their own quality assurance/quality improvement plans. In this evolutionary process, Team EMS has provided the skills set for effective and continued success in meeting the goals of these plans. Particular interest has focused on the role of jurisdictional/local QA/QM managers and the skills to be an effective quality leader. To help strengthen the role of this important link to quality services, Title 30 was amended in October 2007 to define and mandate the functions of this officer at the operational program level. The two-day core curriculum was modified and presented this year at four EMSOP educational seminars.

electronic Maryland Ambulance Information System (eMAIS®) Improvement

MIEMSS was awarded a 2nd and 3rd year grant from the Maryland Highway Safety Office for the implementation and upgrade of a new electronic Patient Care Record (ePCR) solution. The number one goal was to have Maryland's prehospital care data meet the gold compliance standards set forth by the National Emergency Medical Services Information System (NEMSIS). Beginning February 2011, three pilot EMSOPs implemented eMEDS as their primary ePCR. The application passed all contractual milestones and now serves as the platform/data schema for all EMSOPs. Additionally a matching grant program was announced this year for all EMSOPs using the eMEDS application and wanting to link their EMS Computer Aided Dispatch (CAD) records. Six EMSOPs were awarded funds and will be implementing this feature in FY 2012.

EMS Surveillance Measures

MIEMSS has maintained several EMS system surveillance priorities based upon routine data review, customer requests, and research outcomes. Hospital yellow alert demand is monitored at a state, regional, jurisdictional, and specific hospital level through our online County Hospital Alert Tracking

System (CHATS) to keep all entities updated on system response capabilities and historical trends. This monitoring (especially during the winter months and flu season) and individual hospital resolution to high emergency department (ED) service demand helped keep this vital service available system-wide. Additionally, these data form one measurement in the State's Health Department's syndromic surveillance programs.

The Helicopter Utilization Database was created after field protocols were revised for Helicopter scene request transports in 2008. This database accounts for all helicopter requests for transport, independent of actual transport mode outcome, and permits the requesting EMS managers/medical directors to conduct case reviews. The primary goal is to utilize this transportation resource for only the most severe, time critical, scene incident patients statewide.

Data Confidentiality

MIEMSS maintains or has access to eight confidential databases used in ensuring quality EMS care delivery. The Data Access Committee (DAC) was formed to ensure that all data and information requests were expedited efficiently and accurately, while ensuring patient and provider confidentiality at all times. Since January 2000, over 1,450 requests have been tracked and facilitated. Standardized web-based request for data was established for timely review, approval, and accurate facilitation.

REGIONAL PROGRAMS & EMERGENCY OPERATIONS

Mission: To provide a liaison between the MIEMSS Central Office and the local EMS agencies, manage MIEMSS programs at the local level, work closely with the local governmental entities, training centers, emergency medical services/fire providers, and staff the Regional EMS Advisory Council. Regional offices also provide support in the area of planning, coordination, and response for health and medical preparedness for catastrophic events.

Regional Programs/Emergency Operations consists of five offices located throughout the State. Each office consists of at least one regional administrator and a secretary. They are responsible for monitoring the operation of the EMS system in their area and acting as advocates for the services in their region in the development of State policies and as MIEMSS representatives to institute and maintain those policies. In the event of a large-scale incident, regional administrators are expected to be

available to local resources to assist in the response. In many cases, they will be the first State representatives on the scene.

Regional EMS Advisory Councils

Each region has a Regional EMS Advisory Council that provides the focal point for the coordination of EMS planning and activities between the jurisdictions. The councils provide a means for neighboring jurisdictions to collaborate on many issues, such as conferences, training, quality improvement processes, emergency response exercises, and mutual aid activities. The regional offices act as staff for those councils to schedule meetings, manage records, research information, facilitate discussions, and represent MIEMSS at their meetings.

Grant Programs

Regional offices facilitate the distribution of funds to support local programs from several sources; for an accounting of the funds administered through the regional EMS offices, see page 32. Enhancements to local programs that were made as a result of those funds include the following:

Department of Health and Human Services – Hospital Preparedness Program (HPP)

HPP provides funding to local EMS agencies to enhance their emergency preparedness, especially for biological events. The complete accounting of expenditures, according to the priorities prescribed by HPP, can be found on page 64. This year funds are being used to expand access to the states Patient Tracking System in all the regions, provide portable power generation for Region IV, complete the connection of the local Health Departments to the Digital EMS Telephone system, and provide laptop computers in Region IV to provide field access to hospital bed availability information on HC Standard.

MIEMSS-Funded Grants

MIEMSS provides funding from its budget for four programs. The Advanced Life Support (ALS) Training program provides funds to support initial and continuing education for ALS providers and candidates. The Emergency Medical Dispatch (EMD) program provides funding for similar programs for EMS dispatchers. The 50/50 Matching Equipment Grants support the purchase of Automated External Defibrillators (AEDs), defibrillators, and diagnostic equipment by the local EMS agencies and companies. The Regions also worked closely with the Communications Engineering Office to identify priorities for replacement of wide band EMS radios that require replacement to be compliant with the FCC Narrow Banding requirements. The MIEMSS Radio Grant program provides funding to upgrade the radios.

Urban Area Security Initiatives (UASI)

The Region III Health and Medical Task Force, a sub-committee of the Baltimore Area Urban Workgroup led by Christina Hughes of Franklin Square Hospital, continues to work towards several preparedness objectives throughout the region. The group focused on three main projects this year including two state-of-the-art Mobile Ambulance Buses (MAB's), a Regional Alternate Care Site cache of equipment ranging from tents to medical supplies, and procurement of hardware for implementation of the State electronic patient tracking system within the region.

In Region V, Montgomery and Prince George's counties will benefit from several UASI grants. FY 2010 funding will provide handheld computers to all transport units for the patient-tracking pilot program. The Region V Office, acting as the Project Manager for the Montgomery County Metropolitan Medical Response System oversaw the drafting of comprehensive plans for response and conducted a table-top exercise to evaluate those plans.

Public Safety Interoperable Communication Grant

The Region III office continues to work closely with Communications Engineering to connect hospitals, 9-1-1 centers, emergency operations centers, and State Police barracks to the Public Safety Intranet (PSInet) using Voice over Internet Provider (VoIP) technology. This is being funded by the Department of Homeland Security (DHS) Public Safety Interoperable Communications (PSIC) grants. The Region III hospitals were previously connected through an Urban Area Security Initiative grant.

Inventory and Administration

Each regional office is responsible for tracking the activity and progress of all grants that its region receives. This includes ensuring that periodic reports are complete and inventorying any physical assets gained as a result of the grants as per State and Federal requirements. This also includes an annual inventory of state equipment on loan to the local jurisdictions and the ongoing inventory of equipment obtained from previous grants.

Medical Direction

STEMI Designation and Planning

Last fiscal year the regional programs assisted in the process to plan for the designations of the S-T Elevation Myocardial Infarction (STEMI) centers and the new protocols requiring transports to these centers. The Cardiac Intervention Centers were designated on April 1, 2011. This year each Regional Office has developed not only a STEMI Committee, but a working QA/QI group to evaluate the STEMI data from across the state. In addition, MOU's were established with several out of state facilities.

The Committee in Region I meets quarterly and implemented a region-wide "Activation From the Field" initiative which allows ALS providers to activate the Cardiac Cath Intervention Team at a hospital, while assessing the patient at the scene of the call for help. This activation from the field by our EMS providers reduces EMS ECG to Balloon (E2B) times drastically in the rural setting of Western Maryland and ensures increased survivability. The Region I Administrator is also active with Western Maryland Regional Medical Center's Door to Balloon Time (D2B) committee, decreasing communication barriers between pre-hospital providers and hospital staff.

In Region II, Frederick Memorial Hospital and Meritus Medical Center are working closely with the local EMS jurisdictions on quality assurance matters. STEMI Committee Membership is being expanded to include community cardiologists and more emergency department participation. One of the specific issues that

they are looking at is the time between the notifications of the 911 center to "balloon" time for STEMI patients. The Region III Committee worked diligently this past year to identify strengths and weaknesses in the Region's STEMI programs, and develop and share best practices amongst their partners to attain the highest level of coronary care. The Region III STEMI Committee continues to meet, review trends, and work to improve the overall system.

The Region III STEMI QA/QI sub-committee has served the Region III STEMI committee in developing common terminology, working definitions, and analysis of regional STEMI data. This sub-committee developed a standardized STEMI feedback form to be used throughout the region. The purpose of this form is to provide EMS providers who transported a STEMI patient valuable feedback on their final prognosis and outcome. This feedback is vital in the QI feedback loop of ensuring to maintain the best care to these time critical patients.

The Region IV Committee carefully evaluated transport times by response area to ensure the patients are transported to the most appropriate Cardiac Intervention Center and carefully evaluated the role of out of state facilities.

The Region V committee, representing hospitals throughout the region and outside the Region V borders, developed a regional STEMI plan. A sub-committee of that group created the STEMI plan data points for Region V, which will be collected by Southern Maryland Hospital.

Base Stations

In cooperation with the Office of the State EMS Medical Director, the regional offices assist with the site visits to approve hospitals to provide physicians' orders to prehospital providers. The regional offices also have taken the lead in the coordination of scheduling and supporting "Base Station Courses," which are required for the physicians and staff at hospitals requesting base station designation, and for new physicians and staff at those hospitals already designated as base stations.

Quality Improvement

The Regional V Administrator provides staff support to the Regional Jurisdictional Quality Improvement Committee. The office also coordinates initial quality improvement training and continuing education across the state. Additionally, the Region V Administrator developed a company level Quality Improvement course that premiered in Charles County in March.

In Region I, both Allegany and Garrett counties have continued work on their Quality Assurance and Quality Improvement Committees and have been meeting regularly to ensure proper EMS coverage in the region. Both counties continue to implement the SWOT (Strengths, Weaknesses, Opportunities, and Threats) initiatives. The successful introduction of the new Emergency Services Board for Garrett County, which has met several times since the supporting legislation was passed, is a testament to the SWOT initiative.

Region II has been very supportive of both Frederick County Division of Fire and Rescue Services and Washington County Division of Emergency Services. The Regional Administrator attends their monthly Medical Quality Improvement Committee meetings. Each committee has chosen additional benchmarks and initiatives to be reviewed that may show evidence that a new piece of equipment is needed for better patient care or that additional training is needed in a specific area. In fall 2011, Region II will hold a Company Level Quality Assurance Officers Course. This class will be instructed and organized by the Regional Jurisdictional Quality Improvement Committee.

The Region III Medical Director's Committee continued to make great strides during the past year to standardize the jurisdictional quality assurance reporting processes. Dr. Eric Nager, the Region III EMS Medical Director, has been instrumental in coordinating a common QI process for the region and encouraging jurisdictions to work to attain the highest feedback standards.

The Region IV EMS Advisory Council has formed a QA/QI subcommittee to better assist the jurisdictions in Region IV in meeting the needs for quality assurance. A two day Quality Assurance Officers Course was held in Ocean City. The updating of all QA plans have been completed. Medical Directors Agreements, Quality Assurance and Quality Improvement plans, and the quarterly submission of Quality Assurance reports are being submitted to the State EMS Medical Director.

In Region V, a SWOT analysis was started in St. Mary's County. The State EMS Medical Director and the Region V staff are assisting stakeholders in the county to develop a plan for the future.

Communication Systems

The Western EMRC has been established, located at the new 9-1-1 Communications Center in Allegany County. Cooperation between the MIEMSS Communications staff, the Allegany County 911 Center, Garrett County Emergency Management, Washington County EMS, and the Region I and II Offices has made possible the EMS communications system that provides for Garrett, Allegany, and recently integrated Washington County this past year.

The Region IV Office, in conjunction with the MIEMSS Communications Department, is exploring the

feasibility and implementation of a Region IV EMRC in the coming years.

VAIP

The regional offices continue to perform inspections of ambulances under the Voluntary Ambulance Inspection Program (VAIP). These inspections ensure that each unit is stocked with specific equipment and meets the response criteria developed by the VAIP Committee. Statewide 344 units were inspected this year. The inspections are valid for a period of two years. The standards will be updated in the next fiscal year to ensure they are aligned with the Maryland Medical Protocols for EMS providers.

Conferences and Training

EMS Care 2011 was held in Ocean City from March 31 through April 3, 2011. The Preconference started with a 12-hour Skills class on Thursday and included additional workshops on Friday. The full conference included lectures from nationally know speakers and experts on Saturday and Sunday. The conference was not only moved to a new location, but the Statewide committee worked to make this an outstanding educational forum. We are pleased that the conference was a huge success and plans are underway for next year's conference.

The 9th Annual Miltenberger Emergency Services Seminar, held in March, was another success. Teamwork between the Region I Office, the local hospitals, and other local agencies and institutions has developed a supportive learning environment that offers fire, EMS, EMD, and nursing topics. Close to 300 EMS providers attended this past year's seminar, and work has already begun for the 10th Anniversary program for this coming year to be held March 16-17, 2012.

Frederick County Volunteer Fire and Rescue Association will be sponsoring a one-day EMS Educational Conference in April 2012. Usually, 40 or 50 EMS providers attend this conference. Classes will combine lectures and hands-on workshops. The evaluations indicated that the participants wanted more hands-on workshops for the upcoming conference. The Region II Office continues to provide support for this conference through printing material, assisting in obtaining speakers, and continuing education credits.

The Peninsula Regional Medical Center (PRMC) hosted its 20th Annual Trauma Conference on September 24th in Ocean City. In addition, PRMC coordinated a Stroke Conference to provide prehospital providers with additional training to better recognize stroke patients. Shore Health Systems (Memorial Hospital at Easton) also hosted Stroke Conferences for prehospital providers. These institutions not only assisted in the training of prehospital providers, but also offered outreach programs to the community to better educate the public regarding the risks, signs, and symptoms of stroke. As a result of their efforts, EMS units are able to more quickly identify patients at high risk of strokes and transport them to treatment.

Talbot County EMS, in conjunction with Shore Health Systems and the Region IV Office, hosted the 14th Annual Winterfest Conference in Tilghman Island. This is one of the most successful regional conferences held throughout the state.

The Region IV Office, in conjunction with the Maryland Committee on Trauma and Shore Health Systems, Memorial Hospital at Easton, hosted the first Rural Trauma Training class held in Maryland on November 17, 2010. Physicians, nurses, and paramedics discussed treatment of the trauma patients at local hospitals through a continuum of care to trauma centers.

MIEMSS Grant Disbursements (FY 2011) by Region

	50/50 Matching Fund Grant for AEDs, Monitor Defibrillators and Upgrades	ALS Training Funds	Emergency Dispatch Programs	HPP Bioterrorism Grants BT-VII (FFY 2010)	Totals By Region
Region I	$40,128	$31,269.00	$4,400	$13,333	$89,130.00
Region II	$65,384	$36,932.00	$4,400	$20,952	$127,668.00
Region III	$103,635	$91,399.80	$13,200	$73,333	$281,567.80
Region IV	$96,000	$70,758.00	$19,800	$60,000	$246,558.00
Region V	$96,228	$81,900.00	$13,200	$52,382	$243,709.00
Total	$401,375	$312,258.80	$55,000	$220,000	$988,632.80

NOTE: Does not include Miscellaneous Grants described on page 26.

Support for Education Programs

In addition to the conferences described above, the regional offices support many other educational programs that are innovative and geared to address issues specific to a particular region. Some arise from needs identified through quality improvement processes. All of the regions support the eMEDS and Protocol Rollout classes.

The regional offices also act as a daily resource for the multiple local educational programs and institutions, ensuring there are adequate resources and basic training programs available. Often the regional offices coordinate courses with community colleges, fire academies, and local hospital and association programs. Some regions have education committees and councils staffed by the regional offices to bring the program coordinators together and identify priorities for training.

The Region I Office assisted with Hazardous Materials Training in Garrett County in preparation for a full-scale exercise in spring 2011. The Region I Administrator has participated in various training activities, with the most recent being the completion of the CRT-I program.

The regional offices are also responsible for conducting the written certification and licensure examinations. This year they conducted 37 First Responder and 105 EMT-Basic exams for classes, as well as 379 individual exams in their offices

Illness and Injury Prevention

Region V continues to support a variety of education and prevention activities through the Region V EMS Advisory Council, county fire and rescue associations, and the EMS for Children Risk Watch initiative. The Risk Watch for Children with Special Needs is coordinated through Region V. The Administrator also serves on the MSFA Fire and Life Safety Committee and the Risk Watch Subcommittee playing an active role in Statewide prevention activities. In addition, the administrator is the chair of the Partnership for a Safer Maryland, an advocacy group.

Health and Medical Emergency Preparedness

Responses and Activations

The regional offices are becoming the first line of response by MIEMSS to support local jurisdictions during significant emergency incidents. This year MIEMSS supported State agencies and local EMS programs during several major incidents.

- MIEMSS personnel supported the Maryland Governor's Inauguration in Annapolis, by assisting in the planning of health and medical response to the event as well as staffing the Unified Command coordinated through MEMA (Maryland Emergency Management Agency)
- The Region I Administrator was involved in the planning process for the scheduled move of Washington County Hospital. On December 11, 2010, a team, put together by MIEMSS, tracked Washington County Hospital (WCH) patients that were relocated approximately three miles away to the new Meritus Medical Center (MMC). Over an eight-hour period, 161 patients were moved, utilizing 14 local public health and EMS staff members to assist with triage and scanning of these patients. Thirty Commercial Ambulances with 66 staff members, transported the patients. The team deployed scanning devices and using the HC Standard tracking software helped expedite the transport of the patients between facilities. Without using the HC Standard patient tracking software, the commercial ambulance crews would have been required to complete a patient care report after each patient transport, thus slowing the transfer of patients dramatically.
- The Region V Office helped to coordinate activities remotely during a Heat Emergency at the Regency Furniture Stadium in Waldorf. An after- action conference was conducted with all the agencies involved from the three southern Maryland counties.
- Region III and SOCLAR assisted in the unplanned relocation of patients from two nursing homes when their air conditioners failed during an extreme heat emergency.
- MIEMSS personnel were also activated to staff the SEOC during the winter snowstorms and hurricane Earl.

Health and Medical Committees

Each region has continued to support and strengthen regional interdisciplinary health and medical emergency preparedness committees.

The Region II Office continues to support the Tri-State Healthcare Coalition in which health care and public health agencies collaborate to provide information related to the regional (Western Maryland) picture of emergency medical services and response. They have developed a process for sharing resources between agencies in the event of a disaster or a time of need. The Coalition conducted a full-scale exercise in July 2010 between Frederick Memorial Hospital and Washington County Hospital. The objective of this exercise was to see the logistics of sharing equipment and resources between the two hospitals. Grants are emphasizing more cooperation and coordination between health care agencies, public health, law enforcement, fire and EMS. Regions I and II have created a Council to conduct comprehensive regional ESF #8 planning and coordinate grant application activities for the Maryland Region I & II Hospitals, DHMH Facilities, Public Health Departments, and EMS Regional Councils. The name of the organization is the Region I & II Health Care Council. The purpose of this council is to solicit from its various constituent bodies, expressions of interest for available grants. They will, in a timely manner, prioritize and forward the expressions of interest through the grant process.

The Region III Health and Medical Task Force continues to coordinate work on all the health and medical UASI projects. As the Hospital Preparedness Program is taking on a more regional focus, the committee is expanding to include federally qualified health clinics and skilled nursing facilities. By merging the UASI and HPP projects, this committee has been able to accomplish larger projects in a shorter period of time.

The Region IV Health and Medical Committee assisted with a regional disaster exercise and planning. The committee has met on a more regular basis and continues to develop ties region-wide. The Region IV Office has been requested to participate in the Delmarva Regional Healthcare Mutual Aid Group. This group brings together resources from Delaware, Maryland, and Virginia to mitigate potential disasters that could impact the Delmarva Peninsula.

The Region V Health & Medical Task Force helps suburban Maryland counties to stay coordinated as they work with their partners throughout the National Capital Region. The Task Force was expanded to include federally funded health centers and other partners. UASI planning efforts are underway in both Montgomery and Prince George's counties.

Emergency Response Exercises

MIEMSS regional offices supported more than 21 exercises during the past fiscal year. Support included planning and coordination, arranging for moulage and enlisting volunteer victims, scheduling data collectors, drafting after-action reports and improvement plans. The Maryland EMS Moulage team provided moulage to seven of these 13 exercises. (Moulage is the art of applying mock injuries for the purpose of training Emergency Response Teams and other medical personnel. Moulage uses complicated makeup and theatre techniques to provide elements of realism to the training simulation.) At these seven exercises, the moulage team moulaged over 275 victims. Some of the more notable exercises included:

- MIEMSS joined with many organizations across the State to participate in "STATEWIDE PAN FLU Exercise." The Regional Offices were involved in several aspects of the Statewide Pan Flu drill held May 3 through May 5, 2011.
- MIEMSS united with many organizations to plan for a mass casualty exercise "EPLEX" at the Baltimore Washington International Thurgood Marshall Airport. This exercise was conducted on May 7, 2011. One of the objectives of this exercise was to evaluate the new patient tracking devices and participating agencies' actions against their current response plans and capabilities for a mass casualty.
- MIEMSS assisted with the first Live Shooter Exercise in Region I held on November 1, 2010, at Mountain Ridge High School in Frostburg, Maryland. The Exercise was a huge undertaking and was a collaboration between area law enforcement agencies, local Emergency Management, the Allegany County Board of Education, local hospitals, and health officials, and local EMS/Fire Departments.

- MIEMSS participated in the October Capital Shield Event in Montgomery County, in conjunction with county and federal agencies. All hospitals in Prince George's and Montgomery County participated
- The Region III office assisted in demonstrating the Patient Tracking System to the Urban Area Working Group during the Vigilant Guard Exercise in Baltimore City.
- A few of MIEMSS personnel supported an exercise in Patient Tracking Data exchange testing the draft "Tracking Emergency Patients" EDXL Data Standard by acting as the exercise control center for a multi-state exercise during which data was exchange between four commercial patient tracking applications on over 1,000 patients. Results of this exercise will help steer the full implementation of the standard by the Department of Homeland Security.

Maryland Virtual Emergency Response System

Region II has taken the lead for MIEMSS on the Maryland Virtual Emergency Response System (MVERS) project. This system provides an electronic plan that allows quick and easy access to information in order to expedite a response to a critical situation. MVERS has been developed and managed cooperatively between MIEMSS, the Maryland State Police, and the Maryland Emergency Management Agency. There have been 12 jurisdictions or agencies across the State that have implemented MVERS for schools, state and county government buildings, correctional facilities, and public utilities. The program is being introduced into the state's Critical Infrastructure Protection Planning, and there is interest to develop a template for hospitals to document the unique physical plant capabilities required to support patients. Currently, there is one hospital that is in the process of collecting data to be used in the MVERS program.

Chempack

The Region V Office coordinated the CDC's Chempack Sustainment visit. During the two-week visit, all items close to their expiration date were replaced. Their visit covered various locations throughout the state. All of the MIEMSS administrators and associates participated in the visit. Due to the relocation of some of the assets, a new Chempack storage facility was constructed on the eastern shore and the materials from two other locations were moved to that location or redistributed to other facilities.

Health and Medical Monitoring Application

Version 3.6 of HC Standard is currently in production and has brought our health partners many new features. This computer application incorporates the functions of the County Hospital Alert Tracking System (CHATS) and the Facility Resource Emergency Database (FRED) and will host the patient tracking data. The regional offices were instrumental in providing training and support to the users of the system. Additional funding was received to use HC Standard to establish the Health and Medical Preparedness Dashboard to bring many health and medical applications into one system to provide full situational awareness. This new addition to our suite of HC Standard components allows customization of pertinent applications within one common viewing window. HC Standard is the central database for all patient tracking programs being implemented throughout the State.

Preparedness Planning

MIEMSS continues to cooperate with the Governor's Homeland Security Advisor to achieve the Governor's 12 Homeland Security goals. Rather than establishing new groups to accomplish these goals, MIEMSS cooperates with the DHMH Office of Preparedness and Response to work through the existing committees to accomplish the goals associated with health and medical preparedness. Projects detailed elsewhere in this section, such as the DMAT teams, UASI projects, and HC Standard are the results of these collaborative efforts and contribute to accomplishing these goals.

The Maryland Disaster Medical Assistance Team (DMAT) was formally designated by the National Disaster Medical System. The team currently has over 80 formal members and another 20 in the process of being cleared by DHS. They were deployed as a developmental team in support of other DMAT and DHHS operations in the National Capital Region. Along with Specialty Transport capabilities they are also beginning to specialize in treating patients exposed to hazardous materials in conjunction with the National Medical Response Teams (NMRT).

New Frestanding Emergency Center

Shore Health Systems opened on a new free-standing Emergency Department that opened in October of 2010. This facility is located in Queen Anne's County. The Region IV Office is setting new transportation guidelines to ensure patients are taken to the appropriate facility.

STATE OFFICE OF COMMERCIAL AMBULANCE LICENSING AND REGULATION

Mission: To provide leadership and direction regarding the commercial (private) ambulance industry in Maryland to protect the health, safety, and welfare of persons utilizing these services. This includes the development and modification of statewide requirements for commercial ambulance services and vehicles and the uniform and equitable regulation of the commercial ambulance industry throughout Maryland.

Operating Statistics:

July 2010-May 2011:

1 New Basic Life Support Services License Issued

105 Intra-Cycle Vehicle Licenses Issued

- 67 Semi-Annual Vehicle Licenses
  - 25 BLS Vehicles
  - 42 ALS Vehicles
- 11 New Vehicles Added
  - 7 BLS Vehicles
  - 4 ALS Vehicles
- 27 Vehicle License Changes
  - 6 Licensing Downgrades
  - 16 License Transfers (BLS to BLS or ALS to ALS)
  - 5 Vehicle License Upgrades (BLS to ALS)

Annual Inspection–June 2011:

39 Commercial Ambulance Service Licenses Issued

- 35 Ground Ambulance Services
  - 8 Basic Life Support Services
  - 27 Advanced Life Support Services
    - 10 Specialty Care Services
    - 6 Neonatal Services
- 4 Air Ambulance Service Licenses Issued

379 Vehicles Inspected

- 238 BLS vehicles
- 131 ALS/SCT vehicles
- 10 Neonatal vehicles

The State Office of Commercial Ambulance Licensing and Regulation (SOCALR) marked its eighteenth year of operation serving the commercial ambulance industry. The department's trend of repeated annual growth validates the value and need for commercial ambulance services in Maryland.

Even though the total number of licensed commercial services has decreased by one service, FY 2011 resulted in a 6% increase of licensed commercial ambulance vehicles. There was a 7% increase in BLS vehicles operating in the State and a 6% increase in ALS-licensed vehicles.

SOCALR also continues to play a vital role in the EMS community beyond the licensing capacity. Regular duties include compliance with federal, state, and local laws, quality assurance and ambulance safety.

MARYLAND TRAUMA & SPECIALTY REFERRAL CENTERS

Injured patients need treatment at the hospital best staffed and equipped to meet their special needs. Maryland's system of care ensures that patients promptly get to the most appropriate hospital in an effort to decrease morbidity and mortality. (For differences in standards in the levels of trauma centers, see the Trauma Center Categorization chart on the next page.)

The trauma and specialty referral centers within the Maryland EMS System are:

TRAUMA CENTERS

Primary Adult Resource Center
- R Adams Cowley Shock Trauma Center/University of Maryland Medical System, Baltimore City

Level I Trauma Center
- The Johns Hopkins Hospital Adult Trauma Center, Baltimore City

Level II Trauma Centers
- The Johns Hopkins Bayview Medical Center, Baltimore City
- Prince George's Hospital Center, Cheverly
- Sinai Hospital of Baltimore, Baltimore City
- Suburban Hospital, Bethesda

Level III Trauma Centers
- Meritus Medical Center, Hagerstown
- Peninsula Regional Medical Center, Salisbury
- Western Maryland Regional Medical Center, Cumberland

SPECIALTY REFERRAL CENTERS

Burns
- Baltimore Regional Burn Center/ The Johns Hopkins Bayview Medical Center, Baltimore City
- Burn Center/Washington Hospital Center, Washington, DC
- Pediatric Burn Service at the John's Hopkins Children's Center
- Pediatric Burn Center at Children's National Medical Center

Cardiac Interventional Centers
- Anne Arundel Medical Center
- Baltimore-Washington Medical Center
- Bayhealth Medical Center-Kent General Hospital
- Carroll Hospital Center
- Christiana Hospital
- Franklin Square Hospital Center
- Frederick Memorial Hospital
- Holy Cross Hospital
- Howard County General Hospital
- The Johns Hopkins Bayview Medical Center
- The Johns Hopkins Hospital
- Meritus Medical Center, Hagerstown
- Peninsula Regional Medical Center
- Prince George's Hospital Center
- Shady Grove Adventist Hospital
- Sinai Hospital of Baltimore
- Southern Maryland Hospital Center
- St. Agnes Hospital
- St. Joseph Medical Center
- St. Mary's Hospital
- Suburban Hospital
- Union Memorial Hospital
- University of Maryland Medical Center
- Upper Chesapeake Medical Center
- Washington Adventist Hospital
- Washington Hospital Center
- Western Maryland Regional Medical Center

Eye Trauma
- Wilmer Eye Institute's Emergency Service/The Johns Hopkins Hospital, Baltimore City

Hand/Upper Extremity Trauma
- The Curtis National Hand Center/ Union Memorial Hospital, Baltimore City

Hyperbaric Medicine
- Hyperbaric Medicine Center/R Adams Cowley Shock Trauma Center/University of Maryland Medical System, Baltimore City

Neurotrauma (Head and Spinal Cord Injuries)
- Neurotrauma Center/R Adams Cowley Shock Trauma Center/ University of Maryland Medical System, Baltimore City

Pediatric Trauma
- Pediatric Trauma Center/ The Johns Hopkins Children's Center, Baltimore City
- Pediatric Trauma Center/Children's National Medical Center, Washington, DC

Perinatal Referral Centers
- Anne Arundel Medical Center
- Franklin Square Hospital Center
- Frederick Memorial Hospital
- Greater Baltimore Medical Center
- Holy Cross Hospital
- Howard County General Hospital
- Johns Hopkins Bayview Medical Center
- Johns Hopkins Hospital
- Mercy Medical Center
- Peninsula Regional Medical Center
- Prince George's Hospital Center
- St. Agnes Health Care
- St. Joseph Medical Center
- Shady Grove Adventist Hospital
- Sinai Hospital of Baltimore
- University of Maryland Medical System

Poison Consultation Center
- Maryland Poison Center/University of Maryland School of Pharmacy, Baltimore City

Primary Stroke Centers
- Anne Arundel Medical Center
- Atlantic General Hospital
- Baltimore-Washington Medical Center
- Calvert Memorial Hospital
- Civista Medical Center
- Franklin Square Hospital Center
- Frederick Memorial Hospital
- Good Samaritan Hospital
- Greater Baltimore Medical Center
- Harbor Hospital Center
- Harford Memorial Hospital
- Holy Cross Hospital
- Howard County General Hospital
- The Johns Hopkins Bayview Medical Center
- The Johns Hopkins Hospital
- Maryland General Hospital
- Memorial Hospital at Easton
- Mercy Hospital Center
- Meritus Medical Center, Hagerstown
- Montgomery General Hospital
- Northwest Hospital
- Peninsula Regional Medical Center
- Shady Grove Adventist Hospital
- Sinai Hospital of Baltimore
- Southern Maryland Hospital Center
- St. Agnes Hospital
- St. Joseph Medical Center
- St. Mary's Hospital
- Suburban Hospital
- Union Hospital of Cecil County
- Union Memorial Hospital
- University of Maryland Medical Center
- Upper Chesapeake Medical Center
- Washington Adventist Hospital
- Western Maryland Regional Medical Center

Primary Adult Resource Center

R Adams Cowley Shock Trauma Center, University of Maryland Medical System

Located in Baltimore City, the R Adams Cowley Shock Trauma Center, which serves as the state's Primary Adult Resource Center (PARC), reported receiving 6,657 trauma patients from June 2009 to May 2010, according to the Maryland State Trauma Registry. (See pages 65 to 70 for additional patient data in various categories.) Thomas M. Scalea, MD, FACS, FCCM, serves as the Physician-in-Chief for the Program in Trauma. Karen Doyle, MBA, MS, RN, NEA-BC, is Vice-President of Nursing & Operations. During FY 2011, the Center received 8,355 patients.

The R Adams Cowley Shock Trauma Center EMS Office staff was very active in prehospital EMS educational activities. Tours were given to 35 groups. Evening educational programs open to prehospital and hospital care providers were held six times and linked via live broadcasts to 13 remote sites across the state. Broadcast locations included the Western Maryland Regional Medical Center in Cumberland, Meritus Medical Center in Hagerstown, Carroll County Community College, Suburban Hospital in Bethesda, Prince George's Hospital Center in Cheverly, Civista Medical Center in LaPlata, Calvert County ALS Training Center, St. Mary's Hospital in Leonardtown, Cecil County Department of Emergency Services, Kent County Department of Emergency Services, Queen Anne's County Department of Emergency Services, Memorial Hospital at Easton, and the Peninsula Regional Medical Center in Salisbury. There were 166 EMS providers who participated in 13 ALS Airway Skills Labs. In the Observation Program, 287 EMS providers observed in the Trauma Resuscitation Unit, and 195 EMS providers in Critical Care. In addition, 23 onsite clinical programs were held at firehouses, training academies, and regional EMS conferences. In addition to the local EMS conferences, Shock Trauma has joined forces with JEMS and EMS Magazine to provide speakers and courses for "EMS Today" and "Fire House Expo."

In an effort to further basic, translational, and clinical studies in injury research, the University of Maryland School of Medicine (UMSOM) has designated its Charles McC. Mathias National Study Center for Trauma and EMS as an Organized Research Center (ORC). With this designation, the Shock, Trauma, and Anesthesiology Research – Organized Research Center (STAR-ORC) became a world-class, multi-disciplinary research and educa-

Trauma Center Categorization

Differences in Standards Based on Physician Availability and Dedicated Resources	PARC	Level I	Level II	Level III
Attending surgeon who is fellowship-trained and is in the hospital at all times	X			
Dedicated facilities (Resuscitation Unit, Operating Room, and Intensive Care Unit) 24 hours	X			
Facilities (Resuscitation Unit, Operating Room, and Intensive Care Unit) available at all times	X	X	X	X
Trauma Surgeon available in the hospital at all times		X	X	
On-call Trauma Surgeon available within 30 minutes of call				X
Anesthesiologist in the hospital at all times and dedicated to trauma care	X			
Anesthesiologist in the hospital at all times but shared with other services		X	X	
On-call Anesthesiologist with CRNA who is in the hospital				X
Orthopedic Surgeon in the hospital at all times and dedicated to trauma care	X			
Orthopedic Surgeon in the hospital at all times but shared with other services		X		
On-call Orthopedic Surgeon available within 30 minutes of call			X	X
Neurosurgeon in the hospital at all times and dedicated to trauma care	X			
Neurosurgeon in the hospital at all times but shared with other services		X		
On-call Neurosurgeon available within 30 minutes of call			X	X
Fellowship-trained/board-certified surgical director of the Intensive Care Unit	X	X		
Physician with privileges in critical care on duty in the Intensive Care Unit 24 hrs/day	X	X	X	
Comprehensive Trauma Research Program	X	X		
Education—Fellowship Training in Trauma	X			
Surgical Residency Program	X	X		
Outreach Professional Education	X	X	X	

tional center focusing on brain injuries, critical care and organ support, resuscitation, surgical outcomes, patient safety, and injury prevention. The STAR-ORC encompasses the research activities of the UMSOM's Program in Trauma and its Department of Anesthesiology, along with the existing National Study Center (NSC), which was established in 1986 by the United States Congress.

As part of STAR-ORC, the research program at the Shock Trauma Center is an integrated multi-disciplinary program that seeks to answer important questions concerning issues affecting trauma patients. The R Adams Cowley Shock Trauma Center researchers participate in large national and international multi-institutional projects, and are conducting projects funded by the National Institutes of Health, the Department of Defense, and various industry sponsors.

A topping out ceremony on June 9, 2011 marked a major milestone on the continuing construction of the University of Maryland Medical Center's $160 million, nine-floor building. This new facility will significantly expand the R Adams Cowley Shock Trauma Center, boost the capacity of the medical center's adult and pediatric emergency departments, and provide additional beds for surgical intensive care patients. The new building is scheduled to open in 2013.

The Shock Trauma Center provides the leadership for the American Trauma Society (ATS), Maryland Division through its president, Robbi Hartsock, RN. The Maryland ATS continues to provide safety programs and Traumaroo (the children's safety program of the ATS that employs the services of the animated character "Troo" to teach important safety habits, with "fun" as a key component) in schools and communities in all five EMS regions of Maryland.

The Shock Trauma Center's Violence Prevention Program (VPP) consists of several components.

- Primarily, the Violence Intervention Program (VIP) is designed to identify patients who are victims of personal violence in an effort to intervene and disrupt the cycle of violence. The program utilizes a multi-disciplinary approach with parole and probation staff, social workers, case workers, nurses, and physicians who plan care for these patients. It is one of the few hospital-initiated violence intervention programs in the country, with compelling data to support its effectiveness. Goals of the program are to interrupt the cycle of violence, teach non-violent coping strategies, connect clients to community providers, reduce risk-taking behavior and re-injury, reduce criminal behavior, and prevent violence and criminal activity. The program had 21 off-campus visits and encountered more than 2,500 people at these visits.
- Another component of VPP is the Promoting Health Alternatives for Teens (PHAT) program. PHAT aims to talk to youth about the "power of choice" and decisions; to have youth and professionals talk about career paths; to introduce youth to former victims/perpetrators of violence; and to talk about positive life lessons. For FY 2011, the PHAT program provided 25 tours for 178 students.
- The final component is My Future My Career (MFMC), which exposes a group of at-risk youths to specific career paths over eight weeks of sessions at University of Maryland at Baltimore. The ultimate goal is to re-engage youth with school. For the month of May 2011, the MFMC program had eight students participate once a week for a four week program.

The Domestic Violence Task Force is a coordinated effort to educate Baltimore's health care community about domestic violence. A comprehensive approach was implemented to address this serious problem through two objectives: (1) education through in-service training for the Trauma Resuscitation Unit (TRU) nursing personnel on the screening process for domestic violence patients and; (2) community outreach achieved by hosting an annual domestic violence seminar during Domestic Violence Month in October.

The goal of the Trauma Prevention Department is to provide education and awareness of high-risk behaviors that often lead to traumatic injuries. The focus is impaired and inattentive driving (that is, drunk, drugged, or distracted driving) with attention to its consequences and to prevention strategies. The program has existed for more than 20 years, working with various Maryland counties. It has been in partnership with juvenile justice departments, schools, state attorneys offices, and the judicial system. The targeted population includes high-risk teenagers, adult DWI/DUI offenders, and the general public. There are three components to this program: on-site, community outreach (for high-risk teens), and the general population.

The on-site high-risk teen program at the Shock Trauma Center is offered to all of Maryland's counties and Baltimore City. On-site programs consist of a brief discussion on high-risk behaviors and making good decisions, a video and visual presentation, fol-

lowed by a tour of the Shock Trauma Center from the helipad to the trauma resuscitation unit and the patient units. Tours are conducted for teens that are court ordered to attend, for students who are members of Students Against Destructive Decisions (SADD), high-school health or science classes, or other interested groups. Hundreds of teens have been reached in the on-site program.

The teen outreach program goes to high-risk teens in their individual counties. Harford County, Howard County, and Sykesville Shelter in Carroll County are included in the outreach group. Over 500 teenagers have participated in these classes.
Forty high-school assemblies were provided, reaching more than 15,000 students. The assemblies were well received. In addition, Shock Trauma Center prevention staff nurses were guest speakers in high-school health classes and the Minds of the Future Program sponsored by Shock Trauma, reaching over 300 students.

A similar on-site program is provided to adult DWI offenders. During FY 11, more than 500 offenders participated in this program.

The prevention staff attended health/safety fairs, reaching thousands of Marylanders with prevention education materials.

The prevention staff has participated in various committees and task forces on drunken driving issues. Both staff members have been guest speakers at conferences throughout the state. The prevention also partnered with WBAL-TV's "3-D Project, Don't Drive Distracted." In addition, a Distracted Driving Video was produced with the Maryland State Police, MIEMSS, Chestnut Ridge Volunteer Fire Department and Baltimore County EMS. The video was produced to be shown to high schools throughout the state of Maryland.

The Shock Trauma Center launched the Center for Injury Prevention and Policy geared to research, evaluate and modify implementation techniques in teaching prevention. This newly developed Center is led by Mayur Narayan, MD, MBA, MPH.

Level I

The Johns Hopkins Hospital, Adult Trauma Center

Located in Baltimore City, Johns Hopkins Hospital Adult Trauma Center reported receiving 2,008 trauma patients from June 2010 to May 2011, according to the Maryland State Trauma Registry. (See pages 65 to 70 for additional patient data in various categories.) David T. Efron, MD, FACS, serves as Director of Adult Trauma and Chief of Acute Care Surgery, and Kathy Noll, MSN, is the Trauma Program Manager. Elliott R. Haut, MD, Adil H. Haider, MD, MPH, Kent A. Stevens, MD, MPH, Albert Chi, MD, and Amy Rushing, MD are the division's full-time trauma surgeons. Catherine Velopulos, MD is the Trauma/Acute Care Surgery Fellow. Marla Johnston, MSN, CEN, is the Trauma Performance Improvement/Injury Prevention Coordinator. Two full-time nurse practitioners, Patricia Freeman, CRNP, and Suzette Heptinstall, CRNP, further enhance the continuum of care.

Johns Hopkins Hospital Adult Trauma Center, housed in the "#1 Hospital in America" according to the U.S. News & World Report for 21 consecutive years (1991-2011), continues to provide 24-hour a day in-house trauma attending surgeon coverage. A core group of seven trauma/surgical intensivists maintain responsibility for clinical pathways and processes of care. Improved survival, triage time, and length of stay among critically injured patients have been documented with this approach (Archives of Surgery, 2003). Senior mentorship of junior surgical attendings and fellows, along with the ongoing systematic treatment of all injured patients, has continued to ensure optimal patient outcomes (Haut ER, et al. System-Based and Surgeon-Based Influences on Trauma Mortality. Archives of Surgery, 2009).

True to the mission of Johns Hopkins School of Medicine, the Trauma Program is dedicated to research that will improve access to care and outcomes for trauma patients. The Trauma Division maintains a unique relationship with the Johns Hopkins Bloomberg School of Public Health, encompassing all facets of ongoing research. In addition to its standing interest in violence and injury prevention, the division has broadened its academic focus to identify ethnic and gender disparities in outcomes among critically injured patients. Specific faculty interests include deep-vein thrombosis prevention; benchmarking of population-based outcomes relat-

ed to trauma care; quality of care studies; violence and injury prevention, both domestically and internationally; and implementation and improvement of trauma care in the developing world.

Deep-vein thrombosis (DVT), a potentially fatal but highly preventable condition, was a top patient safety issue highlighted by Trauma Surgeon Elliott R. Haut. Dr. Haut received a four-year grant (entitled "Does screening variability make DVT an unreliable quality measure of trauma care?") from the Agency for Health Research and Quality (AHRQ). This project aims to determine if DVT rates truly relate to quality of medical care at trauma centers. Dr. Haut has published multiple commentaries on the topic of DVT preventability and their use in outcomes reporting in the Journal of the American Medical Association (JAMA). He is co-director of the Johns Hopkins DVT collaborative which was recently awarded the 2010 DVTeamCare™ Hospital Award from the North American Thrombosis Forum (NATF) for their work in DVT prevention at Johns Hopkins Hospital.

Racial disparities in health care is a widely debated topic. As Co-Director of the Center for Surgery Trials and Outcomes Research at Johns Hopkins, Dr. Adil Haider has received national attention for his research into understanding the mechanisms that lead to disparities in trauma outcomes, and was recently funded by the National Institutes of Health for a four-year Mentored Patient Orientated Research Career Development Award.

The burden of injury and injury prevention in the developing world has been the research focus of Dr. Kent Stevens. As the Associate Director for Clinical Services and Trauma Care in the International Injury Research Unit (IIRU) at the Johns Hopkins Bloomberg School of Public Health, Dr. Stevens oversees the ongoing efforts to define, prevent, and treat injury in the developing world. Current projects include the Road Safety 10 project, which, in collaboration with the World Health Organization (WHO), seeks to reduce injury and death associated with road traffic injuries in 10 low- to middle-income countries. Dr. Stevens is also assisting the WHO in the development of a Trauma Checklist with hopes of improving care and outcomes of the injured patient. Additional projects include evaluating childhood drowning in Bangladesh and defining causes of and risk factors for injury in Cameroon. Dr. Stevens is also working on trauma registry development in Uganda and South Africa.

Dr. Amy Rushing joined the full-time staff as an assistant professor. Dr. Rushing has a clinical interest in complex abdominal wounds.

Dr. Albert Chi is currently working with the Johns Hopkins University Applied Physics Lab (JHU/APL), Walter Reed Army Medical Center (WRAMC), and the Washington, D.C. National Rehabilitation Hospital (NRH) to evaluate the performance, usability, and patient/clinician acceptance of the JHU/APL Modular Prosthetic Limb (MPL) in patients who have undergone targeted muscle reinnervation surgery.

Targeted muscle reinnervation (TMR) is a new surgical procedure that reassigns nerves that once controlled the arm and the hand. By reassigning existing nerves, it is possible for people who have had upper-arm amputations to control their prosthetic devices by merely thinking about the action they want to perform. Dr. Chi has dedicated his research efforts to advancing this new surgical technique.

Developed through funding provided by the Defense Advanced Research Projects Agency (DARPA), the MPL supports intuitive, non-invasive control schemes for commanding up to 17 independent joints in a robotic prosthetic arm. The MPL arm includes three degrees of freedom (DOF) in the wrist, 10 DOF in the hand, and four DOF in the upper arm. It is modular in both its physical and control figurations, accommodating the full range of amputation levels from wrist to shoulder. Currently Dr. Chi is working with APL to design control schemes that will be derived from advanced electromyography (EMG)-based pattern recognition algorithms designed for patients after targeted muscle reinnervation (TMR).

Community outreach and prevention efforts at Johns Hopkins Hospital have supported the development of an Alcohol Screening and Brief Intervention (ASBI) program. The relevance of ASBI in trauma centers was originally identified by Gentilello in 1999, who published that 50 percent of trauma patients screen positive for alcohol use and ASBI is an effective means to decrease trauma recidivism (Annals of Surgery, 1999). In 2005, the American College of Surgeons mandated inclusion of ASBI in trauma centers. The ASBI program for the Adult Trauma Service, although not currently mandated by the State of Maryland, provides a professional who interviews and educates using personalized information to identify the need for ongoing resources and/or additional counseling. The program has been highlighted as a part of the curriculum of the Johns Hopkins Bloomberg School of Public Health's Summer Institute on Injury Prevention. Additionally, a hospital wide, multi-disciplinary group that includes the Adult Trauma Service, is developing an alcohol withdrawal syndrome protocol to be piloted in three intermediate and intensive care units.

The Johns Hopkins Hospital launched its Safe Streets Hospital Initiative on August 1, 2009. Since that time, the Adult Trauma Service, in collaboration with the Baltimore City Health Department, and the departments of Social Work, Pastoral Care, and Emergency Medicine, have worked to formalize this initiative aimed

at reducing shootings and homicides within the East Baltimore Community. Safe Streets utilizes conflict mediation, outreach, and community mobilization as its core elements to target high-risk individuals. Hospital Safe Streets responders are notified when a shooting victim arrives in the Emergency Department, and respond to the hospital within 30 minutes to discuss alternatives to retaliation with the patient and family. The program is based on the successful Chicago "Cease-Fire" program, and has been receiving ongoing evaluation by the Johns Hopkins Bloomberg School of Public Health.

In an effort to reach out to the community, the Adult Trauma Service has been involved with the East Baltimore Transformation Team. Headed by Major Melvin Russell, Commander of Baltimore's Eastern Police District, the team seeks to involve the community and additional stakeholders in its efforts to decrease violence.

Partnership for a Safer Maryland continues to enjoy the leadership of Marla Johnston, MSN, on the Steering Committee, and Adil Haider, MD, MPH, as a member of the Advisory Board. In 2011, the Partnership awarded one of its annual injury prevention awards to Johns Hopkins Hospital's "Alcohol Screening and Brief Intervention Program."

Level II

Johns Hopkins Bayview Medical Center Trauma Center

Located in Baltimore City, the trauma center at Johns Hopkins Bayview Medical Center entered 1,489 trauma patients into the Maryland State Trauma Registry from June 2010 to May 2011. The trauma service at Bayview welcomed its new clinical medical director in August 2010. Nathaniel McQuay, Jr., MD, FACS, joined Bayview as its director of trauma and co-director of surgical critical care. Dr. McQuay came to Bayview from St. Luke's Hospital in Bethlehem, Pennsylvania, where he was a member of the University of Pennsylvania Trauma Network. He completed his general surgical training at Eastern Virginia Medical School and trained in trauma and surgical critical care as a fellow at the R Adams Cowley Shock Trauma Center.

The trauma center at Johns Hopkins Bayview Medical Center (JHBMC) provides patient-centered comprehensive care to all trauma patients utilizing a team oriented multidisciplinary approach. Under the collaborative leadership of specialized physicians, nurses and members of the healthcare team, the trauma program continues to advance with implementation of protocols to address patient and institutional needs. As a result, Bayview's survival rate of 97% has remained at this level for the past six years.

For the past three years, the trauma center at Johns Hopkins Bayview Medical Center participated in the National Trauma Data Bank (NTDB). The NTDB is "the largest aggregation of US trauma registry data ever assembled" (http://www.facs.org/trauma/ntdb/index.html, 2010) and is hosted by the American College of Surgeons. Participation in the NTDB is voluntary and allows JHBMC Trauma to benchmark against national norms, as well as to participate in trauma-related research.

JHBMC Trauma is designated as a Level II adult trauma center serving the citizens of eastern Baltimore City, eastern Baltimore County, and southern Harford County. The trauma team members and the hospital administrators dedicated resources and made all necessary commitments to provide a successful trauma program to its patients. The trauma service continues to show strength through its advancement and consolidation of resources under the direction of Dr. McQuay, with the assistance of Michael Cooley, CRNP. It provides follow-up care in the trauma outpatient clinic. Mr. Cooley has been instrumental in the growth of this clinic. The trauma clinic provides the patient a chance to be seen after discharge by a practitioner trained in trauma care. This clinic is open to patients treated and released from Bayview's emergency department and from an inpatient stay.

As a result of our policy for trauma diversion, the trauma center remains open to receive patients an average of 98% of available hours each month which ranks amongst the top Level II trauma centers in the State of Maryland. This achievement emphasizes the institution's commitment to providing access to care for acutely injured patients with time sensitive injuries.

Johns Hopkins Bayview Medical Center continues its designation as an EMS Base Station by supporting activities to meet state requirements. Successful designation as a base station is also a requirement for the hospital's trauma center designation.

EMS Week 2011 was celebrated by having daily drawings for gift cards for each day of the week. EMS providers who transport patients to its ED were eligible for the drawing.

The JHBMC Trauma program is a multi-disciplinary program dedicated to the management of trauma patients of all ages and the community as a whole. It strives to continually assess and improve its services to the citizens of Maryland.

Level II

Prince George's Hospital Center

Located in Cheverly, MD, the Prince George's Hospital Center's Trauma Unit continues to provide a high level of quality trauma care to the ever increasing volume of trauma patients it receives.

According to the Maryland State Trauma Registry, Prince George's Hospital Center received 3,054 trauma patients from June 2010 through May 2011. (See pages 65 to 70 for additional patient data in various categories.)

K. Singh Taneja is the President of Dimensions Healthcare Associates, including hospital's Trauma Services; Carnell Cooper, MD, FACS, serves as the Medical Director and Chief of the Trauma Service; Gabriel Ryb, MD, MPH, FACS, serves as the Assistant Medical Director, Trauma Services; Sandra Waak, RN, CEN, is the Trauma Program Manager; and Deborah Brown, RN, is the Assistant Department Manager. Data collection is supported with two Trauma Registrars.

The Prince George's Hospital Center (PGHC) is the primary adult trauma center for Prince George's, Calvert, Charles, St. Mary's, and Southern Anne Arundel counties. Parts of Montgomery and Howard counties, as well as the eastern region of Washington, DC, are also included in its trauma care catchment area.

Prince George's Hospital Center continues to meet its mission to provide high quality and efficient health care services to preserve, restore, and improve the health status of citizens, in partnership with the community. As a result, the hospital has received National recognition for care and services it provides. Prince George's Hospital Center's Emergency Medicine Care has been found to be among the top five percent in the nation according to a study released by HealthGrades, the leading independent healthcare ratings organization. Prince George's Hospital Center is a recipient of the HealthGrades 2010 Emergency Medicine Excellence Award.

The hospital has also been recognized among the Best Regional Hospitals in the 2010-2011 US News and World Report for the Washington DC area. The Critical Care Center and the Emergency Department have continued to work closely together with the Washington Regional Transplant Community (WRTC). This relationship has provided a positive impact on the lives of patients and families awaiting organ transplants. The last several years have seen that relationship get even stronger. We have received official recognition from WRTC for our steady increase in the rate of organ and tissue donation during this time.

PGHC has utilized some of the latest new technological advances in the management of the severely injured patient. This year, the hospital successfully treated several patients who had sustained traumatic tears in their thoracic aorta using a much less invasive endovascular grafting repair procedure. A small catheter is thread into the aorta through a blood vessel in the groin and the repair of the injury is done without opening up the chest. Previously, these types of injuries were treated by making a large incision in the patient's chest. The endovascular approach results in significantly less pain postoperatively, less pulmonary complications, and potentially a shorter length of stay.

To further enhance patient safety at PGHC, a Radio Frequency Identification Detection (RFID) surgical sponge detection system has been implemented. This cutting edge technology is used to detect any surgical sponges that may have inadvertently been left inside a surgical patient. Prince George's Hospital Center was one of the first hospitals in the area to use this RFID system.

Quality improvement activities continue to include daily patient rounds, monthly Peer Review, and monthly Grand Rounds/Morbidity and Mortality Reviews. Trauma Attendance at the Grand Rounds/Morbidity and Mortality Reviews is open not only to trauma attendings, but also to RNs, PAs, medical residents, and ancillary departments, such as physical therapy and radiology, thus providing a forum for a multi-disciplinary perspective on trauma care and outcome improvements. Attendance at these case presentations remains strong.

PGHC is also committed to trauma education. The hospital continues to host Trauma Nursing Core Course (TNCC) classes several times per year. TNCC verification is required of all Emergency Department nursing staff.

Under the direction of Drs. Cooper and Ryb, the PGHC's trauma service has continued their partnership with Ross University in providing a trauma care rotation for medical students, providing them with extensive experience in trauma care.

PGHC continues to participate in the monthly trauma educational web broadcasts hosted by the R Adams Cowley Shock Trauma Center. These sessions are open to hospital staff and EMS providers. Trauma continuing education credits are awarded to attendees.

This year, the hospital announced two recipients for the B. Patel Emergency/Trauma Services

scholarship. The award is named in memory of a beloved Trauma Surgeon who worked at PGHC and provides for monies for continuing trauma education for an EMS provider, as well as an internal applicant. The EMS award recipient was Luisa Mana Aqierre, Volunteer member of Laurel Volunteer Fire Department, PGFD Company 10. Sandy Waak, RN, CEN from the Trauma Services Department was the internal applicant recipient.

Despite many challenges, PGHC continues to make great strides and remarkable improvements in its healthcare system with the support of the Governor, Lt. Governor, Prince George's County Executive, County council, and the community.

The State, County, and Dimensions Healthcare System (which operates PGHC) recently signed a MOU (Memorandum of Understanding) with the University of Maryland Medical System (UMMS) and the University System of Maryland (USM) to work towards developing a comprehensive plan for strengthening health care in Prince George's County. This multi-party agreement marks a major step forward in the long-standing efforts to stabilize, further improve, and expand the health care system in Prince George's County.

We at Dimensions are excited about the vision and commitment of our state and county government leadership to superior health care in the Prince George's County. We look forward to working with the University of Maryland Medical System and the University System of Maryland to bring comprehensive and responsive health care to Prince George's County.

Level II

Sinai Hospital Trauma Center

Located in Baltimore City and serving the Northwest corridor of the Greater Baltimore Metropolitan area, Sinai Hospital reported receiving 1,753 trauma patients from June 2010 through May 2011, according to the Maryland State Trauma Registry. (See pages 65 to 70 for additional patient data in various categories.) Thomas Genuit, MD, MBA, FACS, has continuously served as Trauma Director since 2003. Elwood Conaway, BSN, currently serves as the trauma nurse coordinator.

Over the past fiscal year, the number of trauma patients cared for by the Trauma Center at Sinai Hospital and their injury severity scores have remained relatively stable.

The ACGME-approved surgical residency program is currently in its fifth year and was recently approved for expansion to a total of 18 residents. All residents are ATLS- and ACLS-certified, and all residents, PGY III and above, receive additional training in Advanced Trauma Operative Management (ATOM), Focused Abdominal Sonography in Trauma (FAST), and an 8-week rotation at the R Adams Cowley Shock Trauma Center.

Quality of care is of the utmost importance to the Trauma Program at Sinai Hospital. Ongoing quality management is provided through weekly trauma case reviews by the Trauma Coordinator, Data Coordinator, and Trauma Director and monthly departmental CME-approved Trauma Morbidity and Mortality Conferences.

Sinai now employs a Neuro-Intensivist who is intimately involved in the care of all traumatic brain injured patients. In addition, together with the Brain and Spine Institute at Sinai Hospital, we are in progress of creating a comprehensive concussion follow-up program.

The hospital recently hired its new Chief of the Department of Surgery, Dr. Mark Katlic. Dr. Katlic is board certified in General and Thoracic Surgery and has a long-standing special interest in the care of geriatric surgical patients. Together, Dr. Aurelio Rodriguez and physician staff of the Sinai Hospital Department of Physical Medicine and Rehabilitation are working on a program to improve the care for geriatric trauma patients.

The hospital continues its active participation in regional and national initiatives to improve patient care, including the Maryland Trauma Quality Improvement Council (Trauma QIC), the National Surgical Quality Improvement Program (NSQIP) by the American College of Surgeons, and the CDC/CMS National Surgical Infection Prevention Program (SIPP).

Within the State, the Trauma Center maintains active involvement in the Trauma Center Collaborative, TraumaNet to advance all aspects of trauma care. Sinai and its Trauma Center place a high value on maintaining an excellent working relationship and open communications with EMS and its providers in the Greater Metropolitan area. To this end, the Division of Trauma and members of the Emergency Department (ER-7) are meeting on a regular basis with EMS leaders.

Level II

Suburban Hospital – Johns Hopkins Medicine

Located in Bethesda, the Suburban Hospital Trauma Center is the only designated trauma center in Montgomery County, serving the residents of Bethesda, Potomac, Kensington, Rockville, Silver Spring, Germantown, and Gaithersburg. It also provides back-up support to the centers of Frederick, Washington, and Prince George's counties.

From June 2010 through May 2011, 1,620 trauma patients were treated at Suburban, according to the Maryland State Trauma Registry. (See pages 65 to 70 for additional patient data in various categories.)

Dany Westerband, MD, FACS, is the Medical Director of Suburban Hospital's Trauma Services. Melissa Meyers, RN, BSN, MBA is its full-time Trauma Program Director. The program staff also includes trauma registrar Tania Zaidi, RHIT, and two trauma case reviewers, Patricia Baker, RN and Taryn Giza, RN, BSN, CEN.

The Suburban Hospital Trauma Center continues to strive in the provision of the highest level of quality trauma care. A driving force in the quality management program at Suburban is the concurrent and retrospective review of trauma care. Through a careful process that involves a thorough review of all records, clinical and system issues are rapidly identified, timely addressed then discussed monthly at formal morbidity and mortality conferences which serve as an educational forum for all trauma surgeons, emergency department physicians, intensivists, surgical residents, nurse practitioners, physician assistants, and registered nurses. In addition, presentations of difficult trauma cases, within and outside the trauma center, are held frequently to further enhance continuing education programs in trauma and the development of new policies and treatment guidelines. In FY 2011, this approach led to the development of a special trauma activation and co-management protocol involving the hospitalists, to ensure that the elderly trauma patient with complex medical issues receives the most appropriate care.

Another reflection of Suburban Hospital's commitment to high quality care was demonstrated in January when the Intensive Care Unit was awarded the Beacon Award for critical care excellence. This award recognizes the top critical care units nationwide.

Injury prevention remains also a priority of the Trauma Program. Through community and legislative initiatives, the staff is often involved in efforts to educate the public about various issues such as pedestrian safety, responsible drinking, and drug awareness. In June, Melissa Meyers, RN and Patricia Baker, RN, traveled to Gaithersburg to participate in the Lakeforest Mall Safe Summer Event, providing information on safety to school-aged children. On behalf of Suburban Hospital, Trauma Roo, the American Trauma Society's children's safety mascot, has made several appearances in Montgomery County, spreading the word on the importance of seat belts. In March, the trauma center facilitated senior students of Walt Whitman High School of Bethesda in the filming of a movie highlighting the dangers of driving while intoxicated. "Every 15 Minutes" began with a simulated car crash in front of the Walt Whitman High School with students acting as trauma victims. The students were extricated and transported by Montgomery County EMS to Suburban, where they were evaluated by the trauma team. One student actor was pronounced dead shortly after arrival while another actor was informed of a life-changing disability. The program ended with the parents' viewing of the dead student actor in a very dramatic way. In support of the Maryland Cell Phone Law of October 2010, Suburban Hospital participated in a "Do not text and drive" campaign. The campaign included information on the new law and a "Just Hang It Up" pledge signing to avoid texting and all other distracted behavior while driving.

Other prevention-related activities include the hospital's "Fall Prevention and Balance" programs that were organized by the Physical Medicine Department and presented at Montgomery County senior centers. The program includes trained physical therapists from Suburban Hospital who ensure screenings and community education via lectures. They offer diverse classes to seniors and other residents on fall prevention and balance exercises, as well as safety strategies for preventing falls.

Dany Westerband, MD, FACS, Medical Director of Trauma Services and Surgical Residency Liaison Director for Suburban Hospital, remains heavily committed to trauma education. As the current Chair of the Maryland chapter of the American College of Surgeons Committee on Trauma, he is closely involved in the dissemination and teaching of all

ACS-sponsored trauma courses including ATLS (Advanced Trauma Life Support), ATOM (Advanced Trauma Operative Management), ASSET (Advanced Surgical Skills for Exposure in Trauma), DMEP (Disaster Management and Emergency Preparedness) and TOPIC (Trauma Outcome & Performance Improvement Course). In addition, Dr. Westerband continues to serve on the 12-member State EMS Board and is an active member of the DC chapter of the American College of Surgeons' Committee on Trauma and the American Association for the Surgery of Trauma.

Melissa Meyers, RN, BSN, MBA, the Trauma Program Director, is an active Instructor of Advanced Trauma Nursing Course (ATNC). She is also the current Chair of the Maryland Trauma Center Network and a board member of the Maryland Division of the American Trauma Society. In addition, Ms. Meyers continues to serve on the State Emergency Medical Services Advisory Council (SEMSAC), other state-level trauma committees, and is an active member of the Society of Trauma Nurses.

Both Dr. Westerband and Ms. Meyers are often invited to participate in specific EMS education programs held at County Fire Stations or the Training Academy. The Emergency Department is also a training site for prehospital care providers through an agreement with Montgomery County Community College and the Montgomery County Training Academy. The hospital also sponsors an Emergency Medical Technician to Certified Nursing Assistant bridge-program, free of charge, for prehospital care providers interested in working as Emergency Department Technicians.

In November 2010, a four-hour seminar, "Update on Critical Issues in Trauma," was held at Suburban Hospital Trauma Center. This program, which included speakers from other academic medical centers, was offered free of charge to Suburban employees, staff from surrounding trauma centers, and EMS providers. The conference was attended by over 250 trauma care providers, including physicians, RNs, physician assistants, and EMS providers.

Suburban Hospital continues to be a leader in Region V for emergency preparedness and many other areas of health care delivery. The Bethesda Hospitals Emergency Preparedness Partnership (BHEPP), composed of Suburban Hospital, the National Institutes of Health Clinical Center, the National Institutes of Health National Library of Medicine and the National Naval Medical Center, remains on course to advance its mission of emergency preparedness and research for the National Capital Region. The hospital has also remained a very active member of the Montgomery County Healthcare Collaborative on Emergency Preparedness whose members include all Montgomery County hospitals, the Kaiser Permanente Health Plan, the Public Health Administration, EMS, and Homeland Security. In addition, Suburban represents Region V with the ESF 8 activities for the National Capital Region. Through these solid alliances and expanded participation in local, state, and national disaster drills and exercises, Suburban Hospital - Johns Hopkins Medicine clearly strives to remain one of the most "Highly Prepared" Trauma Centers in the nation.

In the area of cardiac care, the hospital is also growing. In FY 11, Suburban Hospital was designated by the state of Maryland as a STEMI Center. With strong support from the National Heart, Lung, and Blood Institute of the National Institutes of Health and Johns Hopkins Medicine, the hospital continues to offer easy access to cardiac surgery and other advanced cardiovascular treatment. Since 2006, the cardiac program has worked diligently to meet the national standard of less than 90-minute door-to-balloon time. A 100% success rate was reported in June, July, and August 2010.

Other ongoing cardiac care initiatives include electronic real-time transmission of EKGs from prehospital providers. The transmission of EKGs prior to the patient's arrival in the ED results in the activation of the cardiac catheterization team to assist with the transitioning of the STEMI patients to the catheterization lab under the direction of an interventional cardiologist. Concomitantly, the Suburban Hospital – NIH Stroke Center is also doing very well, providing advanced care to stroke patients. Suburban is certified as a Primary Stroke Center by the Joint Commission and named a specialty referral center for stroke by the Maryland Institute for Emergency Medical Services Systems.

To ensure that trauma and other vital health care services are available to the community at all times, the administration of Suburban Hospital remains fully committed to maintaining hospital diversion hours to a minimum. This is made possible through a hospital-wide "Code C" team response involving top-level administrators, physicians, nurses, transportation, housekeeping, and other members of the emergency department and inpatient units. The goal is to keep Suburban doors open 24/7 while offering safe, dedicated and high quality care to all patients.

Level III

Meritus Medical Center Trauma Center

Located in Hagerstown, Maryland, the Trauma Center at Meritus Medical Center received 951 trauma patients from June 2010 to May 2011, according to the Maryland State Trauma Registry (See pages 65 to 70 for additional patient data in various categories). Karl P. Riggle, MD, FACS, is Director of Trauma Services; Marc E. Kross, MD, PhD, FACS, is Surgeon-in-Chief of Trauma Services; Susie Burleson, RN, MSN, MBA is Trauma/EMS Manager; and Corey Thomas, LPN, is Trauma Registrar.

During the past year, the Trauma Center at Meritus Medical Center continued to provide trauma services to residents of Washington and Frederick Counties, Southern Pennsylvania, and the Eastern Panhandle of West Virginia. Over 95% of the trauma patients treated at Meritus Medical Center have arrived by ground EMS. Vehicle crashes and injuries among the elderly account for the majority of trauma in the tri-state area, however, the incidence of penetrating injuries is increasing.

The Trauma Center values its working relationship with EMS providers throughout the region and serves as a clinical site for paramedic programs in both Maryland and West Virginia. The trauma center staff also attends EMS jurisdictional meetings and Region II EMS Advisory Council meetings on a regular basis.

The staff of the Trauma Center continues to advocate for injury prevention throughout the community. In coordination with the Washington County SAFE Kids Coalition, safety events were held at the Children's Safety Village of Washington County and in targeted neighborhoods, focusing on child passenger safety, bicycle safety, and injury prevention. The trauma center also joined the Safe Communities Coalition to designate Hagerstown as a Safe Community. (The Safe Communities America Network consists of communities that have demonstrated leadership in safety promotion and injury prevention. Each community has made an investment to ensure that its community is a safe place to live, work, and visit). The Trauma Center staff also participated in the annual Medical Academy, hosted by the Meritus Medical Center, for high-school students interested in medical careers. Students spent a week taking part in activities that would provide care to a trauma patient, including EMS, flight crews, and staff from various units, such as the Operating Room, Emergency Department, Physical Therapy, Laboratory, and Infection Control.

Trauma education continues to be a focus for the Trauma Center. Two multi-disciplinary trauma conferences for direct care providers were held in conjunction with Hagerstown Community College. Plans are in place to continue this semi-annual event in upcoming years. Trauma Center staff have served as speakers in trauma-related topics to local healthcare and community groups. Dr. Kross, Surgeon-in-Chief, served on the planning committee for the Maryland Committee on Trauma (COT) Symposium. Dr. Kross also served as faculty for multiple EMS case presentations. The W. L. Riggle Memorial Trauma Nurse Education Fund continues to provide scholarship money for trauma nursing continuing education.

To celebrate the continued contributions and dedication of the trauma center staff throughout the hospital, the Trauma Service held its annual Trauma Team Recognition Day. To celebrate Trauma Awareness Month, the staff focused on fall prevention in the community. Public Education was set up at Meritus Medical Center for both staff and visitors to learn more about fall prevention and trauma awareness.

Level III

Peninsula Regional Medical Center Trauma Center

Located in Salisbury, MD, 30 miles west of Ocean City, Peninsula Regional Medical Center Trauma Center (PRMC) is the only Trauma Center located on the Eastern Shore of Maryland. PRMC received 1,181 trauma patients from June 2010 to May 2011, as recorded in the Maryland State Trauma Registry. Walter P. Lischick, MD, serves as the Trauma Medical Director, and Kari Cheezum, RN, BSN, CEN, as the Trauma Program Manager. In addition to being designated as a Level III Trauma Center, PRMC is also a JCAHO-certified AMI and Stroke Center, as well as a Maryland Primary Stroke Center. In spring 2011, PRMC was designated as a Cardiac Intervention Center for the state of Maryland and has been recognized for the second year as being in the top five percent performing ED's in the nation by Healthgrades 2010 Emergency Medicine Excellence award.

The Peninsula Regional Medical Center Trauma Center (PRMC) continues to coordinate and participate in community-based injury prevention initiatives. During the pre-homecoming and pre-prom periods in

fall 2010 and spring 2011, Trauma Services nurses and staff participated in assisting with mock-crash scenarios at local area high schools. In addition, the nurses of PRMC continue to work together to participate in venues with the Maryland Division of the American Trauma Society, SAFE KIDS Lower Shore Coalition, and the Worcester, Wicomico, and Somerset Highway Advisory Committees, as well as local community wellness events. Recently, Tonya Craft, trauma registrar, and Kimberly Fischer, trauma nurse registrar received certification by Safe Kids Worldwide as Certified Child Passenger Safety Seat technicians.

Peninsula Regional Medical Center continues to assist in planning, coordinating, and sponsoring regular educational events. A multi-disciplinary group continues to coordinate and sponsor the annual "Topics in Trauma" Conference, which is in its twenty first year. Conference topics are applicable to the daily practice of pre-hospital care, as well as to advanced inpatient trauma care. This regional, annual conference continues to attract nurses and EMS providers from Maryland, Delaware, Pennsylvania, and Virginia.

PRMC continues to provide educational classes for EMS providers from Worcester, Wicomico, and Somerset counties. Classes for Pediatric Education for Prehospital Providers (PEPP), Prehospital Basic Trauma Life Support (PHBTLS), ALS Paramedic Re-certifications/Refreshers, 12-lead EKG interpretation classes for pre hospital providers, and ALS Skills are just a few of the classes offered. In addition, the third annual Stroke Conference for EMS providers was held in May 2011 and, similar to previous years, there was positive feedback from the EMS community. Peninsula Regional Medical Center continues to promote open communication between the Medical Center and the surrounding EMS community. Our EMS nurse liaison, Douglas Walters, RN, EMT-I, attends EMS jurisdiction meetings, Region IV EMS Advisory Council meetings, as well as QA meetings on a regular basis, to offer feedback to the EMS populations we serve.

Level III

Western Maryland Regional Medical Center

Located in Cumberland, the Trauma Center at Western Maryland Regional Medical Center received 721 patients from June 2010 to May 2011, according to the Maryland State Trauma Registry. (See pages 65 to 70 for additional patient data in various categories.) Juan Arrisueno, MD, serves as the Trauma Director; Chuck Barrick, RN, is the Trauma Nurse Coordinator; and Kathy Witt is the Trauma Registrar.

In the first full-year at the new Western Maryland Regional Medical Center, the Western Maryland Health System (WMHS) again saw nearly 700 trauma patients come through its newly opened doors. While some things have changed at the new hospital, the care and compassion given to all of the trauma patients have remained the same.

WMHS was honored this year for its injury prevention efforts by the Maryland Division of the American Trauma Society. Trauma Coordinator Chuck Barrick, RN, was on hand to accept the award on behalf of the team at WMHS. In the Health System's rural service area, the types of injuries seen in the Trauma Center are much different than those seen in the more urban areas of the State. Recognizing this different patient population, WMHS has adapted its injury prevention to the needs of the community; for example, one key area of focus has been on ATV safety.

Dr. Juan Arrisueno continues to serve as the Medical Director for the Trauma Center; he is accompanied in trauma call by Dr. Michael Stasko, Dr. Roy Chisholm, and Dr. Milton Lum. Dr. Lum is a new addition to the staff this year and recently completed his surgical residency in the Pittsburgh, Pa., area.

The Health System continues to support the continuing education, infrastructure, and staffing needs of the Trauma Center. Continuing education takes place through partnerships with the R Adams Cowley Shock Trauma Center. This is primarily in the form of web-based tele-links with the R Adams Cowley Shock Trauma and other trauma centers. Also, speakers have come from Shock Trauma to WMHS to meet the education needs of the surgeons, nurses, and therapists that treat our trauma patients. These educational efforts have grown to include visits from speakers from the University of Maryland and Johns Hopkins University.

Education opportunities directly targeted for nursing and EMS take place annually at the Miltenberger Seminar. This event is held at the Rocky Gap Lodge

and Resort in Cumberland, and last year the new hospital offered itself as an extended venue for this exciting program. Over 300 people were in attendance at the two-day event, which covered many other topics in addition to trauma. Nationally recognized keynote speakers have headlined the event and more are planned for the upcoming seminars.

The Emergency Department's (ED) Education Coordinator, Elizabeth Wooster, has begun Certification for Emergency Nursing (CEN) training for staff nurses in various areas of the hospital and was able to get the Trauma Nursing Core Course (TNCC) for all the ED nurses through grant funding.

The features of the new hospital have greatly enhanced patient care, including the increased number of trauma bays, the radiolucent trauma stretchers, and the availability of 32 and 64-slice CT scanners adjacent to the ED. The time from the helipad to the trauma bays was shortened through the addition of powered carts to move the patients from the helicopter to the Emergency Department. The trauma program was bolstered by the use of trauma grant funds to purchase respiratory equipment and address intubation needs and surgical needs.

The thoracic surgery services available at WMHS are comparable with those at higher level trauma services, and protocols have been developed for trauma patients to ensure their appropriate care. Trauma patients who required thoracic surgery are admitted on designated areas patient care areas to ensure that they are cared for by trauma-trained nurses, physical therapists, occupational therapists, and nursing assistants.

WMHS is proud of the relationship it has with MIEMSS and the level of care it provides to patients in our service area. The Trauma Center was the subject of a video produced this year for a new community outreach program by the WMHS Foundation. The "Tour of a Lifetime" featured the journey of a critically injured patient from the accident site to the WMHS Trauma Center and then to the R Adams Cowley Shock Trauma and beyond. This video is increasing community awareness about the importance of having access to a trauma center in the community and WMHS is committed to ensuring these services to the patients we serve.

Adult Burns

Johns Hopkins Burn Center Johns Hopkins Bayview Medical Center

The Johns Hopkins Burn Center is comprised of two units and a total of 20 beds. The high acuity patients are treated and cared for in the Burn Intensive Care Unit (BICU). The BICU is a 10 bed unit with mixed acuity – critical care and intermediate care. Patients with less acuity are transferred or admitted directly to the Burn – Wound Unit for care. Stephen Milner, MD, DDS, is the Director of the Burn Center. Dr. Milner is a Professor of Plastic Surgery, Chief of the Division of Burns and Plastic Surgery; Director, Michael D. Hendrix Burn Research Center, as well as the Surgical Director of the Wound Healing Center at the Johns Hopkins Bayview Medical Center campus. Dr. Milner recently was awarded an honorary doctorate degree from the University of Glamorgan, Wales in the United Kingdom. The Patient Care Manager for the Burn Center and Surgical Intensive Care Unit is Carol Miller, RN, MSN.

The Johns Hopkins Burn Center (JHBC) managed more than 627 patient visits between June 2010 and May 2011. Of these, 414 (66%) required inpatient admission to the Burn Center, whereas 213 (34%) were successfully treated as outpatients.

The Johns Hopkins Burn Center realizes the importance of community outreach and burn prevention, as well as clinical education for health care professionals throughout the region. Many programs currently exist to serve the community and our fellow health care colleagues.

Some of the community outreach efforts currently provided by the Johns Hopkins Burn Center are: The Fire Safety & Burn Program for senior citizens and adults; The Kiwanis Community Burn Prevention Program for school age children; The Safe Babies Program for newborns and their parents; The Juvenile Fire-setter Program for at-risk youth; The New Life Burn Society Survivor Support Group; The School Re-entry Program for burn survivor children; The Image Enhancement Program for burn survivors; The Survivors Offering Assistance in Recovery (SOAR) Program; and participation in numerous statewide health and safety fairs annually.

Some of the clinical education programs currently provided by the Burn Center are: Advanced Burn Life Support (ABLS) provider certification

courses; the Emergency Department Burn Poster Program; the Military Burn Education Program; the EMS/Firefighter Burn Course; as well as on-site clinical training for medical students, nursing students, rehabilitation students, psychology students, dietician students, and EMS/Firefighters. We also currently teach at numerous schools of nursing throughout the region and participate in the ED Consortium, as well as many annual trauma update courses for both EMS and other healthcare professionals.

In keeping with the mission and vision of Johns Hopkins Medicine, translational research is a key focus for the Johns Hopkins Burn Center. Currently there are multiple collaborations with many disciplines. The Michael D. Hendrix Research Laboratory actively studies the non-healing wound environment. At the bedside, studies are being sponsored by pharmaceutical companies, Department of Defense, and the United States Military to improve wound and burn healing including placental stem cell research. The purpose of this research is to study our methods and techniques out in the field to reduce mortality of burn victims who are unable to reach medical attention.

Adult Burns

The Burn Center at the Washington Hospital Center

The Burn Center at the Washington Hospital Center is located in the District of Columbia and serves as the adult regional burn center for the District, southern Maryland, and northern Virginia. Marion Jordan, MD, is the Director.

The Burn Center features a 7-bed intensive care unit with a dedicated operating room and recovery room, a 10-bed intermediate/rehabilitation care unit, and the Skin Bank for Burn Injuries.

Reconstructive surgery and rehabilitation are available for patients in the post-acute and convalescent phases, regardless of where they received treatment for their acute burns.

Patients with minor burns that do not require hospitalization are provided with outpatient wound care and rehabilitation through the Burn Center Clinic.

Pediatric Burns

Johns Hopkins Children's Center

From June 2010 to May 2011, the Pediatric Burn Service at the Johns Hopkins Children's Center saw 265 burn cases, of which 134 children with severe burn injuries were admitted. Dr. Stephen Milner is the Director of the Johns Hopkins Burn Center. Dr. Richard Redett, Dr. Paul Colombani, Dr. Dylan Stewart, and Dr. Jeffrey Lukish serve as Pediatric Burn Surgeons. Susan Ziegfeld, CRNP-Pediatric, is the Program Manager.

The Johns Hopkins Children's Center is the Pediatric Burn Referral Center for Maryland EMS Regions I, II, III, and IV. From June 2009 to May 2010, 136 children under the age of 15 were admitted with severe burn injuries. Critically injured burn patients are managed in the 26-bed Pediatric Intensive Care unit, while the rest of the children are managed on a 16-bed unit specifically designed for the care of burned children and their families. Additionally, more than 300 outpatient burned children were treated at the Pediatric Outpatient Burn Clinic located in the David M. Rubenstein Child Health Building. Follow-up care is offered three times a week in the burn clinic. Specialized pediatric home nursing can be arranged for those who need additional outpatient care.

Burns in children require special expertise and pose a unique set of medical and psychological challenges. The unique synergy of multiple pediatric sub-specialties under one roof at Hopkins Children's offers the best treatment uniquely designed for each burned child. In addition to reconstructive and plastic surgery, general surgery, critical care, infectious disease control, psychiatry, and pain management, Hopkins Children's offers Child Life support services and counseling for all burn patients.

Research is an integral part of the Pediatric Burn Center. Rosemary Nabaweesi is responsible for the design, construction, and analysis of surgery databases as determined by the director, manager, and respective principal investigators in the department of surgery. She develops reports to meet the department's goal of providing Hopkins and State decision-makers with clinical, operational, and statistical data analysis. Furthermore, she is responsible for Johns Hopkins Pediatric Burn Center's management of clinical/research and operational data systems. Within the hospital, she serves on the Burn Monthly Mortality & Morbidity Committee, the weekly Multi-Disciplinary

Goals of Care Rounds, the Injury-Free Kids Coalition Executive Committee, and she attends new nurse orientations as needed. In addition, she sits on the state Maryland Trauma Registry, Education and Prevention (MTREP) Committee and Trauma Quality Improvement Committee (QIC), and participates in ongoing sub-committees as needed. Current studies include:

- The Burn Model Study is an ongoing clinical trial that aims to understand the problems that burn patients encounter, ranging from physical, psychological, social, and financial to school adaptation. In person or telephone interviews are conducted at baseline (ideally two weeks prior to discharge), one month, 6-, 12- and 24-months post-discharge for children aged 17 years and younger. Stephen Milner, the director of the Johns Hopkins burn program, and James Fauerbach are the Principal Investigators of this study. Eleven pediatric patients have been enrolled since 2008, out of a target enrollment of 50, including adults.
- Dr. Paul Colombani is conducting a clinical trial on admitted burn patients with less than 20% TBSA to determine if environmental cultures are similar to those grown from burn wound sites. The aim of the study is to re-evaluate the need for routine barrier precautions of the burn patient population.

Susan Ziegfeld is a Master's Prepared Nurse who serves full-time as the Burn Program Manager. In this capacity, she assumes all administrative functions of the program, including organizing systems for a multi-disciplinary approach to care. In addition to her direct supervision of the Pediatric Burn staff she functions as a Pediatric Nurse Practitioner within Johns Hopkins Hospital (JHH) assisting with the care of both in- and out-patients. She is also very involved with injury prevention initiatives, as well as education, participating in a variety of committees and meetings on local, state, and national levels. At the State level, she serves on the Maryland Trauma Registry Education and Prevention (MTREP) Committee, Trauma Quality Improvement Committee (QIC), and is on the Executive Committee for the Maryland Trauma Network, Inc. (TraumaNet). At the national level, she serves on the Society of Trauma Nursing-Pediatric Special Interest Group, is Chair of Nominations for the American Pediatric Surgical Nurses Association, and is a member of the Injury Free Coalition for Kids. She is also a course director for the Advanced Trauma Care for Nurses (ATCN).

Quality care is of utmost importance to the Pediatric Burn Center. Katie Manger, BSN, the Burn Coordinator, assumes day to day responsibility for the process and performance improvement activities, as well as chairing the Performance Improvement Committee along with the Trauma Director. She reviews all pediatric resuscitation documentation and monitors all Quality Improvement (QI) filters on a daily basis. In addition to her development of the QI process, she functions as EMS liaison. She corresponds with the EMS providers, giving written and verbal feedback on the status of patients and care rendered in accordance with MIEMSS protocols. The Coordinator also serves on several committees. At a statewide level, she serves on the MTREP Committee, Trauma QIC. She chairs the Burn Mortality & Morbidity Committee as described earlier. She provides the pediatric burn education throughout Johns Hopkins Children's Center, including orientation and ongoing continuing education.

Considered an integral part of the Pediatric Burn Service, the Injury Prevention Program headed by Mahseeyahu Ben Selassie, MSW, MPH continues to provide fire and burn prevention education in the community. Pediatric burn center staff provide burn-related education to EMS providers and other hospitals throughout the country. Specialized pediatric burn nurses also educate elementary school students on fire and burn prevention initiatives.

Pediatric Burns

Children's National Medical Center

From June 2010 to May 2011, Children's National Medical Center, as a pediatric burn specialty referral center, treated as inpatients 88 children with burn injuries who were residents of Maryland or who experienced a burn injured in Maryland. (See pages 78 to 80 for additional pediatric burn data in various categories.) Randall S. Burd, MD, PhD is the Chief of the Trauma & Burn Service; Martin R. Eichelberger, MD is the Associate Chief of the Burn Service; Jennifer Fritzeen, MSN, RN is the Trauma & Burn Program Manager; Elaine Lamb, MSN, CPNP, Brandi Farrell, MSN, CPNP, and Elizabeth Murphy, MSN, CPNP are the Trauma & Burn Nurse Practitioners; and Sally Wilson BSN, RN is the Injury Prevention, Education, and Outreach Coordinator.

The Children's National Medical Center has served as a Pediatric Burn Center for the state of Maryland for over three decades and will be surveyed by the state of Maryland in early 2012 to serve as a

Maryland Burn Center. Children's National is dedicated to the care of children in Region V, which includes Montgomery, Prince George's, Calvert, Charles, and St. Mary's counties. A child's burn wound can be treated under Non-Operating Room Anesthesia (NORA), significantly reducing pain during the treatment of burn injury. There were 51 Maryland children undergoing NORA procedure for burn wound care.

The interdisciplinary team of pediatric specialists provides comprehensive emergency, critical care, acute, and follow-up care for children who are burned by flames, scalded, or suffering from electric burns. During the past year, 88 children from Maryland have been admitted to the Burn Service. Outpatient burn clinic visits totaled 1,272, and 154 children were treated and discharged from the emergency department.

Working jointly with the Safe Kids District of Columbia, Safe Kids USA, the DC Risk Watch Team, and the Injury Free Coalition for Kids of the District of Columbia (Injury Free DC), the Pediatric Trauma and Burn Center provides fire and burn safety education to communities in Washington, DC, Maryland, and Northern Virginia. In addition, the Pediatric Burn Center staff provide EMS and emergency department education at surrounding hospitals and at EMS conferences.

The Curtis National Hand Center At Union Memorial Hospital

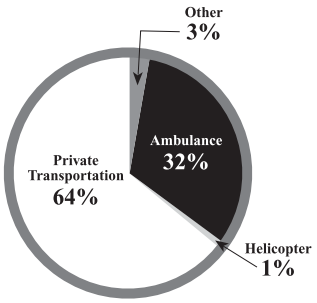
Located in Baltimore City, The Curtis National Hand Center at Union Memorial Hospital serves as the State's referral center for the specialized care of injuries to the hand, wrist, and elbow. Over the past fiscal year (July 2010 to June 2011) 1,450 patients with traumatic hand injuries were cared for at the Center. The unique nature of the services provided also draw patients from a broad geographic region including Pennsylvania, Delaware, Washington, DC, Virginia, and West Virginia.

The Curtis National Hand Center is known as one of the country's most advanced resources for the care of patients with elbow, forearm, wrist, and hand trauma victims. Having received the Congressional designation as the National Hand Center in 1994, the Center remains one of the world's premier facilities for the clinical care and study of the hand and upper extremity, in addition to being an advanced training center of Orthopedic, Plastic, and General Surgeons in the field.

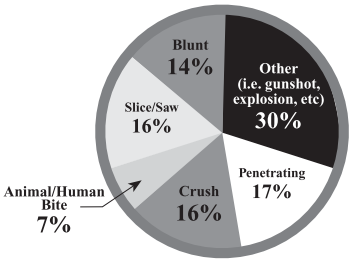
The Curtis National Hand Center and Union Memorial Hospital remain committed to handling acute injuries and providing reconstructive surgery for Maryland's trauma victims. The focus on complex hand, wrist and elbow injuries has long been part of the well developed Maryland Trauma Care System since the Center's founder, Dr. Raymond M. Curtis, collaborated with Dr. R Adams Cowley and others during the inception of Shock Trauma and the Maryland EMS System.

The repair of amputated and seriously injured upper extremities requires a coordinated effort of rapid transport, proper handling of injured limbs, precise surgical repair and physical and occupational therapy, and most of all, a motivated patient. Thirty-

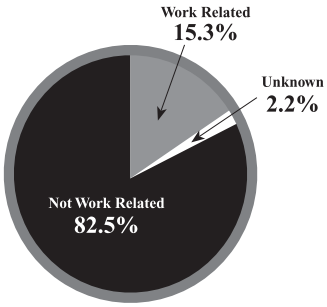
Union Memorial Hospital Hand Trauma Transport Mode

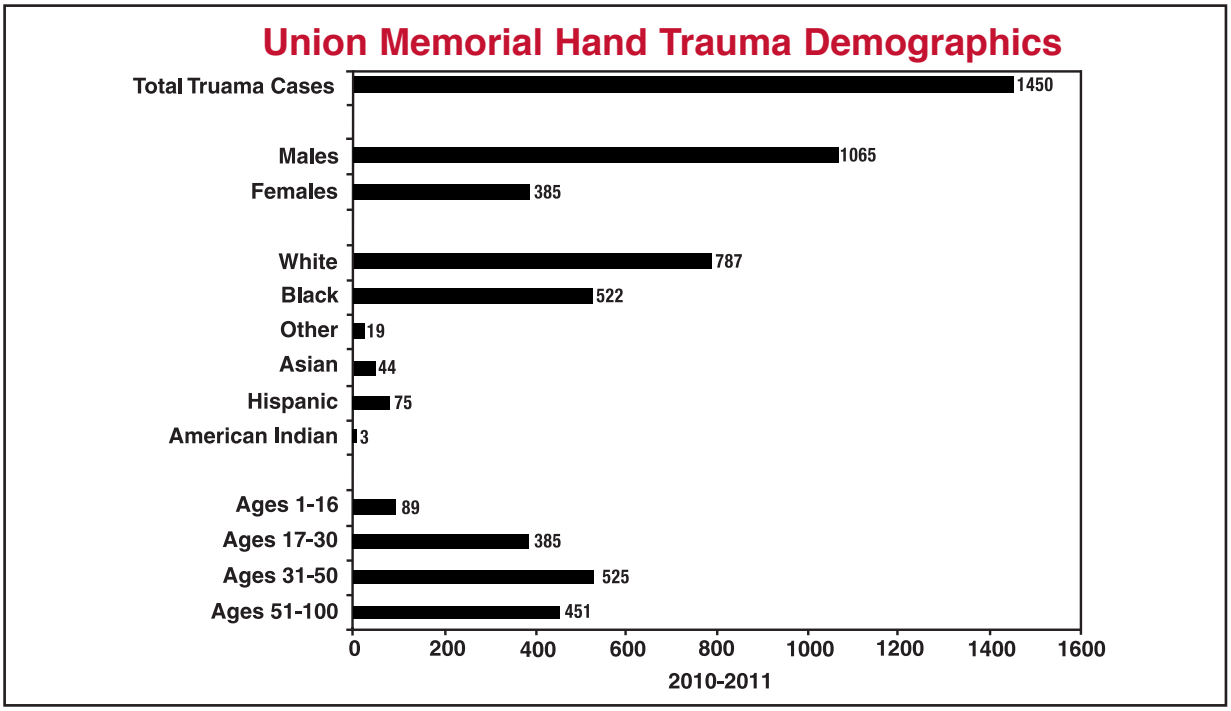


Union Memorial Hospital Hand Trauma Injury Type



Union Memorial Hospital Hand Trauma Scene of Injury





six percent of traumatic hand cases are transported through the MIEMSS system (see Transport Mode graphic). The addition of an onsite heliport in 2009 has reduced travel time and improved the speed of intervention for the most critically wounded.

The Center's expertise in challenging bone and soft tissue trauma is supplemented by advanced microsurgery skills. The handling of fractures, complex soft tissue coverage problems, and amputations requiring replantation attempts continues to be the major focus of the Hand Surgery Service at Union Memorial Hospital (www.unionmemorial.org).

The acute trauma unit is staffed by specialists in orthopedic and plastic surgery with subspecialty training in hand and upper extremity surgery. The team is available 24/7 to respond to a variety of injuries ranging from severing or crush injuries to infections and snake bites. Most hand injuries treated at the Center are the result of accidents with power saws, lawn mowers, snow blowers or other machines that can cut, crush or break hands (see Injury Type graphic) and occur outside of the work place (see Scene of Injury graphic). The majority of patients seeking services are white males over the age of 30 (see Demographics bar chart).

The Curtis National Hand Center is one of the largest training centers for hand surgery. The surgeons of the National Hand Center have contributed some of the most important publications concerning the care of the injured hand and upper extremity, and continue to lecture worldwide about the topic of hand trauma.

Research projects, funded by both internal and external sources, look at a wide range of pertinent questions, including those in microsurgery, surgery of the peripheral nerve, bone soft tissue problems, and reconstruction after significant trauma. Collaborations with the region's scientists and other investigators promote current thinking and new development in this vital area.

Maryland maintains the nation's premier network of institutions and physicians for trauma care in part because of the unique capabilities and availability of all trauma providers, including the Specialty Trauma Centers. The Curtis National Hand Center at Union Memorial Hospital is proud to be part of the network and supports the efforts to provide advanced care for Maryland's citizens.

Hyperbaric Medicine Center R Adams Cowley Shock Trauma Center

The Hyperbaric Medicine Center of the R Adams Cowley Shock Trauma Center of the University of Maryland Medical System is the statewide referral center for victims of diving accidents, carbon monoxide poisoning, smoke inhalation, and gas gangrene. It is the only multi-place chamber in Maryland, and is capable of accommodating 10 stretcher patients or 23 seated patients simultaneously. The center is able to provide treatment around the clock, 365 days a year. Robert Rosenthal, MD, is the Director of the Hyperbaric Medicine Center.

Among the types of cases treated at the Hyperbaric Medicine Center are carbon monoxide poisoning/smoke inhalation; acute gas embolism; decompression sickness (the bends); necrotizing acute soft tissue infections; osteoradionecrosis; gangrene; late effects of radiation; compromised skin grafts and flaps; and crush injuries.

All treatments are supervised by specially trained hyperbaric physicians; direct patient contact is administered by critical care nurse "tenders" who provide patient care in the chamber during all "dives." Because of the chamber's unique design and staffing, even the most critically ill patients can receive hyperbaric treatments without any interruption of care.

Physician and nursing members of the Hyperbaric Medicine Center actively lecture on hyperbaric medical education at regional and national levels and to local and regional EMS providers.

The Hyperbaric Medicine Center participates in a national registry of carbon monoxide patients run by the Centers for Disease Control and Prevention (CDC) in an attempt to better document the national scope of the problem.

Maryland Eye Trauma System The Wilmer Eye Institute at Johns Hopkins

Since its founding in 1925, the Wilmer Eye Institute has always provided a dedicated eye trauma and emergency service to the citizens of Maryland and is the first statewide designated eye trauma center in the United States. Wilmer is located within Johns Hopkins Hospital (JHH) in Baltimore and carries the mission of Johns Hopkins Hospital. Wilmer is committed to providing the resources needed for it to remain a leading center for ocular trauma in the United States. The Wilmer Eye Institute is responsible for providing optimal management of severe eye injuries and conducting research of eye traumas. New treatment and procedures for eye trauma are also part of its goals. Michael P. Grant, MD, PhD, FACS, is the Director of the Center; Shameema Sikder, MD, is the Associate Director for FY 2012; and Shailaja Chopde, BSN, is the Eye Trauma Coordinator.

The Johns Hopkins Hospital Ophthalmological Institute (the Wilmer Eye Institute) submitted an application for re-verification as a Regional Eye Trauma/Specialty Center to MIEMSS. The application was reviewed in detail by MIEMSS staff and by members of the site review team to ensure that high quality trauma health care is available and provided to the citizens of Maryland. The site review was conducted on January 5, 2011. The review team consisted of an Ophthalmologist with experience and expertise in eye trauma surgery, a nurse reviewer, and the MIEMSS' Director of the Office of Hospital Programs. During the site visit, the team inspected the hospital's physical plant, interviewed the Wilmer Eye Trauma Center physicians, Johns Hopkins nurses and administrative staff, and examined pertinent documents including a sample of trauma patients' medical records. MIEMSS and its Office of Hospital Programs completed its review and were pleased to designate the Wilmer Eye Institute of Johns Hopkins Hospital as an Eye Trauma Center for another five years from the date of designation.

In May 2009, the Wilmer inpatient unit and Wilmer ER closed, and the new Bendann Surgical Pavilion opened. As a result, the ocular trauma patients are now admitted to the departments of Surgery or Pediatrics. The nurses there are specially trained to care for these ophthalmic trauma patients. In addition, multiple nurses (Nurse Managers, Nurse Educators, and Trauma Coordinators) from JHH have now organized an all day Ocular Trauma Workshop. The core curriculum for this workshop has been approved by MIEMSS. This workshop is an eight hour ocular trauma course with six hours of CEU's and is designed to offer ocular trauma orientation for nurses both within Hopkins and from outside trauma centers throughout Maryland. This course is presented by hospital staff from the Bendann Surgical Pavilion, Adult ED, Pharmacy, and Wilmer Eye Clinic. This workshop was initially offered every month for four months and now is offered quarterly.

In FY 2011, there were a total of 312 serious eye injuries (see Eye Injury Registry of Maryland/JH tables). Out of this number, the age range of 10-19 years recorded still holds the most number of injuries, with the age range of 20-29 years being the second most prevalent. Data shows that 25.6% of these traumas have shown to happen at home. The data for injury source indicated that blunt objects are still by far the most common method of eye injury and has increased to 45.2% as compared to 34% from the previous year. As shown 68.6% of the injuries were unintentional, followed by assault (27%). Eye injuries that occur due to patients not wearing any eye protection continues to remain high at a 96.2% and has also slightly increased from the previous year (94.7%). See below for the WEI ocular trauma statistics for FY 2011 as reported to U.S. Eye Injury Registry.

Wilmer Eye Institute remains a leading center for ocular trauma in the United States. The Board of Directors at the Johns Hopkins Hospital is committed to providing the financial and manpower resources needed. Strategic imperatives on patient care, teaching and research incorporate the eye trauma program. There is a resource commitment to the eye trauma program for achievement and sustenance of eye trau-

Eye Injury Registry of Maryland /JH
FY 2011

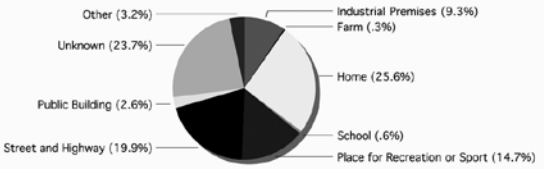
This analysis reflects the United States Eye Injury Registry's database, (N=312) and contains reports of serious eye injuries

Age

Range 1-92 years
Mean: 29.09 years. Median: 30 years.
49% were less than 30 years old.

Age	Percentage	Male:Female Ratio
0-9	8.7%	4.4:1
10-19	23.1%	1.8:1
20-29	17.3%	5:1
30-39	14.4%	6.5:1
40-49	14.1%	4.5:1
50-59	12.5%	3.3:1
60-69	6.7%	4.3:1
≥ 70	3.2%	1: 1.5
	100%	3.3:1

Place of Injury



Race

Caucasian	= 46.6%
Black	= 41.5%
Hispanic	= 8.4%
Asian	= 1.6%
Native American	= 0%
Unknown	= 1.3%
Other	= .6%

Intention

Assault	= 26.9%
Self inflicted -	= 0%
Unintentional	= 68.6%
Unknown	= 4.2%

Bystanders = 7.05% (M:F) 2.7:1
Reported alcohol Use when injured = 10%

When Injured

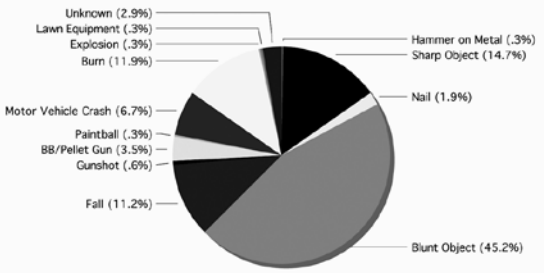
Winter	= 21.2%
Spring	= 21.9%
Summer	= 34.7%
Fall	= 22.2%

Eye Protection

None	= 96.2%
Regular	= 1%
Safety	= 2.6%
Sun	= .3%

Bilateral Injuries = 5%
Leading Source of Bilateral Injury = Burn
Open Globe Injuries = 17.3%
Injured Eye: OD = 49% OS = 51% Unknown = 0%

Source of Injury



Work Related Injuries = = 8.97%
Leading Reported Occupation: = Construction/Contractor
Leading Reported Injury Source: = Sharp Object

Sports Injuries

Basketball = 6.9%	Soccer = 10.3%	Cricket = 3.4%
Softball = 17.2%	Lacrosse = 10.3%	Fishing = 3.4%
Baseball = 6.9%	Golf = 6.9%	Other = 34.5%

In every publication / presentation / media interview / handout etc., appropriate credit to the USEIR must be given, using the following language:

"Data provided by the American Society of Ocular Trauma / United States Eye Injury Registry, through funding by the Helen Keller Foundation, Birmingham, Alabama, USA."

ma designation, as well as commitment to state of the art equipment and improvement in innovations in our eye trauma care through research and outcomes study.

Neurotrauma Center R Adams Cowley Shock Trauma Center

The Neurotrauma Center at the R Adams Cowley Shock Trauma Center of the University of Maryland Medical System provides comprehensive management for patients with brain, spinal cord, and spinal-column-related injuries. Bizhan Aarabi, MD, is the Director of the Neurotrauma Center.

During FY 2011, patients with cervical spine injuries and craniotomies were treated. These included craniotomies for hematoma evacuation, gunshot wounds to the head, debridement, elevation of depressed skull fractures, decompressive craniectomies, and cranioplasties. Spine cases included discectomies, laminectomies, arthrodesis, and open reduction internal fixations.

Pediatric Trauma Center at the Johns Hopkins Children's Center

From June 2010 to May 2011, the Pediatric Trauma Center (PTC) at the Johns Hopkins Children's Center admitted 334 out of 671 children seen under the age of 15 years with severe injuries. Dylan Stewart, MD is the Director of Pediatric Trauma Service. Susan Ziegfeld, CRNP-Pediatric, is the Program Manager. As program manager, she also provides leadership to several national and local organizations

Located within the Johns Hopkins Hospital (ranked as America's best hospital by *U.S. News & World Report* for the past 21 years), the Pediatric Trauma Service at the Johns Hopkins Children's Center provides the highest level of care (Level I) for pediatric trauma patients.

Dr. Stewart began his surgical training at the University of Maryland. He received a competitive National Institutes of Health (NIH) grant to pursue research in pediatric surgery, and then accepted a fellowship in pediatric surgery in the Johns Hopkins/University of Maryland fellowship program. Dr. Stewart practiced

at the University of Maryland during post-fellowship training. Dr. Stewart is proud to be one of the founding members of The Healing Hands Foundation (THHF). THHF is a non-profit organization that provides medical services to children around the world.

Members of the Pediatric Trauma Team continue to be very active in educational activities. Since its inception in 2003, the Pediatric Trauma Center has provided the course director and instructors for the Advanced Trauma Care for Nurses (ATCN) program as well as the Advanced Trauma Life Support (ATLS) for physicians. This program has been endorsed by the Maryland Chapter of the American College of Surgeons - Committee on Trauma, as well as the Society of Trauma Nurses. Benefits of ATCN include an educational, collaborative, synchronized team approach to trauma care with the participants of the concurrently taught ATLS course. Courses are held monthly in collaboration with the R Adams Cowley Shock Trauma Center and the United States Air Force Center for Sustainment of Trauma and Readiness Skills (C-STARS).

ATCN is managed under the Johns Hopkins Pediatric Outreach for Education (HOPE) Program. The HOPE Program, managed by Rose Stinebert, also supports the Pediatric Advanced Life Support (PALS) provider and renewal courses. The HOPE Program continues to be the only PALS affiliate in the region that offers courses at multiple site locations throughout the state. In the past year, the HOPE Program also began offering a new American Heart Association course called Pediatric Emergency Assessment, Recognition, and Stabilization (PEARS). The PEARS course focuses on the priorities in assessment and management of the ill or injured child in the first few minutes of an emergency until the arrival of the rapid response team. In this one-day course, participants have the opportunity to practice emergency techniques, such as infant and pediatric CPR, operation of an Automatic External Defibrillator (AED), ventilation of a child with a bag valve mask, and the use of a length-based resuscitation tape. In addition, the HOPE Program has supported a precepted clinical experience in the Pediatric Intensive Care Unit for 42 EMT-P students from Anne Arundel Community College. In addition to organized educational opportunities, members of the Pediatric Trauma Team have traveled nationally to educate providers on pediatric trauma and burn injuries.

Research is an integral part of the Pediatric Trauma Center (PTC). Rosemary Nabaweesi is responsible for the design, construction, and analysis of surgery databases as determined by the director, manager, and respective principal investigators in the department of surgery. She develops reports to meet the department's goal of providing Hopkins and State decision-makers with clinical, operational, and statistical data analysis. Furthermore, she is responsible for Johns Hopkins Pediatric Trauma Centers' management of clinical research and operational data systems. Within the hospital, she serves on the Trauma Monthly Mortality & Morbidity Committee, the weekly Multi-Disciplinary Goals of Care Rounds, the Injury-Free Kids Coalition Executive Committee, and attends new nurse orientations as needed. In addition, she sits on the state Maryland Trauma Registry Education and Prevention (MTREP) Committee and Trauma Quality Improvement Committee (QIC) and participates in ongoing sub-committees as needed.

Quality care is of utmost importance to the PTC. Katie Manger, BSN, the Trauma Coordinator, assumes day-to-day responsibility for the process and performance improvement activities, as well as chairing the Performance Improvement Committee along with the Trauma Director. She reviews all pediatric resuscitation documentation and monitors all Quality Improvement (QI) filters on a daily basis. In addition to her development of the QI process, she functions as EMS liaison. She corresponds with the EMS providers, giving written and verbal feedback on the status of patients and care rendered in accordance with MIEMSS protocols. The Coordinator also serves on several committees. At a statewide level, she serves on the MTREP Committee and Trauma QIC. Within the hospital, she chairs the Trauma Mortality & Morbidity Committee. She provides the pediatric trauma education throughout Johns Hopkins Children's Center, including orientation and ongoing continuing education.

Susan Ziegfeld is a Master's Prepared Nurse who serves full-time as the Trauma Program Manager. In this capacity, she assumes all administrative functions of the program, including organizing systems for a multidisciplinary approach to care. In addition to her direct supervision of the Pediatric Trauma staff, she functions as a Pediatric Nurse Practitioner within Johns Hopkins Children's Center assisting with the care of both in- and out-patients. She is also very involved with injury prevention initiatives, as well as education, participating in a variety of committees and meetings on local, state, and national levels. At the State level, she serves on the Maryland Trauma Registry Education and Prevention (MTREP) Committee, the Trauma Quality Improvement Committee (QIC), and is on the Executive Committee for the Maryland Trauma Network, Inc. (TraumaNet). At the national level, she serves on the Society of Trauma Nursing-Pediatric Special Interest Group, is Chair of Nominations for the American Pediatric Surgical Nurses Association, and is a member of the Injury Free Coalition for Kids. She is also a course director for the Advanced Trauma Care for Nurses (ATCN).

Considered an integral part of the PTC, the Injury Free Coalition for Kids (IFCK-Maryland) Program continues to train parents and caregivers in the community. Mahseeyahu Ben Selassie, MSW, MPH, is the program coordinator. This program, initially focused on fire- and burn-related injuries in East Baltimore, has now expanded to West Baltimore. Community residents are trained to become community fire safety advocates. Members of the program partnered with the Baltimore City Fire Department and canvassed their communities to make sure that every home had working smoke detectors on every floor.

Other significant resources available to Johns Hopkins PTC patients include:

Children's Safety Centers (CSC). The CSC is a partnership between the Johns Hopkins Center for Injury Research and Policy and the Johns Hopkins Department of Pediatrics, including the PTC. The CSC provides free, personalized education by a safety health educator, access to reduced-cost safety products, and specialized injury prevention services, such as car safety seat installations or checks. Injury prevention topics covered by the CSC include the broad variety of home, pedestrian, and child passenger safety important to children's health. The CSC has been providing services to the larger Hopkins community since 1997.

"Children Are Safe (CARES)" Mobile Safety Center. Introduced in 2004, CARES Safety Center is a 40-foot vehicle built as a house on wheels, which has interactive exhibits and low-cost safety products. It travels to Baltimore neighborhoods to teach parents and caregivers about the injury risks that children face at home and ways to make the home a safer place. Led by the Center for Injury Research and Policy, CARES was created through a partnership with the Baltimore City Fire Department, the Maryland Institute College of Art, the Maryland Science Center, and Johns Hopkins PTC.

Together, the CSC and CARES are significant resources to children and families, providing education and injury prevention supplies, such as car seats and bike helmets, at a reduced cost.

Simulation Center. The PTC has greatly benefitted from the creation and rapid growth of the Johns Hopkins Simulation Center. The Simulation Center is becoming a national model for healthcare provider training and education, and is an emerging tool for improving patient safety. Hopkins residents, nurses, and techs regularly participate in trauma simulations in very realistic conditions, and then have didactic and feedback sessions.

The surgical residency program at Hopkins is approved by the Accreditation Council for Graduate Medical Education (ACGME) and in multiple surgical specialties. Residents from the University of Maryland and St. Agnes also cross-train in pediatric surgery, receiving their pediatric trauma and burn training.

When the Charlotte R. Bloomberg Children's Center building opens its doors in April 2012, families and visitors will enter a world designed for 21st century pediatric medicine. The pediatric trauma and burn admitting area will be integrated with the pediatric emergency room and have easy access to the radiology suite, which is adjacent to both the pediatric and the adult emergency rooms. The operating room (OR) will also have its own dedicated radiology suite adjoining pediatric ORs on the fourth floor, minimizing floor travel for patients and optimizing access to imaging for surgeons in the OR and intensivists in the new 40-bed PICU. Patient rooms will be large and private, with rooming-in provided for parents, even in the PICU. From the soaring lobby to the 10 new, large operating rooms equipped for the most technically complex procedures imaginable, spacious patient rooms, and welcoming family facilities, the new building is designed to elevate the hospital experience to match the quality of the medicine it affords.

Pediatric Trauma Center Children's National Medical Center

From June 2010 to May 2011, the Children's National Medical Center, as a pediatric specialty referral center, treated 760 Maryland children for trauma injuries. Of these, 398 children had multiple trauma injuries, with 270 of the 398 brought directly to CNMC by Maryland EMS. The remaining 128 multiple trauma patients were transfers to CNMC after stabilization in another Maryland Emergency Department. (See pages 74 to 77 for additional pediatric trauma data in various categories.) Randall S. Burd, MD, PhD, is Chief, Trauma & Burn Services; Martin R. Eichelberger, MD, Associate Chief, Burn Services; Jennifer Fritzeen, MSN, RN, Program Manager; Sarah Storing, BSN, RN, Trauma Coordinator; Elaine Lamb, MSN, CPNP, Brandi Farrell, MSN, CPNP, and Elizabeth Murphy, MSN, CPNP, Trauma and Burn Nurse Practitioners; Sally Wilson, BSN, RN, Injury Prevention, Education, and Outreach Coordinator; Yu Yan, MSN, RN, Trauma Registry Coordinator.

A Level I Pediatric Trauma Center, Children's National Medical Center (CNMC) serves the pediatric community of Region V, which includes Montgomery, Prince George's, Calvert, Charles, and St. Mary's counties, by caring for children with multiple trauma and burns.

CNMC provides pediatric emergency and trauma education to physicians, nurses, and prehospital providers. Thirteen courses in Pediatric Advanced Life Support (PALS) are offered annually. The Pediatric Education for the Prehospital Professionals (PEPP) course is offered twice a year. Advances in Pediatric Emergency Medicine is offered annually to community physicians. Numerous pediatric trauma outreach educational programs are offered to all levels of providers throughout the Maryland EMS System.

Since its inception in 1987, Safe Kids Worldwide or SKW (formerly the National SAFE KIDS Campaign), the injury prevention mission of CNMC, has contributed to a 45 percent decrease in child fatalities from unintentional injuries to children ages 14 and under by promoting changes in attitudes, behaviors, laws, and the environment to prevent unintentional injury to children. In the United States, this reduction has saved an estimated 38,000 children's lives. Working through 350 Safe Kids coalitions in the United States and 18 other countries, Safe Kids delivers proven programs at the grassroots level to prevent unintentional injury. By mobilizing communities at the local level, SKW provides public education programs, facilitates engineering and environmental modifications, encourages the enforcement of laws and regulations, and conducts research to drive our programs and determine the efficacy of our efforts. Safe Kids activities for the State of Maryland are available on www.safekids.org or http://www.miemss.org/EMSCwww/SafeKidsHome.htm.

The Emergency Medical Services for Children (EMSC) National Resource Center (NRC) was established in 1991 to assist the Federal EMSC program to improve the pediatric emergency care infrastructure in the United States and its territories. The Program provides funding to implement programs to enhance the quality of medical and trauma care provided to children and youth. Much of the Program's focus since 2005 has been helping states to achieve defined performance measures and reduce gaps in pediatric emergency care. These measures address availability of pediatric on- and off-line medical direction, availability of pediatric equipment on ambulances, hospital facility recognition programs for pediatric emergency and trauma care, hospital pediatric inter-facility transport agreements and guidelines, and pediatric educational requirements for the recertification of prehospital emergency care providers. Resources developed for grantees, community leaders, and parents include fact sheets on the Program as well as performance measures and implementation manual, EMSC Program Strategic Plan, project implementation guide, Family Advisory Network tool kit, and others. All resources may be found on the EMSC website at www.childrensnational.org/emsc.

Poison Consultation Centerr Maryland Poison Center

The Maryland Poison Center (MPC) is a certified regional poison center that provides 24/7 emergency poison information to the general public and health professionals in the state. The MPC is accessed by calling the nationwide Poison Help telephone number, 800-222-1222. A division of the University of Maryland School of Pharmacy, the MPC is designated by the Maryland Department of Health and Mental Hygiene as a regional poison center for Maryland. MPC also serves as a consultation center for MIEMSS. Bruce D. Anderson, PharmD, DABAT, is Director of Operations, and Suzanne Doyon, MD, ACMT, is Medical Director.

In Calendar Year 2010, the Maryland Poison Center (MPC) received 62,820 calls. While 35,895 of these calls involved a human exposure, 1,981 involved animal exposures, and the remaining 24,897 were requests for information where no exposure occurred. Forty-eight percent of poison exposures involved children under the age of six. Although the incidence of poisoning is greater in children, most severe poisonings and poisoning deaths occur in adolescents and adults. Seventy-one percent of the cases reported to the MPC were managed at a non-healthcare facility site, such as the home, school, or workplace. Maryland EMS providers consulted with the MPC on 1,632 cases in 2010. In 396 of those cases, transportation by EMS to a healthcare facility was avoided based on poison center advice. Safely managing patients at the site of the exposure saves millions of dollars in unnecessary healthcare costs. It also allows more efficient and effective use of limited health care resources.

Poison specialists who work in the MPC are pharmacists and nurses who are certified as specialists in poison information by the American Association of Poison Control Centers. Managing at least 2,000 human exposure poisoning cases and passing a national certification examination are required to become a certified specialist. The 13 specialists at the MPC have over 220 years of combined poison center experience, ensuring that callers have access to experienced, qualified, and well-trained staff.

The Maryland Poison Center continues to work closely with the National Capital Poison Center and state and national agencies to monitor for possible chemical and biological weapons exposures and public health events throughout Maryland and the Washington, DC region. The MPC's data collection system allows data to be submitted in real-time to a nationwide poison

center surveillance system. An automated symptom and substance outlier detection strategy is used to identify evolving patterns or emerging clusters of exposures.

Research is conducted by Maryland Poison Center staff to advance the prevention, diagnosis, and treatment of poisonings. In 2010, MPC staff authored or co-authored 13 research posters, presentations and published articles. Areas of research included octreotide as an antidote, charcoal cookies for GI decontamination, prescription cough and cold medicines, OTC cough and cold medicines, IV acetylcysteine, diphenhydramine, and buprenorphine.

The Maryland Poison Center's public education efforts are intended to help increase awareness of the poisons that are found in every home, business, and school, and to help prevent poisonings from occurring. The MPC strives to make sure that everyone knows that they can quickly and easily get information by contacting the Maryland Poison Center, 24/7, if a poisoning occurs. In 2010, the MPC provided speakers and/or materials for 103 programs and health affairs in 18 Maryland counties, Baltimore City, and Washington D.C. The programs and events led by MPC staff were attended by more than 5,800 people. Several organizations partnered with the MPC to provide education to their patients, customers, clients, and students. These organizations included fire departments, hospitals, health departments, schools, police departments, child-care agencies, pharmacies, hospital perinatal education programs, CPR instructors, parish nurses, Red Cross, and Head Start and Healthy Start programs. In all, more than 58,000 pieces of educational materials (brochures, magnets, telephone stickers, Mr. Yuk stickers, teacher's kits, and other pieces) were distributed at programs or by organizations, or mailed to people and groups who requested them. National Poison Prevention Week (March 21-27, 2010) activities included mailings to emergency departments and pharmacies throughout the state. A Poison Prevention Week poster contest for public schools in Washington County was co-sponsored by the MPC and Safe Kids Washington County. The grand-prize winning poster was used throughout the state to promote poison safety. In an effort to provide additional poison prevention information to the public, the MPC publishes "Poison Prevention Press," a bi-monthly e-newsletter highlighting various poison prevention topics.

Professional education is targeted toward the special needs of health professionals. Programs and materials are designed to help the clinician better manage poisoning and overdose cases. In 2010, 68 programs were conducted at hospitals, fire departments, colleges,

and state, regional, and national conferences. These programs were attended by more than 4,300 EMS providers, physicians, nurses, pharmacists, and physician assistants throughout Maryland. Monthly podcasts were recorded for broadcast on two websites devoted to continuing education for EMS providers and nurses: MedicCast.com and NursingShow.com. In all, there were 238,566 downloads of the podcasts worldwide. "ToxTidbits," a monthly toxicology update, is faxed to every Maryland emergency department and emailed to more than 4,000 health professionals. Current and past issues of "ToxTidbits" and information on how to sign up to receive all of the MPC's e-newsletters can be found on the MPC's website at www.mdpoison.com. The Maryland Poison Center also provides on-site training for health professionals. In 2010, more than 100 EMS providers, paramedic students, physicians, and pharmacists came to the MPC to learn more about the assessment and treatment of poisoned patients.

Reason for Poisoning (CY 2010)

Circumstance	Number of Patients	Percentage
Unintentional	27,444	76.5
Intentional	6,639	18.5
Adverse Reaction	1,289	3.5
Other & Unknown	523	1.5
TOTAL	35,895	100.0

Medical Outcome of Poisoning (CY 2010)

Medical Outcome	Number of Patients	Percentage
No Effect/Minor Effect	32,171	89.6
Moderate Effect	1,979	5.5
Major Effect	207	0.6
Death	35	0.1
Other & Unknown	1,503	4.2
TOTAL	35,895	100.0

NOTE: The medical outcome is assessed, based on the inherent toxicity of the agent and the severity of the clinical manifestations.

Location of Poisoning Exposure by Region (CY 2010)

Region	Number of Exposures	Percentage
Region I (Garrett, Allegany)	909	2.5
Region II (Washington, Frederick)	3,034	8.5
Region III (Carroll, Howard, Harford, Anne Arundel, Baltimore County, Baltimore City)	22,356	62.3
Region IV (Cecil, Kent, Queen Anne's, Talbot, Caroline, Dorchester, Wicomico, Worcester, Somerset)	3,979	11.1
Region V (*Montgomery, *Prince George's, Charles, Calvert, St. Mary's)	3,703	10.3
Unknown County/ Other state	1,914	5.3
TOTAL	35,895	100.0

**NOTE: Routing for the nationwide telephone number automatically connects callers from Montgomery and Prince George's counties to the National Capital Poison Center in Washington, DC. Some callers from these counties reach the Maryland Poison Center by dialing local telephone numbers still in service. This report reflects calls to the Maryland Poison Center only. An additional 12,752 human exposures in Maryland were reported to the National Capital Poison Center in 2010.*

REHABILITATION

The vision of MIEMSS is the elimination of preventable deaths and disabilities due to sudden illness or injury through an integrated system of prevention, intervention, and rehabilitation. This integrated system is known as the trauma care continuum. Rehabilitation is the cornerstone of "post-trauma" care. It is the phase of emergency care that enables the individual to return to a maximum level of function and, in most cases, to return as a productive member of society.

Maryland has a statewide coverage of rehabilitation providers to treat patients who have experienced neurotrauma, multi-trauma, and orthopedic injuries in various treatment settings. The trauma centers provide transitional (subacute) care or have transfer agreements with rehabilitation hospitals to provide this specialized care.

Rehabilitation services are provided in hospitals, acute inpatient rehabilitation hospitals, long-term care facilities, home care, outpatient services, and community-based rehabilitation programs. During FY 2011, trauma centers in Maryland referred 1,721 trauma patients ages 15 and over to inpatient rehabilitation services. The ten rehabilitation facilities receiving the most patients are listed on this page.

Top Ten Destinations of Patients (Ages 15 & Over) Who Went to Inpatient Rehabilitation Facilities (June 2010 to May 2011)

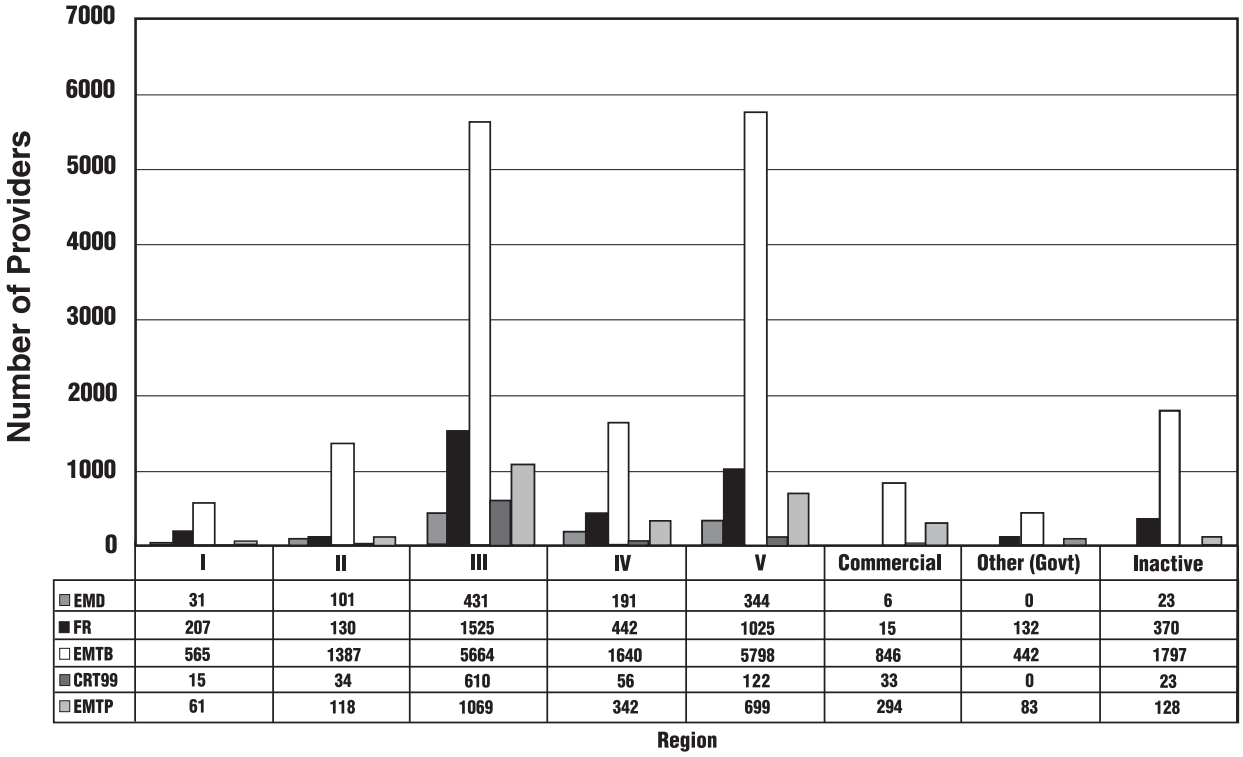
Source: Maryland State Trauma Registry

Rehabilitation Center	Number
Adventist Health Care	39
Future Care	35
Genesis Long-Term Care Facilities	128
Good Samaritan Hospital of Maryland	39
Kernan Hospital	476
Maryland General Hospital	79
Meritus Medical Center, Comprehensive Inpatient Rehabilitation Services	35
National Rehabilitation Hospital Washington, DC	30
Sinai Rehabilitation Hospital	56
University Specialty Center	82

Note: Total patients ages 15 and over who went to rehabilitation centers = 1,721

MARYLAND EMS STATISTICS

Number of EMS Providers (Primary Affiliation) by Region

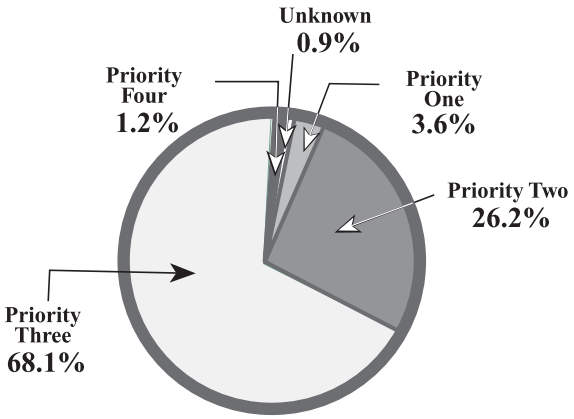


	I	II	III	IV	V	Commercial	Other (Govt)	Inactive
EMD	31	101	431	191	344	6	0	23
FR	207	130	1525	442	1025	15	132	370
EMTB	565	1387	5664	1640	5798	846	442	1797
CRT99	15	34	610	56	122	33	0	23
EMTP	61	118	1069	342	699	294	83	128

Types of EMS Calls

Patient Priority For Injury Calls

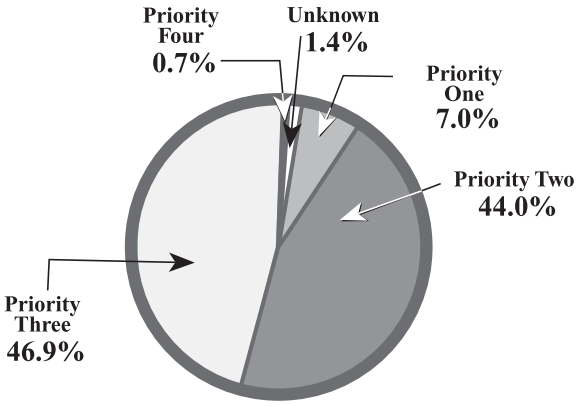
Calendar Year 2010



Source: Paper and electronic Maryland Ambulance Information System Data

Patient Priority For Medical Calls

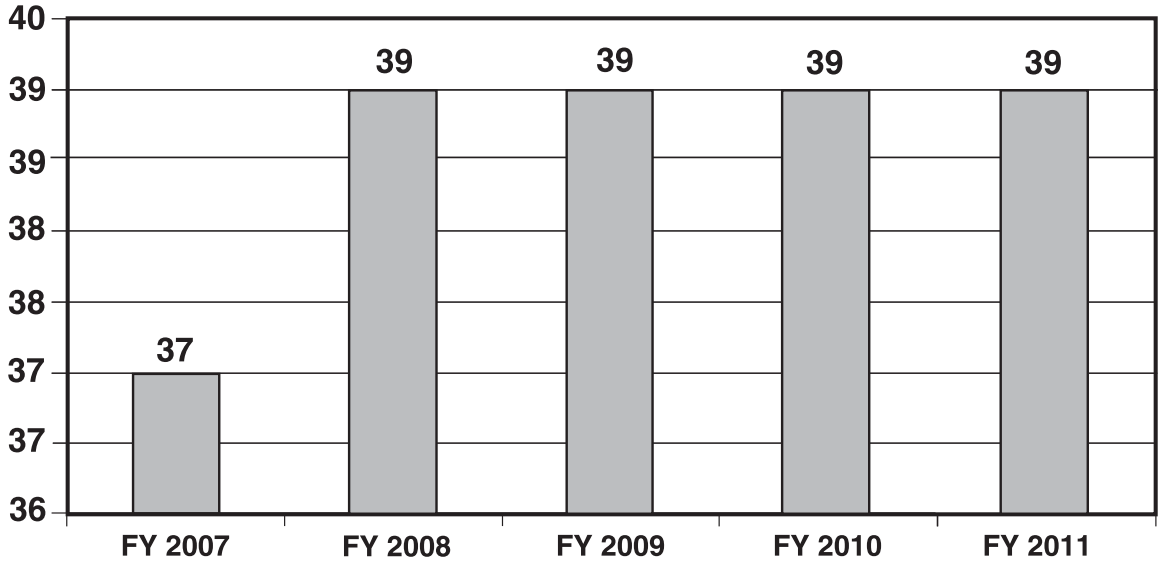
Calendar Year 2010



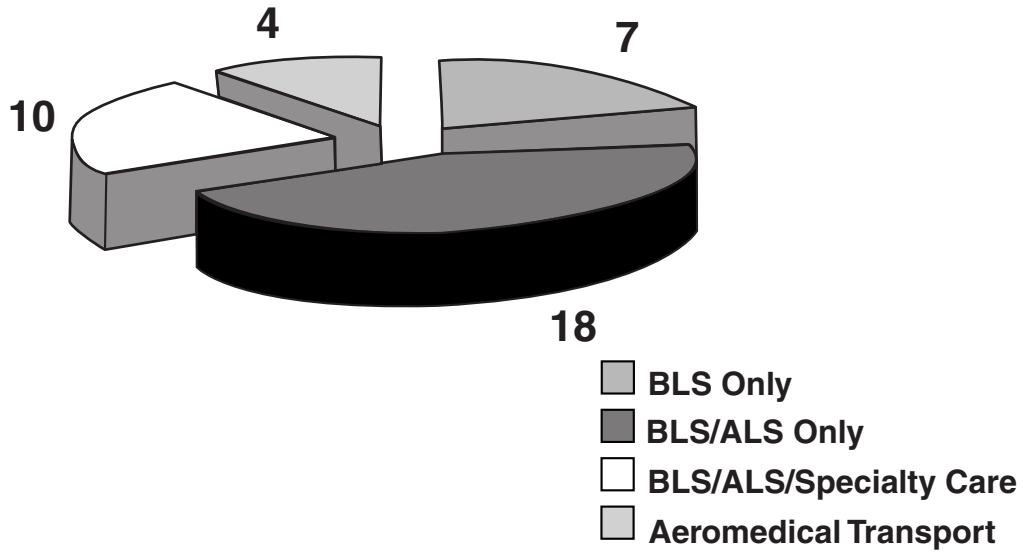
Source: Paper and electronic Maryland Ambulance Information System Data

Commercial Ambulance Services

Commercial Ambulance Services (Ground & Air)
(FY 2007 - FY 2011)

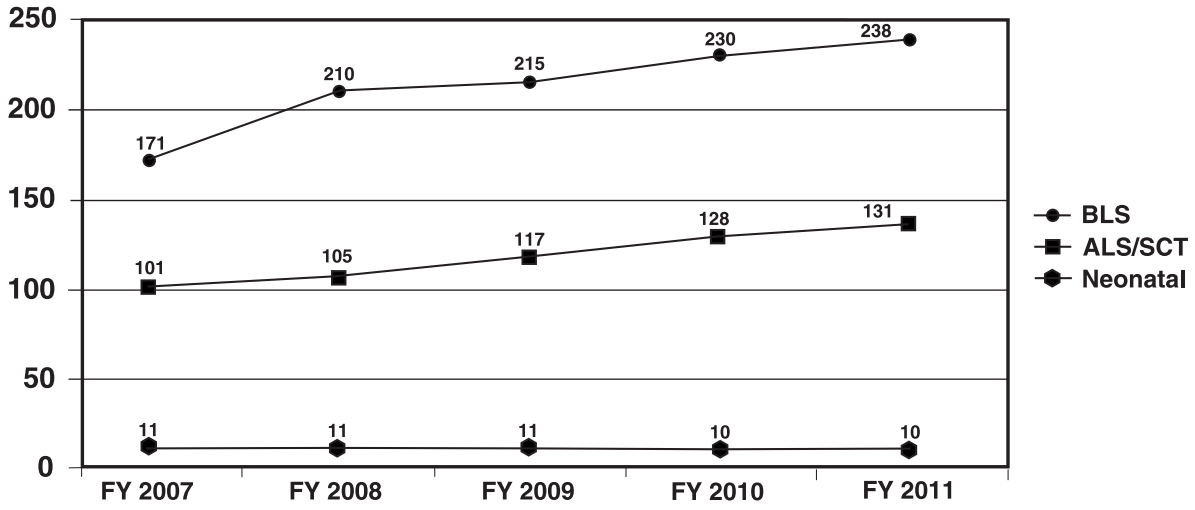


Commercial Services by License Type
(FY 2011)

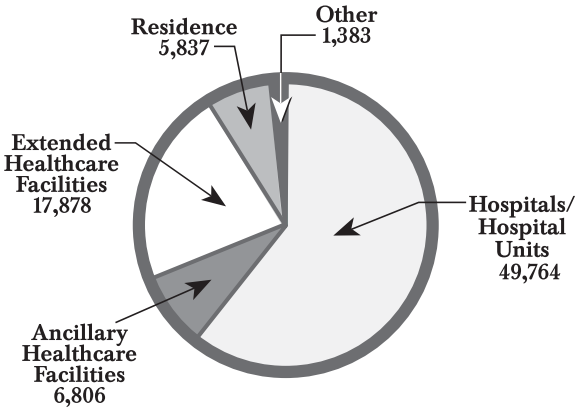


Commercial Ambulance Services

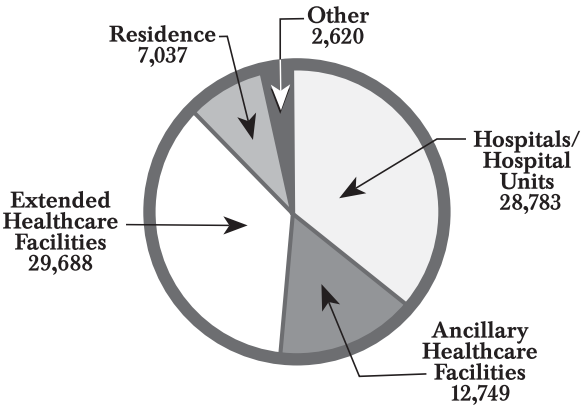
Commercial Ground Ambulance Vehicles by Type
(FY 2007 - FY 2011)



Commercial Origin Location Types
CY 2010



Commercial Destination Location Types
CY 2010



Source: Commercial Maryland Ambulance Information System (CMAIS)

Notes:

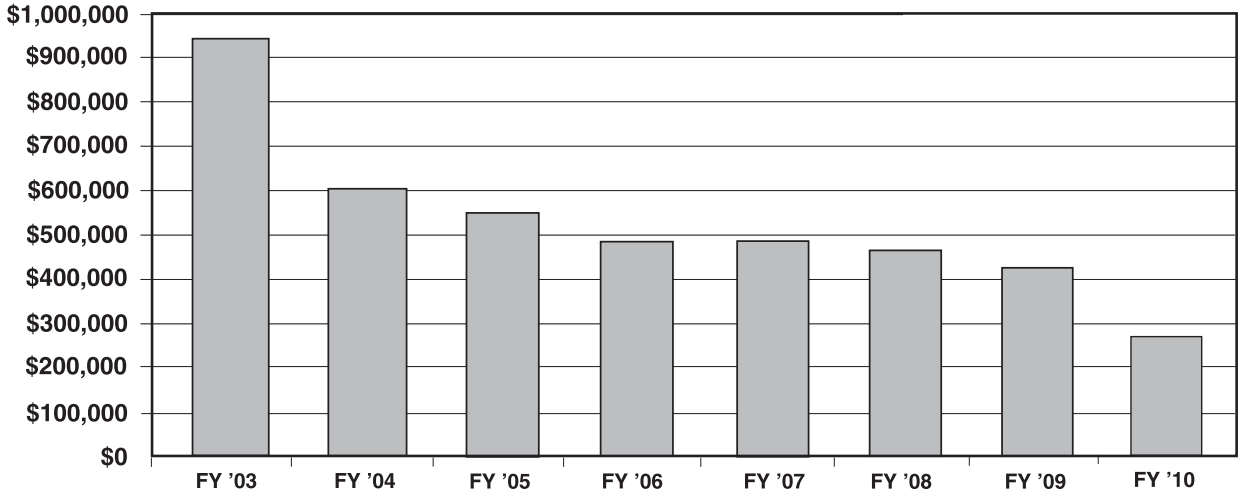
Hospitals = Hospitals & Hospital EDs, CCUs, & Perinatal Units

Ancillary Healthcare Facilities = Diag. Cntr., Phys. Office, MRI, Mental Health Facility, Dialysis Cntr.

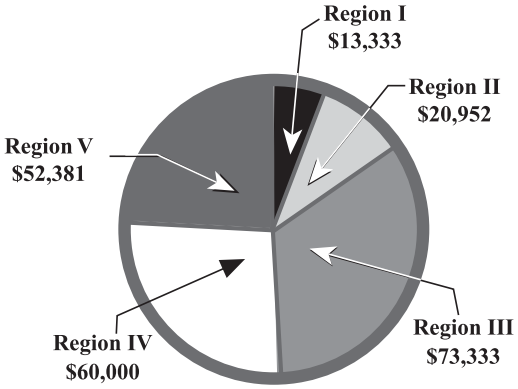
Extended Healthcare Facilities = Nursing Home, Adult Day Care, Rehab

Health Preparedness Program (HPP)
Bioterrorism Funding for Maryland EMS
(Federal FY 2003 – FY 2010)

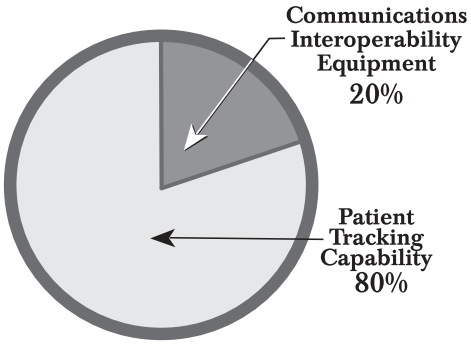
HPP Bioterrorism Funding Totals
(Federal FY 2003 – FY 2010)



HPP Bioterrorism Funding Allocation By Maryland EMS Region
(Federal FY 2010)



HPP Bioterrorism Funding Categories
(Federal FY 2010)



MARYLAND TRAUMA STATISTICS

Age Distribution of Patients: Patients Treated at Pediatric or Adult Trauma Centers

(3-Year Comparison)

Source: Maryland State Trauma Registry

Age Range	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Under 1 year	209	243	184
1 to 4 years	564	588	510
5 to 9 years	547	517	460
10 to 14 years	763	751	637
15 to 24 years	5,467	4,850	4,842
25 to 44 years	6,861	6,540	6,471
45 to 64 years	4,615	4,982	4,961
65 + years	2,440	2,621	2,770
Unknown	12	9	30
TOTAL	21,478	21,101	20,865

For children that were burn patients at Children's National Medical Center or Johns Hopkins Pediatric Trauma Center, see Maryland Pediatric Burn Center Statistics.

ADULT TRAUMA

Legend Code

The Johns Hopkins Bayview Medical Center	BVMC	R Adams Cowley Shock Trauma Center	STC
Johns Hopkins Medical System	JHH	Sinai Hospital of Baltimore	SH
Meritus Medical Center	MMC	Suburban Hospital – Johns Hopkins Medicine	SUB
Peninsula Regional Medical Center	PEN	Western Maryland Regional Medical Center	WMRMC
Prince George's Hospital Center	PGH		

Total Cases Reported by Trauma Centers

(3-Year Comparison)

Source: Maryland State Trauma Registry

Trauma Center	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
The Johns Hopkins Bayview Medical Center	1,672	1,793	1,489
Johns Hopkins Medical System	2,407	2,071	2,008
Meritus Medical Center	781	798	951
Peninsula Regional Medical Center	1,587	1,411	1,181
Prince George's Hospital Center	3,117	2,993	3,054
R Adams Cowley Shock Trauma Center	6,173	6,473	6,657
Sinai Hospital of Baltimore	1,616	1,637	1,753
Suburban Hospital	1,671	1,614	1,620
Western Maryland Regional Medical Center	781	631	721
TOTAL	19,805	19,421	19,434

Occurrence of Injury by County: Scene Origin Cases Only

(June 2010 to May 2011)

Source: Maryland State Trauma Registry

County of Injury	Number
Allegany County	398
Anne Arundel County	1,059
Baltimore County	2,370
Calvert County	117
Caroline County	66
Carroll County	259
Cecil County	56
Charles County	223
Dorchester County	96
Frederick County	331
Garrett County	58
Harford County	437
Howard County	425
Kent County	49
Montgomery County	1,421
Prince George's County	2,033
Queen Anne's County	157
St. Mary's County	128
Somerset County	82
Talbot County	56
Washington County	633
Wicomico County	394
Worcester County	241
Baltimore City	4,427
Virginia	65
West Virginia	167
Pennsylvania	139
Washington, DC	206
Delaware	83
Other	5
Not Indicated	639
TOTAL	16,820

Note: Scene origin cases represent 86.5 % of the total trauma cases treated statewide.

Residence of Patients by County: Scene Origin Cases Only

(June 2010 to May 2011)

Source: Maryland State Trauma Registry

County of Residence	Number
Allegany County	369
Anne Arundel County	997
Baltimore County	2,428
Calvert County	147
Caroline County	84
Carroll County	326
Cecil County	65
Charles County	248
Dorchester County	78
Frederick County	332
Garrett County	39
Harford County	483
Howard County	369
Kent County	57
Montgomery County	1,427
Prince George's County	1,942
Queen Anne's County	107
St. Mary's County	93
Somerset County	69
Talbot County	46
Washington County	530
Wicomico County	421
Worcester County	157
Baltimore City	4,033
Virginia	351
West Virginia	261
Pennsylvania	371
Washington, DC	465
Delaware	160
Other	308
Not Indicated	57
TOTAL	16,820

Note: Scene origin cases represent 86.5 % of the total trauma cases treated statewide.

Patients with Protective Devices at Time of Trauma Incident: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

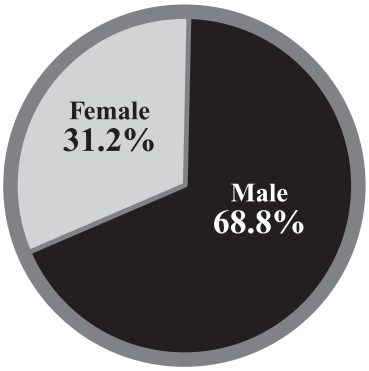
Protective Device	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
None	22.6%	24.8%	22.3%
Seatbelt	29.2%	28.4%	25.8%
Airbag & Seatbelt	20.7%	21.1%	21.8%
Airbag Only	4.3%	4.1%	4.5%
Infant/Child Seat	0.1%	0.2%	0.2%
Protective Helmet	13.9%	13.6%	14.4%
Padding/Protective Clothing	0.1%	0.1%	0.2%
Other Protective Device	0.1%	0.0%	0.1%
Unknown	9.0%	7.7%	10.7%
TOTAL	100.0%	100.0%	100.0%

Note: Patients were involved in motor vehicle, motorcycle, bicycle, and sports-related incidents only. "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Gender of Patients: Primary Admissions Only

(June 2010 to May 2011)

Source: Maryland State Trauma Registry



Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Mode of Patient Transport to Trauma Centers: Scene Origin Cases Only

(June 2010 to May 2011)

Source: Maryland State Trauma Registry

Modality Type	BVMC	JHH	MMC	PEN	PGH	SH	STC	SUB	WMRMC	TOTAL
Ground Ambulance	95.2%	85.4%	79.5%	75.1%	81.4%	95.2%	75.3%	94.8%	80.6%	83.4%
Helicopter	0.0%	0.4%	3.4%	12.4%	14.3%	0.0%	24.2%	0.4%	9.9%	10.7%
Other	4.8%	14.2%	17.1%	12.5%	4.3%	4.8%	0.5%	4.8%	9.5%	5.9%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: Only patients brought directly from the scene to a trauma center are included in this table.

Origin of Patient Transport to Trauma Centers

(June 2010 to May 2011)

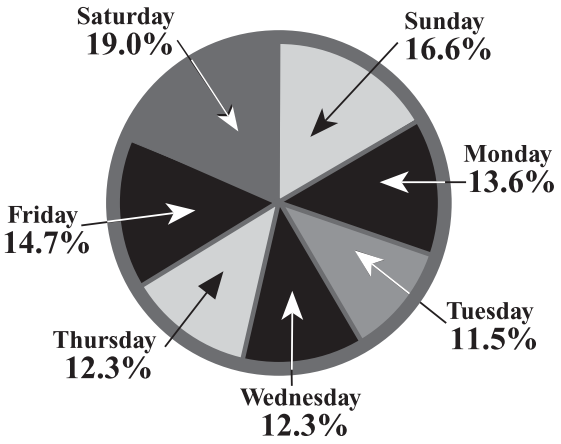
Source: Maryland State Trauma Registry

Origin Type	BVMC	JHH	MMC	PEN	PGH	SH	STC	SUB	WMRMC	TOTAL
Scene of Injury	99.8%	92.4%	96.3%	91.7%	96.0%	96.7%	70.4%	96.2%	96.5%	86.9%
Hospital Transfer	0.0%	7.2%	1.4%	3.0%	2.2%	1.0%	29.5%	2.5%	2.2%	11.9%
Other	0.2%	0.4%	2.3%	5.3%	1.8%	2.3%	0.1%	1.3%	1.3%	1.2%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Emergency Department Arrivals by Day of Week: Primary Admissions Only

(June 2010 to May 2011)

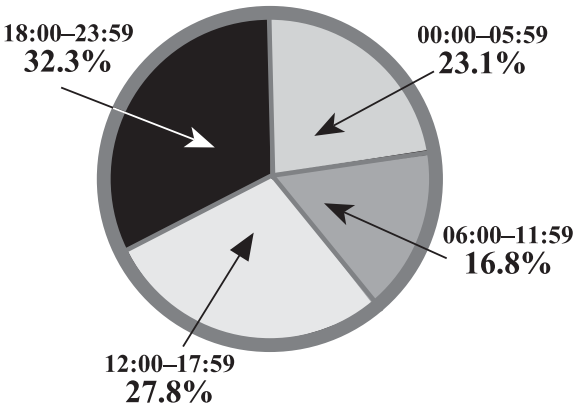
Source: Maryland State Trauma Registry



Emergency Department Arrivals by Time of Day: Primary Admissions Only

(June 2010 to May 2011)

Source: Maryland State Trauma Registry



Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Number of Deaths by Age

(3-Year Comparison)
Source: Maryland State Trauma Registry

Age	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Under 1 year	1	0	0
1 to 4 years	0	2	1
5 to 14 years	5	6	9
15 to 24 years	171	134	150
25 to 44 years	189	201	174
45 to 64 years	134	147	146
65+ years	189	182	184
Unknown	8	4	7
TOTAL	697	676	671
Deaths Overall as a Percentage of the Total Injuries Treated	3.5%	3.5%	3.5%

Note: Only pediatric patients that were treated at adult trauma centers are included in this table. For patients treated at the pediatric trauma centers, see pediatric trauma center tables and graphs.

Number of Injuries by Age

(3-Year Comparison)
Source: Maryland State Trauma Registry

Age	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Under 1 year	35	32	42
1 to 4 years	110	121	118
5 to 14 years	315	306	252
15 to 24 years	5,417	4,810	4,790
25 to 44 years	6,861	6,540	6,471
45 to 64 years	4,615	4,982	4,961
65+ years	2,440	2,621	2,770
Unknown	12	9	30
TOTAL	19,805	19,421	19,434

Note: Only pediatric patients that were treated at adult trauma centers are included in this table. For patients treated at the pediatric trauma centers, see pediatric trauma center tables and graphs.

Number of Injuries and Deaths by Age

(June 2010 to May 2011)
Source: Maryland State Trauma Registry

	Number of Injured Patients		Number of Deaths	
Age	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	42	39	0	0
1 to 4 years	118	99	1	1
5 to 14 years	252	214	9	8
15 to 24 years	4,790	4,287	150	135
25 to 44 years	6,471	5,678	174	151
45 to 64 years	4,961	4,356	146	128
65+ years	2,770	2,487	184	163
Unknown	30	28	7	7
TOTAL	19,434	17,188	671	593

Note: Only pediatric patients that were treated at adult trauma centers are included in this table. For patients treated at the pediatric trauma centers, see pediatric trauma center tables and graphs.

Etiology of Injuries to Patients: Primary Admissions Only

(3-Year Comparison)
Source: Maryland State Trauma Registry

Etiology	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Motor Vehicle Crash	34.1%	31.7%	30.5%
Motorcycle Crash	6.4%	5.8%	6.3%
Pedestrian Incident	5.0%	5.6%	5.0%
Fall	24.0%	26.7%	28.1%
Gunshot Wound	7.4%	6.9%	6.4%
Stab Wound	6.3%	7.1%	7.0%
Other	16.8%	16.2%	16.7%
TOTAL	100.0%	100.0%	100.0%

Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Blood Alcohol Content of Patients by Injury Type: Primary Admissions Only

(June 2010 to May 2011)
Source: Maryland State Trauma Registry

Blood Alcohol Content	Motor Vehicle Crash	Assault	Fall	Other	Total
Negative	57.2%	44.7%	57.0%	61.1%	54.9%
Positive	26.8%	37.1%	18.6%	14.1%	25.6%
Undetermined	16.0%	18.2%	24.4%	24.8%	19.5%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Etiology of Injuries by Ages of Patients: Primary Admissions Only

(June 2010 to May 2011)

Source: Maryland State Trauma Registry

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound	Other	Total
Under 1 year	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.2%	0.1%
1 to 4 years	0.3%	0.1%	0.3%	0.4%	0.2%	0.0%	0.6%	0.3%
5 to 14 years	1.1%	0.2%	1.0%	0.9%	0.5%	0.1%	1.6%	1.0%
15 to 24 years	26.6%	20.5%	24.7%	7.2%	45.1%	34.0%	24.4%	22.0%
25 to 44 years	35.0%	38.7%	30.9%	18.0%	41.8%	49.1%	38.0%	32.2%
45 to 64 years	24.7%	36.8%	31.8%	32.3%	10.0%	16.2%	30.2%	27.3%
65+ years	12.2%	3.7%	11.2%	41.0%	1.8%	0.6%	4.8%	17.0%
Unknown	0.1%	0.0%	0.1%	0.0%	0.6%	0.0%	0.2%	0.1%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival. Only pediatric patients that were treated at adult trauma centers are included in this table. For patients treated at the pediatric trauma centers, see pediatric trauma center tables and graphs.

Etiology Distribution for Patients with Blunt Injuries: Primary Admissions Only

(June 2010 to May 2011)

Source: Maryland State Trauma Registry

Etiology	Percentage
Motor Vehicle Crash	36.2%
Motorcycle Crash	7.5%
Pedestrian Incident	5.9%
Fall	33.0%
Other	17.1%
Unknown	0.3%
TOTAL	100.0%

Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Etiology Distribution for Patients with Penetrating Injuries: Primary Admissions Only

(June 2010 to May 2011)

Source: Maryland State Trauma Registry

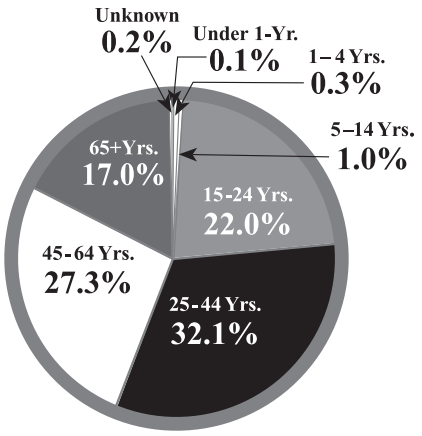
Etiology	Percentage
Motorcycle Vehicle Crash	0.5%
Motorcycle Crash	0.1%
Pedestrian Incident	0.1%
Gunshot Wound	43.9%
Stabbing	48.0%
Fall	1.5%
Other	5.7%
Unknown	0.2%
TOTAL	100.0%

Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Age Distribution of Patients: Primary Admissions Only

(June 2010 to May 2011)

Source: Maryland State Trauma Registry

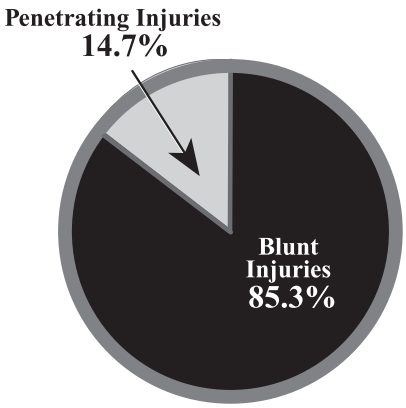


Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival. Only pediatric patients that were treated at adult trauma centers are included in this table. For patients treated at pediatric trauma centers, see pediatric center tables and graphs.

Injury Type Distribution of Patients: Primary Admissions Only

(June 2010 to May 2011)

Source: Maryland State Trauma Registry



Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Final Disposition of Patients: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

Final Disposition	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Inpatient Rehab Facility	11.8%	12.4%	12.5%
Skilled Nursing Facility	2.0%	2.4%	2.3%
Residential Facility	1.3%	1.4%	1.0%
Specialty Referral Center	4.2%	3.5%	3.8%
Home with Services	2.5%	2.6%	2.7%
Home	67.9%	68.2%	67.2%
Acute Care Hospital	1.9%	1.8%	2.4%
Against Medical Advice	2.1%	1.8%	1.7%
Morgue/Died	5.1%	5.0%	4.9%
Left Without Treatment	0.4%	0.4%	0.4%
Jail*	0.0%	0.0%	0.9%
Other	0.8%	0.5%	0.2%
TOTAL	100.0%	100.0%	100.0%

Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.
**"Jail" is a new category that was added in this current annual report year. Previously, "jail" was included in "residential facility."*

Injury Severity Scores of Patients with Penetrating Injuries: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

ISS	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
1 to 12	71.1%	73.0%	68.2%
13 to 19	11.9%	11.3%	13.8%
20 to 35	12.1%	10.5%	13.1%
36 to 75	4.9%	5.2%	4.9%
TOTAL	100.0%	100.0%	100.0%

Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Injury Severity Score (ISS) by Injury Type: Primary Admissions Only

(June 2010 to May 2011)

Source: Maryland State Trauma Registry

ISS	Blunt	Penetrating	Total
1 to 12	69.5%	68.2%	69.3%
13 to 19	16.9%	13.8%	16.4%
20 to 35	11.0%	13.1%	11.4%
36 to 75	2.6%	4.9%	2.9%
TOTAL	100.0%	100.0%	100.0%

Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Injury Severity Scores of Patients with Blunt Injuries: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

ISS	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
1 to 12	69.6%	69.2%	69.5%
13 to 19	15.8%	16.5%	16.9%
20 to 35	11.8%	11.7%	11.0%
36 to 75	2.8%	2.6%	2.6%
TOTAL	100.0%	100.0%	100.0%

Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Injury Severity Scores of Patients with Either Blunt or Penetrating Injuries: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

ISS	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
1 to 12	69.8%	69.8%	69.3%
13 to 19	15.2%	15.7%	16.4%
20 to 35	11.9%	11.5%	11.4%
36 to 75	3.1%	3.0 %	2.9%
TOTAL	100.0%	100.0%	100.0%

Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

MARYLAND ADULT BURN STATISTICS

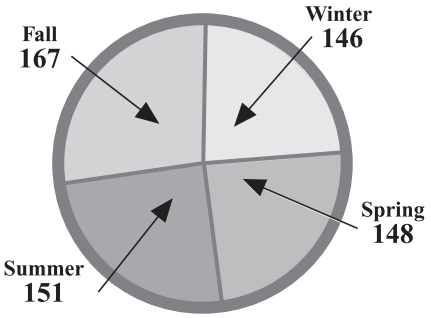
Total Number of Adult Burn Cases

Patients Age Fifteen and Older Treated at John Hopkins Burn Center at Bayview
Source: Maryland State Trauma Registry

Institution	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Johns Hopkins Burn Center (at Bayview)	683	661	612

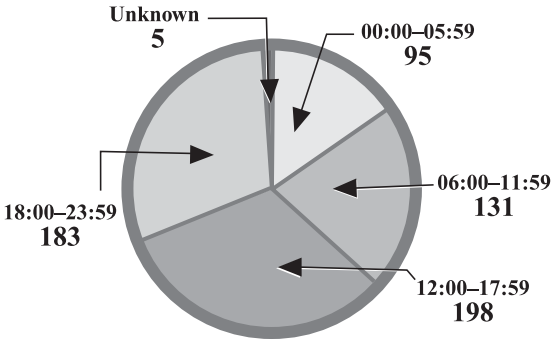
Season of the Year Distribution

Patients Age Fifteen and Older Treated at Johns Hopkins Burn Center at Bayview (June 2010 to May 2011)
Source: Maryland State Trauma Registry



Time of Arrival Distribution

Patients Age Fifteen and Older Treated at Johns Hopkins Burn Center at Bayview (June 2010 to May 2011)
Source: Maryland State Trauma Registry



Place of Injury

Patients Age Fifteen and Older Treated at John Hopkins Burn Center at Bayview (June 2010 to May 2011)
Source: Maryland State Trauma Registry

Place of Injury	Number
Home	328
Industrial Place	83
Place for Recreation or Sport	62
Street/Highway	24
Public Building	13
Residential Institution	3
Other Specified Place	3
Unspecified Place	96
TOTAL	612

Occurrence of Injury by County

Patients Age Fifteen and Older Treated at John Hopkins Burn Center at Bayview (June 2010 to May 2011)

Source: Maryland State Trauma Registry

County of Injury	Number
Allegany County	8
Anne Arundel County	48
Baltimore County	134
Calvert County	4
Caroline County	3
Carroll County	18
Cecil County	10
Dorchester County	4
Frederick County	13
Harford County	36
Howard County	22
Kent County	2
Montgomery County	4
Prince George's County	6
Queen Anne's County	6
Somerset County	4
St. Mary's County	1
Talbot County	8
Washington County	11
Wicomico County	11
Worcester County	8
Baltimore City	153
Virginia	3
West Virginia	14
Pennsylvania	39
Washington, DC	3
Delaware	2
Other	9
Not Valued	28
TOTAL	612

Residence of Patients by County

Patients Age Fifteen and Older Treated at John Hopkins Burn Center at Bayview (June 2010 to May 2011)

Source: Maryland State Trauma Registry

County of Residence	Number
Allegany County	5
Anne Arundel County	62
Baltimore County	142
Calvert County	4
Caroline County	4
Carroll County	23
Cecil County	12
Dorchester County	5
Frederick County	14
Harford County	36
Howard County	22
Kent County	2
Montgomery County	8
Prince George's County	9
Queen Anne's County	6
Somerset County	4
St. Mary's County	1
Talbot County	9
Washington County	8
Wicomico County	12
Worcester County	7
Baltimore City	140
Virginia	5
West Virginia	14
Pennsylvania	42
Washington, DC	1
Delaware	3
Other	8
Not Valued	4
TOTAL	612

Mode of Patient Transport

Patients Age Fifteen and Older Treated at John Hopkins Burn Center at Bayview (June 2010 to May 2011)

Source: Maryland State Trauma Registry

Modality Type	Number
Ground Ambulance	353
Helicopter	31
Other*	225
Not Valued	3
TOTAL	612

**Note:* *The category "Other" includes patients that were walk-ins or were brought in by private or public vehicles*

Etiology of Injury by Ages of Patients

Patients Age Fifteen and Older Treated at John Hopkins Burn Center at Bayview
(June 2010 to May 2011)
Source: Maryland State Trauma Registry

Age Range	Electrical	Chemical	Thermal			Inhalation	Other Burn	Other Non-Burn	Unknown	Total
			Flame	Contact	Scald					
15 to 24 years	4	5	60	11	33	2	2	1	1	119
25 to 44 years	14	13	93	17	80	3	1	6	2	229
45 to 64 years	14	8	99	15	53	4	0	7	2	202
65 years and over	0	2	26	9	18	1	0	5	1	62
TOTAL	32	28	278	52	184	10	3	19	6	612

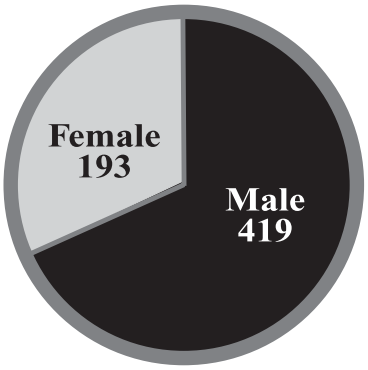
Final Disposition of Patients

Patients Age Fifteen and Older Treated at John Hopkins Burn Center at Bayview
(3-Year Comparison)
Source: Maryland State Trauma Registry

Final Disposition	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Home	558	541	510
Home with Services	53	50	48
Transfer to an Acute Burn Facility	0	1	0
Transfer to Another Acute Care Facility	6	1	4
Rehabilitation Facility	21	14	11
Skilled Nursing Facility	9	22	11
Psychiatric Hospital	2	5	2
Morgue/Died	21	13	16
Unable to Complete Treatment/ Against Medical Advice	6	3	7
Other	1	3	0
Not Valued	6	8	3
TOTAL	683	661	612

Gender Distribution

Patients Age Fifteen and Older Treated at John Hopkins Burn Center at Bayview
June 2010 to May 2011
Source: Maryland State Trauma Registry



Number of Injuries by Age

Patients Age Fifteen and Older Treated at John Hopkins Burn Center at Bayview
(3-Year Comparison)
Source: Maryland State Trauma Registry

Age Range	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
15 to 24 years	130	139	119
25 to 44 years	270	238	229
45 to 64 years	200	217	202
65 years and over	83	67	62
TOTAL	683	661	612

MARYLAND PEDIATRIC TRAUMA STATISTICS

Legend Code

Children's National Medical Center	CNMC
Johns Hopkins Pediatric Trauma Center	JHP

Total Cases Treated at Pediatric Trauma Centers

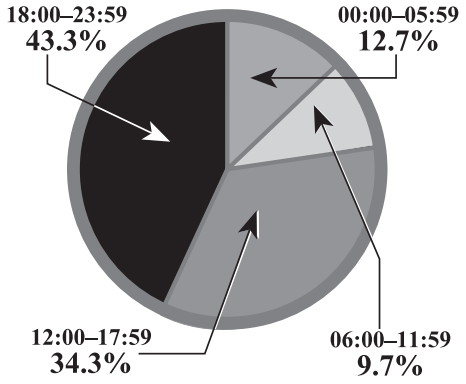
(3-Year Comparison)

Trauma Center	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
CNMC	851	853	760
JHP	822	827	671
TOTAL	1,673	1,680	1,431

Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

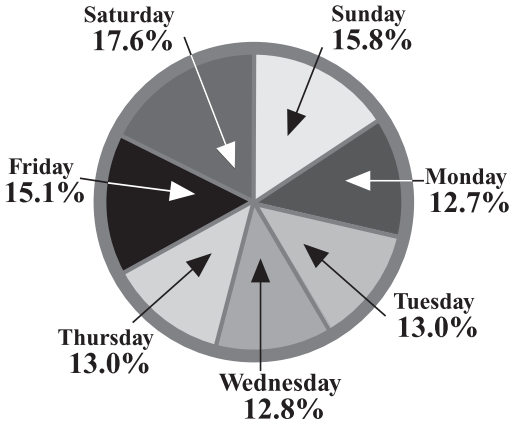
Emergency Department Arrivals by Time of Day: Children Treated at Pediatric Trauma Centers

(June 2010 to May 2011)



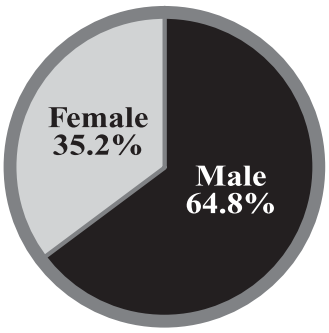
Emergency Department Arrivals by Day of Week: Children Treated at Pediatric Trauma Centers

(June 2010 to May 2011)



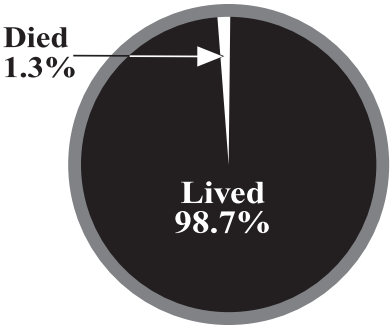
Gender Profile: Children Treated at Pediatric Trauma Centers

(June 2010 to May 2011)



Outcome Profile: Children Treated at Pediatric Trauma Centers

(June 2010 to May 2011)



Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Mode of Patient Transport by Center: Scene Origin Cases Only

Children Treated at Pediatric Trauma Centers (June 2010 to May 2011)

Modality Type	CNMC	JHP	Total
Ground Ambulance	64.1%	79.4%	73.1%
Helicopter	20.6%	19.2%	19.8%
Other	15.3%	1.4%	7.1%
TOTAL	100.0%	100.0%	100.0%

Note: Only patients brought directly from the scene to a trauma center are included in this table. For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Origin of Patient Transport by Center:

Children Treated at Pediatric Trauma Centers (June 2010 to May 2011)

Origin	CNMC	JHP	Total
Scene of Injury	46.8%	74.7%	59.9%
Hospital Transfer	42.1%	25.3%	34.2%
Other	11.1%	0.0%	5.9%
TOTAL	100.0%	100.0%	100.0%

Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Number of Injuries and Deaths by Age

Children Treated at Pediatric Trauma Centers (June 2010 to May 2011)

	Number of Injured Patients		Number of Deaths	
Age	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	142	136	2	2
1 to 4 years	392	375	3	3
5 to 9 years	369	356	5	5
10 to 14 years	476	454	7	6
15+ years	52	52	1	1
TOTAL	1,431	1,373	18	17

Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Final Disposition of Patients

3-Year Comparison

Children Treated at Pediatric Trauma Centers

Final Disposition	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Inpatient Rehab Facility	1.8%	2.8%	2.8%
Residential Facility	0.3%	0.0%	0.2%
Specialty Referral Center	0.0%	0.1%	0.0%
Home with Services	0.8%	1.2%	1.0%
Home	95.1%	93.6%	94.0%
Acute Care Hospital	0.3%	0.1%	0.0%
Against Medical Advice	0.1%	0.1%	0.0%
Morgue/Died	1.0%	1.0%	1.3%
Foster Care	0.4%	0.8%	0.7%
Other	0.2%	0.3%	0.0%
TOTAL	100.0%	100.0%	100.0%

Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Etiology of Injuries by Ages

Children Treated at Pediatric Trauma Centers (June 2010 to May 2011)

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
Under 1 year	6.4%	0.0%	0.0%	14.4%	0.0%	0.0%	9.8%	9.9%
1 to 4 years	27.0%	0.0%	17.2%	37.7%	17.6%	10.0%	17.7%	27.5%
5 to 9 years	34.4%	26.7%	31.3%	24.7%	0.0%	50.0%	20.6%	25.9%
10 to 14 years	30.9%	73.3%	47.8%	20.7%	82.4%	40.0%	45.0%	33.2%
15+ years	1.3%	0.0%	3.7%	2.5%	0.0%	0.0%	6.9%	3.5%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

**Stab wounds include both intentional and unintentional piercings and punctures.*

Injury Type

3-Year Comparison

Children Treated at Pediatric Trauma Centers

Injury Type	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Blunt	94.5%	94.8%	95.4%
Penetrating	3.7%	4.0%	3.0%
Near Drowning	0.7%	0.4%	0.4%
Hanging	0.2%	0.1%	0.3%
Ingestion	0.0%	0.1%	0.2%
Crush	0.2%	0.3%	0.1%
Snake Bite/Spider Bite	0.1%	0.0%	0.0%
Animal Bite/Human Bite	0.3%	0.3%	0.6%
Other	0.3%	0.0%	0.0%
TOTAL	100.0%	100.0%	100.0%

Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Number of Injuries by Age

3-Year Comparison

Children Treated at Pediatric Trauma Centers

Age	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Under 1 year	174	211	142
1 to 4 years	454	467	392
5 to 9 years	437	410	369
10 to 14 years	558	552	476
15+ years	50	40	52
TOTAL	1,673	1,680	1,431

Note: For children that were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Mechanism of Injury

3-Year Comparison

Children Treated at Pediatric Trauma Centers

Mechanism	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Motor Vehicle Crash	16.7%	16.8%	16.4%
Motorcycle Crash	1.2%	0.7%	1.1%
Pedestrian Incident	9.4%	9.4%	9.4%
Gunshot Wound	1.0%	0.7%	1.2%
Stabbing*	1.1%	2.0%	1.4%
Fall	46.0%	45.8%	43.1%
Other	24.6%	24.6%	27.4%
TOTAL	100.0%	100.0%	100.0%

Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

**Stab wounds include both intentional and unintentional piercings and punctures.*

Number of Deaths by Age

3-Year Comparison

Children Treated at Pediatric Trauma Centers

Age	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Under 1 year	3	4	2
1 to 4 years	7	7	3
5 to 9 years	5	2	5
10 to 14 years	1	3	7
15+ years	0	0	1
TOTAL	16	16	18

Note: For children that were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Etiology of Injuries by Ages

Children Treated at Pediatric Trauma Centers or Adult Trauma Centers (June 2010 to May 2011)

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
Under 1 year	5.3%	0.0%	0.0%	16.4%	0.0%	0.0%	9.6%	10.3%
1 to 4 years	27.1%	8.0%	17.4%	38.6%	21.7%	8.7%	19.6%	28.6%
5 to 9 years	33.2%	24.0%	34.8%	23.0%	0.0%	47.8%	21.3%	25.7%
10 to 14 years	34.4%	68.0%	47.8%	22.0%	78.3%	43.5%	49.5%	35.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

**Stab wounds include both intentional and unintentional piercings and punctures.*

Residence of Patients by County: Scene Origin Cases Only

Children Treated at Pediatric Trauma Centers
(June 2010 to May 2011)

County of Residence	Number
Anne Arundel County	64
Baltimore County	116
Calvert County	19
Caroline County	9
Carroll County	27
Cecil County	7
Charles County	23
Dorchester County	1
Frederick County	28
Harford County	41
Howard County	22
Kent County	3
Montgomery County	96
Prince George's County	160
Queen Anne's County	11
St. Mary's County	21
Somerset County	1
Talbot County	2
Washington County	2
Baltimore City	161
Virginia	9
Pennsylvania	6
Washington, DC	16
Delaware	2
Other	8
TOTAL	855

Notes: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. Scene origin cases represent 59.7% of the total cases treated at pediatric trauma centers. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Occurrence of Injury by County: Scene Origin Cases Only

Children Treated at Pediatric Trauma Centers
(June 2010 to May 2011)

County of Injury	Number
Anne Arundel County	64
Baltimore County	128
Calvert County	19
Caroline County	7
Carroll County	23
Cecil County	8
Charles County	27
Dorchester County	4
Frederick County	31
Harford County	40
Howard County	23
Kent County	6
Montgomery County	98
Prince George's County	152
Queen Anne's County	11
St. Mary's County	21
Talbot County	3
Washington County	1
Wicomico County	1
Worcester County	2
Baltimore City	153
Pennsylvania	4
Washington, DC	20
Not Indicated	9
TOTAL	855

Notes: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. Scene origin cases represent 59.7% of the total cases treated at pediatric trauma centers. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Children with Protective Devices at Time of Trauma Incident

3-Year Comparison
Children Treated at Pediatric Trauma Centers

Protective Device	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
None	36.4%	37.5%	36.0%
Seatbelt	20.8%	22.4%	19.3%
Airbag & Seatbelt	0.5%	2.5%	3.3%
Airbag Only	0.5%	0.0%	0.0%
Infant/Child Seat	16.9%	17.3%	17.2%
Protective Helmet	8.3%	7.7%	10.6%
Padding/Protective Clothing	1.0%	0.5%	0.0%
Unknown	15.6%	12.1%	13.6%
TOTAL	100.0%	100.0%	100.0%

Note: Children were involved in motor vehicle, motorcycle, bicycle, and sports-related incidents only. For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

MARYLAND PEDIATRIC BURN STATISTICS

Legend Code

Children's National Medical Center Pediatric Burn Center	CNMCBC
Johns Hopkins Pediatric Burn Center	JHPBC
Johns Hopkins Burn Center (at Bayview)	JHBC

Total Number of Pediatric Burn Cases

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview

(3-Year Comparison)

Source: Maryland State Trauma Registry

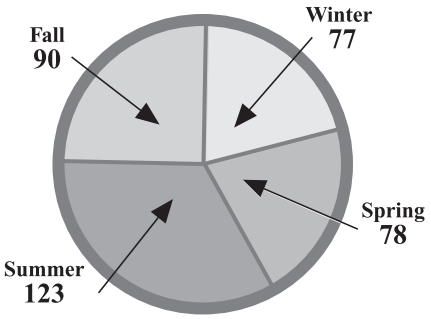
Institution	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Children's National Medical Center Pediatric Burn Center	142	102	88
Johns Hopkins Pediatric Burn Center	191	230	265
Johns Hopkins Burn Center (at Bayview)	23	19	15
TOTAL	356	351	368

Season of the Year Distribution

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at Johns Hopkins Burn Center at Bayview

(June 2010 to May 2011)

Source: Maryland State Trauma Registry



Place of Injury

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview

(June 2010 to May 2011)

Source: Maryland State Trauma Registry

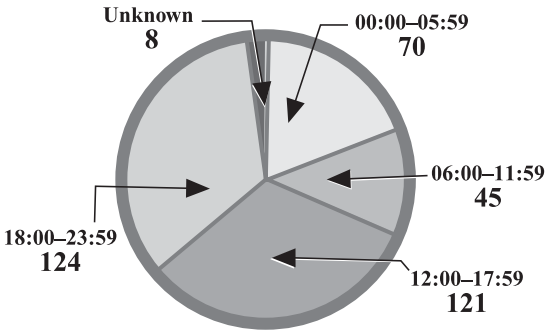
Place of Injury	Number
Home	307
Farm	2
Place for Recreation or Sport	11
Street/Highway	5
Public Building	9
Residential Institution	1
Other Specified Place	8
Unspecified Place	25
TOTAL	368

Time of Arrival Distribution

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at Johns Hopkins Burn Center at Bayview

(June 2010 to May 2011)

Source: Maryland State Trauma Registry



Occurrence of Injury by County

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (June 2010 to May 2011)

Source: Maryland State Trauma Registry

County of Injury	Number
Allegany County	2
Anne Arundel County	19
Baltimore County	43
Calvert County	3
Caroline County	4
Carroll County	8
Cecil County	4
Charles County	5
Dorchester County	1
Frederick County	3
Garrett County	1
Harford County	14
Howard County	6
Montgomery County	22
Prince George's County	36
Queen Anne's County	1
St. Mary's County	5
Talbot County	1
Washington County	6
Wicomico County	4
Worcester County	3
Baltimore City	109
Virginia	4
West Virginia	5
Pennsylvania	21
Washington, DC	2
Delaware	1
Other	1
Not Valued	34
TOTAL	368

Residence of Patients by County

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (June 2010 to May 2011)

Source: Maryland State Trauma Registry

County of Residence	Number
Allegany County	2
Anne Arundel County	22
Baltimore County	48
Calvert County	4
Caroline County	4
Carroll County	9
Cecil County	5
Charles County	5
Dorchester County	2
Frederick County	5
Harford County	16
Howard County	6
Montgomery County	23
Prince George's County	37
Queen Anne's County	1
Somerset County	1
St. Mary's County	5
Talbot County	1
Washington County	9
Wicomico County	4
Worcester County	3
Baltimore City	121
Virginia	1
West Virginia	5
Pennsylvania	23
Washington, DC	4
Other	2
TOTAL	368

Mode of Patient Transport to Burn Centers

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (June 2010 to May 2011)

Source: Maryland State Trauma Registry

Modality Type	CNMCBC	JHPBC	JHBC	Total
Ground Ambulance	48	158	2	208
Helicopter	4	12	0	16
Other*	36	79	11	126
Not Valued	0	16	2	18
TOTAL	88	265	15	368

**Note: The category "Other" includes patients that were walk-ins or were brought in by private or public vehicles*

Etiology of Injuries by Ages of Patients

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (June 2010 to May 2011)

Source: Maryland State Trauma Registry

Age Range	Electrical	Chemical	Thermal			Inhalation	Other Burn	Unknown	Total
			Flame	Contact	Scald				
Under 1 year	0	0	1	11	22	0	0	2	36
1 to 4 years	6	3	13	66	106	1	0	4	199
5 to 9 years	3	0	7	13	46	0	1	1	71
10 to 14 years	2	0	19	6	23	2	1	0	53
15 years and over	1	0	2	2	2	0	0	1	8
Not Valued	0	0	0	1	0	0	0	0	1
TOTAL	12	3	42	99	199	3	2	8	368

Final Disposition of Patients

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (3-Year Comparison)

Source: Maryland State Trauma Registry

Final Disposition	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Home	314	298	306
Home with Services	10	22	29
Transfer to an Acute Burn Facility	15	9	10
Rehabilitation Facility	12	17	16
Jail or Prison	0	0	1
Morgue/Died	1	3	1
Alternative Caregiver	0	0	3
Foster Care	2	2	2
Other	2	0	0
TOTAL	356	351	368

Total Body Surface Area Burned by Length of Stay in Days

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (June 2010 to May 2011)

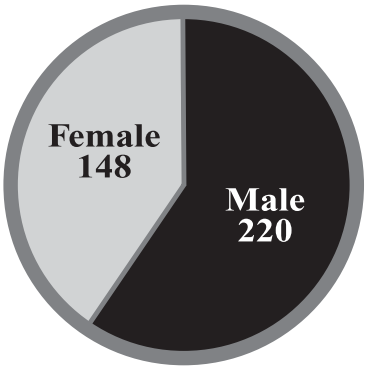
Source: Maryland State Trauma Registry

Length of Stay	Less Than 10% TBSA	10 - 19% TBSA	20% or Greater TBSA	Not Valued	Total
1 Day	222	6	1	37	266
2 - 3 Days	32	5	0	11	48
4 - 7 Days	13	4	2	4	23
8 - 14 Days	7	7	5	1	20
15 - 21 Days	3	4	1	0	8
22 - 28 Days	1	0	0	0	1
Over 28 Days	0	1	0	1	2
TOTAL	278	27	9	54	368

Gender Distribution

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at Johns Hopkins Burn Center at Bayview June 2010 to May 2011

Source: Maryland State Trauma Registry



Number of Injuries by Age

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (3-Year Comparison)

Source: Maryland State Trauma Registry

Age Range	June 2008 to May 2009	June 2009 to May 2010	June 2010 to May 2011
Under 1 year	53	51	36
1 to 4 years	185	182	199
5 to 9 years	69	70	71
10 to 14 years	41	40	53
15 years and over	8	7	8
Not Valued	0	1	1
TOTAL	356	351	368

CHARLES McC. MATHIAS, JR., NATIONAL STUDY CENTER FOR TRAUMA AND EMERGENCY MEDICAL SYSTEMS

In an effort to further basic, translational, and clinical studies in injury research, the University of Maryland School of Medicine (UMSOM) has designated its Charles McC. Mathias National Study Center for Trauma and EMS as an Organized Research Center (ORC). With this designation, the Shock, Trauma and Anesthesiology Research - Organized Research Center (STAR-ORC) is on its way to becoming a world-class, multidisciplinary research and educational center focusing on brain injuries, critical care and organ support, resuscitation, surgical outcomes, patient safety, and injury prevention. The STAR-ORC encompasses the research activities of the UMSOM's Program in Trauma and its Department of Anesthesiology, along with the existing National Study Center (NSC), which was established in 1986 by the United States Congress. This is the seventh ORC established at the UMSOM. The STAR-ORC is led by Alan I. Faden, MD, David S. Brown Professor of Trauma and Professor of Anesthesiology, University of Maryland School of Medicine. The Executive Committee of the STAR-ORC is comprised of Thomas M. Scalea, MD, FACS, FCCM, Francis X. Kelly Professor of Trauma Surgery, Director, Program in Trauma, and Physician-in-Chief, R Adams Cowley Shock Trauma Center; and Peter Rock, MD, MBA, Martin Helrich Professor and Chair, Department of Anesthesiology.

Research Activities

Motor Vehicle-Related Injuries: The NSC is a leading participant in two multi-center studies of injuries sustained in vehicular crashes; the Crash Injury Research and Engineering Network (CIREN) and the Crash Outcomes Data Evaluation System (CODES) Data Network funded by the National Highway Traffic Safety Administration (NHTSA). The NSC is one of seven centers awarded the CIREN project on an annually renewable basis, currently through 2015. A total of 69 cases were enrolled into CIREN during the 2009-2010 contract year. Case reviews were held each month with an average attendance of 15-20 persons; they have also been attended by representatives from the automotive industry and from other CIREN centers. The NSC's CIREN center continued partnerships with the following agencies/organizations: Johns Hopkins University Applied Physics Lab; Maryland State Police; Baltimore County Police Department; Office of the Chief Medical Examiner (OCME); Maryland Highway Safety Office; Pennsylvania State Police; and Children's Hospital of Philadelphia.

Under a contract with the Maryland Highway Safety Office (MHSO), several presentations were given by NSC researchers related to the Southern Maryland DriveCam project. DriveCam is an in-vehicle monitoring device that has been installed in the vehicles of over 220 teens in Southern Maryland to evaluate their driving behaviors and the levels of parental involvement in the development of their driving skills. Data collection continued through September 2010, and preliminary results were given at several State and County task force meetings. Results have also been presented at the 2011 Lifesavers Conference in Phoenix, Arizona. This conference is the premier national highway safety meeting in the United States.

During the past year, the Maryland Crash Outcome Data Evaluation System (CODES) team has continued the role of Program Resource Center (PRC) for the national CODES data network. The PRC, in conjunction with the Technical Resource Center (TRC) at the University of Utah, provide coordination and support for the 17 states currently participating in the program. On State and local levels, data provided by the Maryland CODES staff are used for portions of the Benchmark and Annual Reports compiled by the Maryland Highway Safety Office. NSC staff members serve on the Traffic Records Coordinating Committee, the State Highway Administration's Strategic Plan Update Committee, the national Traffic Records Advisory Committee, and Maryland's Partnership for a Safer Maryland. The PRC coordinates the NHTSA CODES Grand Rounds Electronic Seminars. These webinars highlight applications, innovations, and best practices on data uses, as well as collaborations and relationship-building. The 2010 webinar had 85 participants join to learn about NHTSA's CODES program's current status, operational objectives, and how CODES applications can be of help to them, their State, and their current projects. On June 21-23, 2010, the PRC conducted a comprehensive CODES Annual Training Meeting in Crystal City, Virginia. Approximately 40 CODES representatives from 17 States and NHTSA participated in the training.

The NSC is continuing its collaborative efforts with other state agencies to make highway safety data available to the public, via the internet, in the form of "canned" reports and queries. Many of these products, including a monthly fatality report prepared for the Maryland Chiefs of Police, are available at http://nsc.umaryland.edu.

NSC investigators are focusing on motorcycle safety as well. The NSC was awarded funding from NHTSA to document the types of helmets worn by motorcycle operators involved in serious roadway crashes. This information, along with additional survey tools, will be used to help further identify the types and severity of motorcycle crashes occurring within Maryland.

The NSC is also creating data collection tools, a database, and an evaluation plan for the state's Strategic Highway Safety Plan (SHSP) with funds from the MHSO. The NSC is collecting data from partners around the state, analyzing and evaluating grantees of the MHSO as well as other partners involved in the SHSP, which is mandated and managed by the federal Department of Transportation.

Alcohol Related Injuries: Gordon Smith, MB ChB, MPH, has recently been awarded two grants by NIH to study the role that alcohol use and alcohol hangovers play in trauma and subsequent mortality. The first project, entitled "Alcohol involvement in a cohort of trauma patients: Trends and future mortality" is innovative because it will link unique longitudinal data on alcohol consumption by R Adams Cowley Shock Trauma Center patients with a national death register to identify patients who die after discharge. The objective of this proposal is to develop a comprehensive toxicology database on alcohol involvement in non-fatal injuries, spanning 1983 to the present, to use this data to evaluate trends in alcohol involvement in non-fatal injuries over time, and to determine how an elevated BAC on admission relates to subsequent mortality risk. The second project, entitled "Hangovers and Traffic Injuries: Is Alcohol's Influence Greater Than Expected?" will identify and quantify the role of residual effects of alcohol in traffic injuries by assessing biomarkers of recent alcohol consumption in motor vehicle crash drivers admitted to the Shock Trauma Center. The two grants are awarded for five years each, and represent over $4.7 million in funding.

Prehospital Care: A study sponsored by the U.S. Department of Defense is underway to collect vital signs data in trauma patients transported from the scene of their injury through resuscitation at the Shock Trauma Center. The objectives are to determine trauma patient outcomes and identify therapeutic interventions between field encounter and completion of resuscitation. This work may result in decision aids for military and civilian prehospital providers to improve the quality of prehospital care, identify emergency surgery needs before hospital arrival, and increase survivability of the seriously injured. This study is part of a three-year, multi-million dollar initiative aimed at studying all aspects of traumatic brain injury.

Training Activities

Domestically, during FY 2007, the NSC was awarded a prestigious T-32 training grant, entitled "Injury Control and Trauma Response," from the National Institute of General Medical Sciences of the National Institutes of Health. This grant is to train postdoctoral fellows in the needed critical skills to conduct high-quality injury-related research. This five-year grant provides funding for four trainees per year for two-year fellowships. The first NIH-supported R Adams Cowley Research Fellow started in July 2007, and a total of eight fellows have been appointed since the inception of the program.

Internationally, continued funding by the Fogarty International Center of the National Institutes of Health through their International Collaborative Trauma and Injury Research Training Program has provided for training in the United States and the Middle East of health professionals in a number of injury prevention and response-related courses. The material covered in these various courses includes injury epidemiology, emergency preparedness and disaster response, and the clinical care of trauma patients. As a key component of this grant, five Egyptian physician trainees came to the United States during June and July of 2007 to increase their knowledge and understanding of injury-related research. Four additional Egyptian physicians were hosted during June and July of 2008, and another four were hosted in 2009. These students returned to Egypt and are now applying their new knowledge through research projects to decrease the significant injury-related morbidity and mortality in Egypt. Through this grant, more than 300 Egyptian, Iraqi, and Afghan physicians have been trained during the past three years. Overall, these courses are designed to strengthen injury prevention and control research and practice within Egypt and the Eastern Mediterranean region.

MIEMSS-NSC MOU

Through a cooperative MOU agreement, the NSC continues to support data management and data analysis needs as requested by MIEMSS. Focus of the past year has been on the development of standardized procedures and documents for analysis of data trends from previous years. On-going activities include targeted data analysis efforts and assisting with the development of a standardized data dictionary and report templates for the new eMEDS system. Additionally, there has been the development of an Emergency Medical Services Research Interest Group (EMS RIG) with members from MIEMSS, University of Maryland, and Johns Hopkins University. The purpose of this group, which currently meets monthly, is to help further EMS research within Maryland and nationally.

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