



maryland institute for emergency medical services systems

MIEMSS

2009–2010
Annual Report



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.



2009–2010 ANNUAL REPORT

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Mission/Vision/Key Goals

MISSION

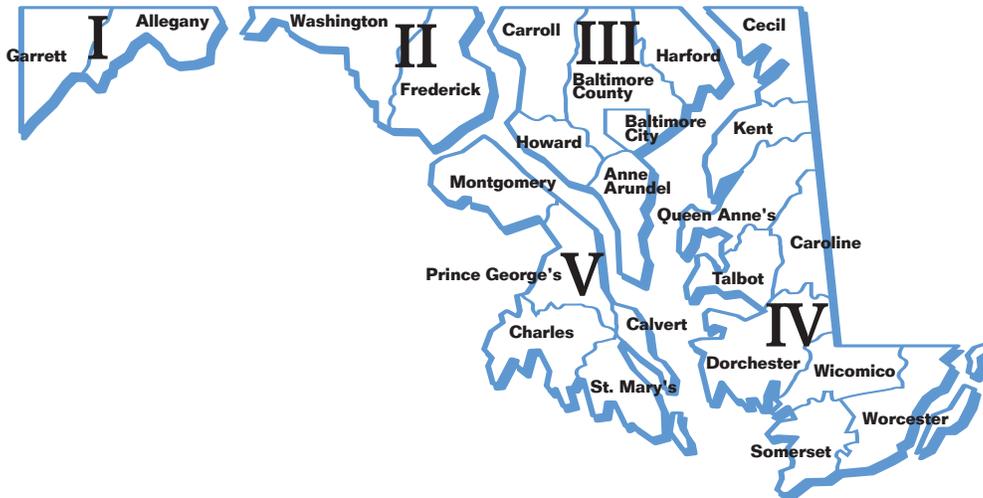
Consistent with Maryland law and guided by the EMS Plan, to provide the resources (communications, infrastructure, grants, and training), leadership (vision, expertise, and coordination), and oversight (medical, regulatory, and administrative) necessary for Maryland's statewide emergency medical services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

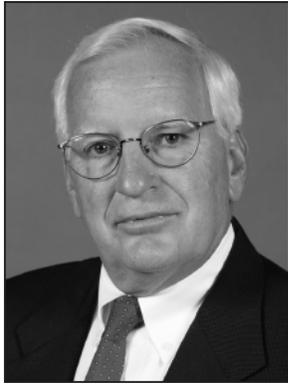
VISION

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.





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

FROM THE EMS BOARD CHAIRMAN

This Annual Report marks the close of a decade during which Maryland's statewide EMS system has made concerted efforts to evolve and strengthen in order to meet

the prehospital emergency needs of critically ill and injured patients in an ever-changing environment and to position the system for continued success in the next decade. Over the past ten years in particular, while our EMS system has worked diligently to ensure effective and ongoing operation of our system, we have also worked to translate advancements in science, medical treatment, and technologies, and related computer and communications applications to the prehospital emergency care environment. Because of our success in this endeavor, we have an effective EMS system today that has a firm foundation for meeting tomorrow's challenges.

Maryland is fortunate to have been able to take advantage of important medical and technological advancements in prehospital care. Improvements in information technology, including a new electronic patient care reporting system for prehospital providers (eMEDS or electronic Maryland EMS Data System), an integrated EMS communications network that makes information on hospital and EMS capabilities instantaneously available to emergency personnel, and a statewide IP-based public safety communications network, are streamlining and increasing the speed and availability of information on critical emergency system resources, as well as the accuracy and utility of patient care records. Advances in emergency medical care, including cutting-edge treatments, such as therapeutic hypothermia for patients who

have been resuscitated from cardiac arrest, can improve outcome in prehospital emergency patients.

The Maryland EMS System continues to be recognized as a national and international leader. Maintaining that lead requires that we identify system needs, set clear priorities, use data effectively, and work collaboratively to configure and support our system to meet current and future needs. Ensuring that our EMS system continues to meet the needs of critically ill and injured patients and incorporates important medical and technological advances into patient care requires effective program, operational, and fiscal management.

Maryland's EMS System is supported by a surcharge on vehicle registration fees that funds the EMS Operations Fund (EMSOF). EMSOF resources are used to ensure the operation of several of the components of our EMS system, including MIEMSS, the Maryland Fire & Rescue Institute, the Aviation Command of the Maryland State Police and its Medevac helicopters, the R Adams Cowley Shock Trauma Center, the Volunteer Company Assistance Fund, and the Amoss Fund which supports local fire, rescue, and ambulance services. The continued solvency of the EMSOF is key to ensuring the ongoing operation of the statewide system.

On behalf of all the members of the State EMS Board, I want to convey our sincere appreciation to Maryland's volunteer and career EMS providers and firefighters, emergency, trauma, and specialty care physicians, emergency nurses, hospitals, and state and local agencies. The dedication of these individuals and entities and their commitment to cooperative excellence will continue to ensure the success of our statewide EMS System in the next decade.



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

MIEMSS

FROM THE EXECUTIVE DIRECTOR

With the MIEMSS Annual Report, we take stock of our efforts over the past year and reflect upon the overall progress of our statewide system, even as we continue to move forward into the next year. The roots of Maryland's EMS system are found in the efforts of those who, nearly half a century ago, dedicated their life's work to improving emergency and trauma care for the critically ill and injured. In so doing, a statewide system was launched to provide effective prehospital treatment for all emergency conditions. The overarching philosophy that guided work in the early days is the same that guides the system now: ensuring that the right patient gets to the right hospital that can provide the patient with necessary and life-saving treatment.

Maryland's EMS system has expanded to build upon the early groundwork laid for systems of care for trauma, burn, perinatal, and other emergencies to now include sophisticated systems of care for cardiovascular and neurological emergencies. In the past two years, Primary Stroke Center hospitals have been designated, and development of standards for Comprehensive Stroke Centers is underway. During this next year, MIEMSS will designate Cardiac Interventional Centers that treat patients who have suffered acute ST-elevation myocardial infarction. For these patients, emergency medical personnel will apply advanced technology to aid in rapid field diagnosis and use sophisticated communications equipment to alert the closest designated Cardiac Interventional Center as to patient condition and treatment need. The Cardiac Interventional Center will then mobilize the necessary medical expertise and hospital equipment for rapid treatment of this life-threatening condition.

Other recent EMS system developments are targeted to enhance not only patient care but also to aid the EMS provider. MIEMSS is poised to implement a new electronic patient care reporting system ("eMEDS" - short for electronic Maryland EMS Data System) that will improve the completeness and utility of the prehospital patient medical record. The new system is being successfully

used in EMS systems in 21 states and its adoption will help providers collect accurate and timely prehospital information and ensure Maryland compliance with national data collection standards. Other significant ongoing data collection efforts include the MIEMSS Helicopter Utilization Database that allows each EMS jurisdiction's medical director and quality assurance officer to review medevac requests and transports within hours of the occurrence to help ensure appropriate utilization of air and ground transportation resources.

Also important for EMS providers and their patients is an increased focus on ambulance safety that is occurring at both state and national levels. MIEMSS is working with EMS providers, jurisdictions, and researchers to explore the factors associated with prevention of ambulance crashes and to consider changes in training, operations, or vehicles that could improve patient and provider safety. MIEMSS has also recently convened another group to evaluate and monitor our statewide approach to the management of out-of-hospital cardiac arrests. This group will examine and make recommendations regarding the care provided before and after EMS arrives as well the hospital care of patients successfully resuscitated in the field.

MIEMSS is also continuing efforts to transition to the new National EMS Education Standards for EMS Providers. These national standards, which were completed in 2009, define the minimal entry-level educational competencies for each level of EMS provider. The MIEMSS Education Standards Committee, which includes representatives from volunteer, career, commercial, and educational programs, is reviewing the national standards and planning how they should be implemented in Maryland over the next few years.

These are but a few of the efforts underway to ensure the continued successes of Maryland's EMS system. Maryland continues to benefit from the outstanding efforts of the many individuals and organizations whose devotion to ensuring effective prehospital care can be seen throughout our exemplary EMS system. MIEMSS thanks you for your work and looks forward to continuing to work with you.

MIEMSS

ADMINISTRATION

Mission: To help secure and effectively utilize financial and personnel resources that will enable MIEMSS to meet its goals and objectives in a manner that is consistent with state regulations and policies.

The Administration Office is responsible for the financial, purchasing, grants, and human resources services of MIEMSS.

The finance staff is responsible for accounting processes to ensure that expenditures are in compliance with applicable regulations. The staff develops the budget, tracks and monitors expenditures, and performs year-end closing. The staff tracks special funds, grant funds, and reimbursable funds.

The purchasing staff procures all necessary supplies, materials, and services for the MIEMSS staff. It is also responsible for the timely payment of invoices.

The human resources staff is responsible for recruitment, timekeeping, payroll-related services, benefits and retirement coordination, personnel evaluation processes, and other traditional personnel functions.

The Administration Office is also accountable 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 on pages 3-4.

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 2010 there were 2,044 patients transported by the Maryland State Police (MSP) Aviation Command. Of these patients, 2,005 (98%) were transported from the scene of injury at the request of the local fire services, and 39 (2%) were transported between hospitals to a higher level of care.

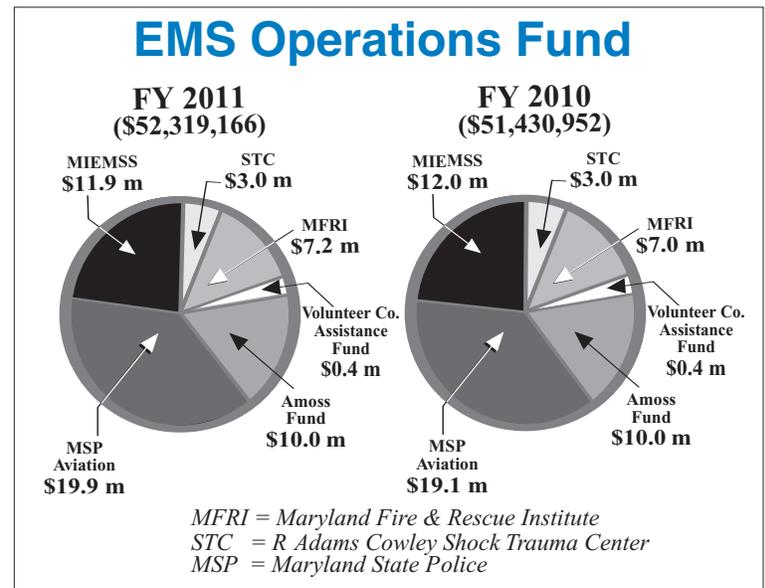
Types of calls included the following:

• Motor vehicle crashes	935
• Falls	373
• Pedestrians	119
• Gunshot wounds	42
• Burns	41
• Assaults	33
• Industrial accidents	26
• Stabbings	20
• Drownings	15
• Hand injuries	9
• Eye injuries	3
• Hyperbaric patients	3
• Electrocutions	1

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 International Trauma Life Support (ITLS), allowed life-like simulation of patient care situations as would be faced by flight paramedics in the course of their normal duties.

On March 19, 2010, the Maryland State Police Aviation Command celebrated 40 years of providing medevac service to the citizens of Maryland. In addition to having the oldest medevac program in the country, Maryland is unique among the fifty states in ensuring that its medevac, search & rescue, and law enforcement services are available to all of its residents in a timely fashion, and are provided as a matter of public safety.



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.

MIEMSS FY 2010 EMS Operations Fund Appropriation by Department

Administrative Offices	
Executive Director, Legal Office	\$709,294
Financial & Human Resources Administration	1,272,004
Planning/Program Development/Total Quality Management	236,329
Communications	
Equipment	1,203,793
Maintenance	1,822,513
EMRC/SYSCOM	1,188,669
Education/Support Services	
Education, Licensure, & Certification/Compliance	1,401,894
Educational Support Services	560,634
Information Technology	1,411,928
Medical Services	
Office of Medical Director	603,701
Office of Hospital Programs	344,431
EMS-Children	180,744
Regional Administration	980,864
TOTAL	\$11,916,799

MIEMSS FY 2010 Expenditure by Object Code (Includes All Funds)

FY 2010	Actual
Number of Positions	94.1
Salaries and Wages	\$7,645,049
Technical/Special Fees	608,201
Communication	1,523,329
Travel	73,626
Fuel and Utilities	117,938
Motor Vehicle Operation and Maintenance	178,932
Contractual Services	1,533,502
Supplies and Materials	208,354
Equipment—Replacement	177,374
Equipment—Additional	53,334
Fixed Charges	83,702
Grants	815,380
Total Expenditure	\$13,018,722

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 56 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.

The Attorney General's Office participated in a variety of committees, task forces, and work groups, including the task force monitoring the Automated External Defibrillator (AED) program. 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 oversaw the participation of MIEMSS in the Emergency Medical Services Do Not Resuscitate program and provided support to the agency in the verification of jurisdictional EMS operational programs.

The Attorney General's Office made educational presentations at several venues, including EMS Care, the Medical Director's Symposium, and Pyramid. In addition, the Attorney General's Office helped to develop and present a new module on due process for Quality Assurance Officers.

The Attorney General's Office participated in drafting several information technology procurements, including a request for proposals for an electronic patient care reporting program and 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..

MIEMSS 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 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 Communications Engineering Services has deployed many new microwave systems across the state. The Communications Engineering Services 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.

Communications Engineering Services has continued to work with DPS Telecom on the development and refinement of the integrated site alarm and microwave monitoring system. MIEMSS continues to play a leadership role in the day-to-day maintenance of the Public Safety Microwave System.

Communications Engineering Services continues to be an active partner in the SIEC Executive Technical Committees to build-out the needed tower and microwave infrastructure to support the 700 MHz radio system.

Communications Engineering Services has completed the final acquisition of new narrowband-capable base stations and is now deploying the eight remaining stations needed to meet the 2013 Federal Communications Commissions (FCC) narrow-banding mandate. To date, the infrastructures in Regions I, II, III, and V are narrowband-ready. Communications Engineering Services has begun replacing non-narrowband-capable mobiles and portables assigned to field providers through a 100% reimbursable Radio Grant process.

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 50 hospital locations, 13 law enforcement locations, 47 health locations, 56 emergency management locations, and 2 transportation locations. The department is currently working with the State Highway Administration to tie DEMSTel to each State Highway shop. The department is striving to connect 31 additional hospitals, 4 PSAPs, and 5 EOCs before the end of the grant period of June 30, 2011.

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/911), 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.

Communications Engineering Services has continued its partnership with the Prince Georges Office of Homeland Security's project to deploy licensed microwave to hospitals in the National Capital Region (NCR). This ongoing project has deployed high-capacity microwave to key hospitals and towers in and around Washington, DC.

Communications Engineering Services assisted with the design and implementation of communication circuits in support of Allegany's new Public Safety Answering Point (PSAP). The department was a key player in the successful relocation of Allegany from their Backup PSAP to their new Primary PSAP. In concert with the relocation, upgrades were made to the Western Emergency Medical Resource Center (EMRC) to enhance capabilities and provide for the future integration of Washington County into the Western EMRC system.

Communications Engineering Services has developed an in-house custom command and monitoring software application to allow remote control and maintenance of the voting systems used statewide by MIEMSS and other agencies. This software solution, not commercially available from the voter manufacturer, allows the MIEMSS to move closer to IP-based communications which will allow greater survivability of systems. Evaluation of VoIP technologies continued through FY 2011, as necessary building blocks for a TCP/IP command center supporting both legacy and P-25 digital radio systems.

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 2010

• Incidents Reported to IRC	505
• IRC Investigations Initiated	318
• IRC Investigations Conducted	265
• IRC Investigations (FY 2009) Continued	43
• IRC Complaints Forwarded to PRP	56
• Complaints Dismissed by PRP	2
• Complaints Forwarded to EMS Board	54
<i>EMS Board Action</i>	
• Reprimands	15
• Probation	24
• Suspensions	5
• Revocations	4
• Remedial training	3
• Surrenders	2
• Evaluations	3
• Applications Denied	2
• Case Resolution Conferences	8
• Dismissed	2
• Counseling	1
• Rehab	7
• Random Testing	15
OAH Hearings requested	9
OAH Hearings conducted	0
OAH Hearings defaulted	0

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 will also provide 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 charge.

In FY 2010, the EMS/DNR program provided 79 in-service trainings to 1,200 health-care providers about the use of the form. Additionally, the EMS/DNR program responded to phone calls from the public for assistance in obtaining and using the 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 Office of Educational Support Services 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 dissemination of information to the Maryland 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 2010 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, followed by a reception for the award winners. Senators Barry Glassman and Donald F. Munson, and Delegate David D. Rudolph participated in the presentations. Governor's proclamations in recognition of EMS for Children Day and EMS Week were delivered. 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 "2010 Maryland Medical Protocols" manual to EMS providers. It took on the look of an interactive dialogue with Medical Directors and an EMS provider host. The Learning Management System was utilized by MIEMSS, which allows EMS providers to acquire continuing education through the MIEMSS web page. Video production and graphics were produced to assist with these new 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 two major educational rollouts, one in March 2010 after the first death of a child from hyperthermia this year and one in May as the outside temperatures started to climb. This year's campaign slogan was: "Never Leave Your Child Alone." Another major EMS news event occurred in May when the National EMS Memorial Bike Ride came to 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 video, saw 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 "Trauma Decision Tree and Protocol Clarification Module" and "Meet the Protocols: The 2010 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 Don't Drive Drunk messages at Ravens games that are posted on the www.stopdrunkdriving.net web site. Other productions included a 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 emergency services providers and the public, "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.

Statewide prevention initiatives were developed through partnerships with other state and local government agencies. Multiple public service announcements

(PSAs) were produced on various prevention topics. 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, and the Maryland Committee on Trauma, 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. Print and broadcast projects were produced in both Spanish and English. 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.

Brian Maguire returned from his Fulbright Fellowship in Australia on preventing injuries among EMS personnel.

The department welcomed Gary Williams, Jr., alum of the program, as the clinical coordinator for the paramedic track. Gary was formally a paramedic and instructor with Acadian Ambulance Service in Louisiana. He replaces Michael Cooney who left for a position in the Middle East.

The Emergency Health Services (EHS) Department continues to maintain Maryland accreditation from MIEMSS and national accreditation through the Commission on Accreditation of Allied Health Education Programs. EHS majors are active in various Maryland emergency services departments, and many out-of-state students remain in the Maryland area after graduation. Job placement for graduates in both the management and paramedic tracks remains strong.

The Undergraduate Management Track internship program placed three students in Federal, Maryland State, and Baltimore-based agencies. All students worked on projects of value for their agencies, producing

work products that will be used by the agencies in an ongoing fashion. There is a larger group of seniors that will have their capstone internship experience in 2011. The undergraduate program continues to attract both full- and part-time students. We look forward to having a curriculum revision implemented by Fall of 2011.

The clinical paramedic program has continued to see an increase in student enrollment and is preparing to implement the new EMS education standards. In order to provide a realistic educational experience, the department has upgraded to the LP 15 and purchased a child human simulation manikin, as well as an additional adult manikin.

The department's Graduate Program continues to prepare local and international students for leadership roles in various aspects of EMS, including the increasingly important crossover between health, EMS, and emergency management. Both faculty and students are publishing research in respected peer-reviewed journals; this adds to the discourse on EMS developments. EHS Graduate Program alumni now occupy increasingly important leadership positions in agencies such as the Department of Homeland Security, the Public Health Service, Centers for Disease Control and Prevention, and numerous state EMS offices. The EHS Graduate Program also co-sponsors and co-directs the joint UMBC-UMB EMS Fellowship Program for qualified emergency physicians.

The department's Critical Care Emergency Medical Transport Program (CCEMT) continues to grow, now having served over 9000 students through approximately 600 courses offered nationwide and internationally. The program has grown to 48 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 650 students; it is offered at 10 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 IAFF 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 911 provider and other affiliated healthcare professions.

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, inter-agency 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 and resources for pediatric care, the 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, the federal EMSC Partnership grant, EMSC-related research activities, the Child Passenger Safety & Occupant Protection Healthcare grant project, the Safe Kids Maryland state coalition with 8 local coalitions and 3 local chapters, and the Maryland RISK WATCH® Champion Management Team with 12 local communities.

National Appointments in EMS & EMSC

During the 2009- 2010 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 the EMSC National Resource Center. Both also remain active participants with the Committee on Pediatric Emergency Medicine (COPEM), part of the American Academy of Pediatrics (AAP). Dr. Wright was appointed 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 as the National Association of State EMS Officials' Pediatric Emergency Care Council Liaison Representative. In addition, Dr. Wright continues to serve on the Pediatric Advisory Committee of the Food and Drug Administration (FDA) in his role as Senior Vice-President of the Child Health Advocacy Institute at the Children's National Medical Center in D.C. His term will end in June 2012. The committee advises the FDA commissioner on pediatric issues, including research priorities, ethics of clinical trials, labeling, and adverse events. Ms. Wright-Johnson was appointed to the National Association of State 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's or local community's response preparedness for mass casualty motor vehicle crashes on rural highways.

EMSC Program Activities

The state PEMAC Committee continued to meet on a bimonthly basis throughout FY 2010 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; Research & Data; and Family Centered Care. 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 – Protocols; September – Pediatric Research; November – Injury & Prevention. 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.

Month and Location	Conference Title	Pediatric Components
August 2009 Ocean City, MD	Peninsula Regional Medical Center Trauma Conference	Display: SECURE Ambulance Safety and Child Passenger Safety
September 2009 MIEMSS	PEARS: Pediatric Emergency Assessment, Recognition and Stabilization	Pilot Course: Collaboration with Johns Hopkins HOPE, Maryland School Health Guidelines Committee and the MIEMSS BLS Subcommittee
October 2009 Solomons, MD	Pyramid 2009	Preconference: Provided pediatric airway and spinal immobilization teaching in the EMTB Skills course. Workshops: Seizing Midazolam, Unrecognized Cardiac Emergencies in Children, Pediatric Neurological Trauma Displays: SECURE Ambulance Safety, Child Passenger Safety (CPS) & Occupant Protection (OP) Healthcare Project
October 2009 Silver Spring, MD	Emergency Nurses Association Barbara Proctor Conference	Display: CPS & OP Healthcare Project Presentation: Family Presence in Resuscitations
January 2010 Tilghman Island, MD	Winterfest Conference 2010	Preconference: Pediatric Vascular Access workshop Workshops: Hot Hot Hot – Assessing Pediatric Fever, Perilous Pediatric Poisonings, Pediatric Assessment & Communication Techniques for Success Displays: SECURE Ambulance Safety, CPS & OP Healthcare Project, VAIP Equipment Inspection Process
January 2010	Trauma Case Reviews – Webcast from RA Cowley Shock Trauma Center	Presentations: The Deadly Combo – CO and Children
February 2010	National ENA Leadership Conference 2010	Presentations: Tips on How to Obtain Funding to Support Your Injury Prevention Activities and Advocating for Children: Become involved in your state EMSC Program
March 2010 Rocky Gap, MD	Miltenberger Emergency Services Seminar 2010	Workshops: Falls in Children, Anaphylaxis in Children and Adults, The Deadly Combo - CO and Children. Displays: SECURE Ambulance Safety, CPS & OP Healthcare Project, VAIP Equipment Inspection Process
March 2010 Philadelphia	National Life Savers 2010	Poster: Child Passenger Safety & Occupant Protection Education: Getting Emergency Care Providers Involved
April 2010 Linthicum, MD	ENA by the Bay 2010	Presentation: Clinical Research in Traumatic Brain Injury, Power in Numbers: The Pediatric Applied Research Network Displays: SECURE Ambulance Safety, CPS & OP Healthcare Project
April 2010 Frederick, MD	Frederick County EMS Seminar	Workshops: Pediatric Patient Assessment, Pediatric Airway Management Skills, Pediatric Lower Extremity Immobilization Skills
May 2010 Alexandria, VA	National EMSC Program Meeting 2010	Presentation: Child Advocacy in Practices: Different Hats, Different Voices: How Everyone can Affect Change
June 2010 Ocean City, MD	Maryland State Firemen's Convention	Child and Family Interactive Displays: Risk Watch - The Great Safety Adventure – Focus Poison Safety, Water Safety, Pedestrian & Rail Safety, Fire Safety, Make the Right Call and Fall Prevention in Home.

On May 20, 2010, 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. Five young Marylanders received awards for their actions that ensured another 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 20, Daniel Ochenschlager, MD, FAAP received the Maryland EMS for Children Award in recognition for his national leadership in pediatric emergency medicine, research, education, and child advocacy. Dr. Ochenschlager is the Region IV Pediatric Medical Director and previously held that position in Region V, teaching PALS and PEPP courses across the state. In 2010, Dr. Ochenschlager became the vice-chair of the state PEMAC and continues to provide leadership for protocol development.

The Pediatric QIC continues to coordinate the training for 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. Work has begun on an outpatient burn central registry.

EMSC Grant Activities

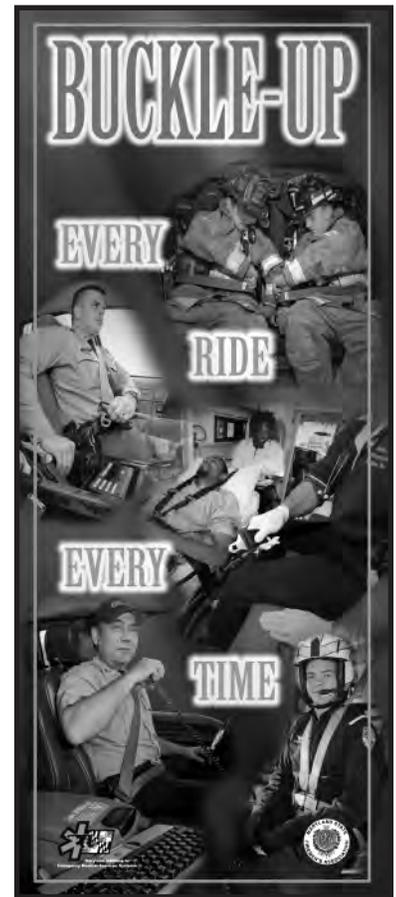
Federal EMSC grants are coordinated through the Maryland EMSC Program Office, involving statewide projects, specialized targeted issues, projects, and research initiatives at academic universities. The Maryland EMSC Program continued to provide leadership in the coordination of the Atlantic (now 10 states) 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 in 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 second year of a three-year EMSC State Partnership Grant from the Maternal Child Health Bureau/Health 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.

Pediatric EMS & Hospital Education

During each of the EMS and Emergency Nursing educational seminars and conferences in Maryland for 2009-2010, 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 (see page 10). The EMSC Program staff and medical directors from PEMAC continue to support the Maryland Enhanced Pediatric Education for Prehospital Professionals (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.

The EMSC program wrote and produced a new training DVD entitled “Establishing Intraosseous Access” that was distributed across the state and to the 55 other EMSC programs across the country. The DVD was designed for use in both prehospital and hospital training programs and has been the basis for the development of the revised Pediatric Vascular Access Workshop offered as an eight-hour preconference course. Danielle Dunn, MS, NREMT-P, 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 ninth 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 and healthcare professional practices and throughout the EMS and Fire Community. The grant year continues to provide CPS & OP resources to primary care prac-

tices; to hospital units including emergency, pediatric, nursery, and neonatal intensive care unit (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 the National Life Savers Conference in Spring 2010. Quarterly CPS Conference Calls are hosted each year, with 2009-2010 topics including the Infant Car Seat Challenge, Seat Belt Fit: With and Without Boosters, Higher-Weight Harness Options, and Vehicular Hyperthermia in Children. Each conference call is available on the MIEMSS EMSC website, with audio portion included in the PowerPoint 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. 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 “Ticket It or Click It” law enforcement campaign. “SECURE” interactive displays have been at each EMS regional and state conference in collaboration with the MIEMSS State Office of Commercial Ambulance Licensing & Regulation and the MIEMSS Department of Educational Support Services. 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 are 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. Having 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 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 November, PEMAC and the Partnership jointly held a prevention forum featuring faculty from the Johns Hopkins School of Public Health.

The Maryland RISK WATCH® Champion Management Team 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 eight 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 12 communities working with RISK WATCH® materials and planning for 2009-2010 in school, after-school, day-care, and department programs. These include:

- **Carroll County** has RW Injury Prevention at two elementary schools.
- **Cecil County Emergency Services** is part of the RISK WATCH® Team, with the Emergency Operations Center leading the program.

- **Frederick County** has resources for after-school programs in both private and public programs.
- **Howard County's Parks and Recreation** has the RW materials for education in before- and after-school programs
- **Johns Hopkins Children's Center** Pediatric ED and Child Life use RW with families on safety education.
- **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.
- **Prince George's County Fire Association** is working with Family Day Care Centers in Forestville.
- **Prince George's County Fire & EMS Department** continues to expand its program with over 70 day-care programs, and focused on disaster preparedness during the past school year.
- **Rock Hall VRF** is interested in restarting RISK WATCH® activities both in the school and in community programs.
- **Calvert County** is looking into incorporating RISK WATCH® with St. Leonard VFD community activities.
- **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.

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 200 infants, toddlers, and young children and 500 families visited part or all of the "Steps to Safety" display, which was featured at the top of the second floor of the convention center. With many schools still in session after the prolonged snow storms of February 2010, the team provided more information to parents and grandparents than to school-age children this year. The "steps" included the following stations:

- **Fire! What Do You Do**, with the tabletop HAZARD HOUSE focus on fire and injury risk areas and handouts for children and parents
- **Make the Right Call: 9-1-1**, with the MSFA Simulator and Miss Fire Prevention volunteers and handouts for children

- **Is It Safe to Eat? Touch?** with Medication vs. Candy display and a DVD from Poison Centers, along with handouts focused on home poison safety, outdoor plant poison safety, children and senior adult poison prevention, and posters for all ages
- **Safety at Home: Fall Prevention for Senior Adults**
- **Walk Safe – Stay Safe:** Safe Kids display with materials from the Railroad Safety campaign and Walk to School / Bus to School Safely
- **Water, Water – Everywhere:** Maryland Natural Resources Police educational experience with life jackets and boat safety
- **Information Tools for adults and teens:** Websites and templates for injury and fire prevention handouts to plan for company events

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 the 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 2009-2010, the coalition meetings have included risk-area topic presentations. Information is on the website from these presentations: Fire & Burn Safety – Novelty Lighters & Children - High Risks & Call for Action; Holiday Safety in & around the House; Railroad Safety –Pedestrian Responsibilities; Water Safety with Children & Youth –Department of Natural Resources; Child Passenger Safety Update –Kids in Safety Seats. In 2010, the Maryland and National Safe Kids programs dedicated website and press releases to an important and high-risk danger to infants and young children –Hyperthermia secondary to being left alone in a vehicle. The campaign had two major educational roll-

outs, one in March 2010 after the first death of a child from hyperthermia in 2010 and one in May as the outside temperatures started to climb. This year's campaign slogan was: "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 are left unattended in a vehicle. More information is available on the website at www.safekidsmd.org. An educational webcast was held in June 2009 that is located on the MIEMSS CPS & OP website www.miemss.org/EMSCwww/CPSHome.htm.

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 2010, the Emergency Medical Resource Center (EMRC) handled 206,788 telephone calls and 155,941 radio calls. Of these 362,729 calls, 133,218 were communications involving a patient or incidents with multiple patients, while 17,186 of these calls involved on-line medical direction.

In FY 2010, the System Communications Center (SYSCOM) handled 27,152 telephone calls and 2,732 radio calls. Of these 29,884 calls, 4,275 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 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 661 calls for the Maryland Department of Health and Mental Hygiene (DHMH) 24-hour Duty Officer.

OFFICE OF GOVERNMENT AFFAIRS

The MIEMSS Office of Government Affairs acts as a liaison between the agency and the Executive and Legislative branches of State government to develop 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 2010 Legislative Session, EMS-related legislation included the following bills that were passed by the General Assembly and signed into law by the Governor:

- The membership of the Statewide Emergency Medical Services Advisory Council (SEMSAC) was expanded to add a pilot and a member of the public at large.
- Important safety protections for emergency services personnel were enacted in the form of legislation which requires a driver, when approaching from the rear an emergency vehicle that is stopped, standing, or parked on a highway and, using any authorized visual signal, to either make a lane change or slow to a reasonable and prudent speed.
- The application of a \$7.50 surcharge for certain traffic cases was expanded, and monies collected are to be credited to the Volunteer Company Assistance Fund to a limit of \$20 million, after which monies are to be credited to the General Fund.
- The Governor is to proclaim the first Sunday in June as the day to honor fire, rescue, and EMS workers in Maryland who made the ultimate sacrifice in the performance of their duties and to order the State flag to be flown at half-staff that day. Also, the Secretary of State is to issue a State flag to the family of an EMS provider who is killed in the performance of duty.
- Legislation was enacted to expand the entities that can receive funds from the Amoss Fund or the Volunteer Company Assistance Fund to include fire, rescue, and ambulance companies located outside of Maryland if the company has been a member of the Maryland State Firemen's Association for at least the past 10 years and the company has a first due response area in Maryland.

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 remains the third leading cause of death in Maryland behind heart disease and cancer. The estimated direct and indirect cost of stroke in the United States for 2009 is \$68.9 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, 34 Primary

Stroke Centers have been designated. (See page 33 for a complete list of primary stroke centers.) A recent call for applications from hospitals requesting to be considered for designation as a Primary Stroke Center was published in the May 7, 2010 issue of the "Maryland Register." Two hospitals have submitted a letter of intent with applications to be submitted to MIEMSS by December 31, 2010. Verification site survey and designation will follow.

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. To facilitate the timely treatment and transfer of the acute stroke patient, the Stroke QIC established a workgroup to develop the Stroke Inter-Facility Transfer Guidelines and the Inter-Facility IV t-PA Transfer Guidelines. These guidelines were developed and approved by the Stroke QIC. Upon final approval from system stakeholders and the EMS Board, the guidelines will be implemented statewide.

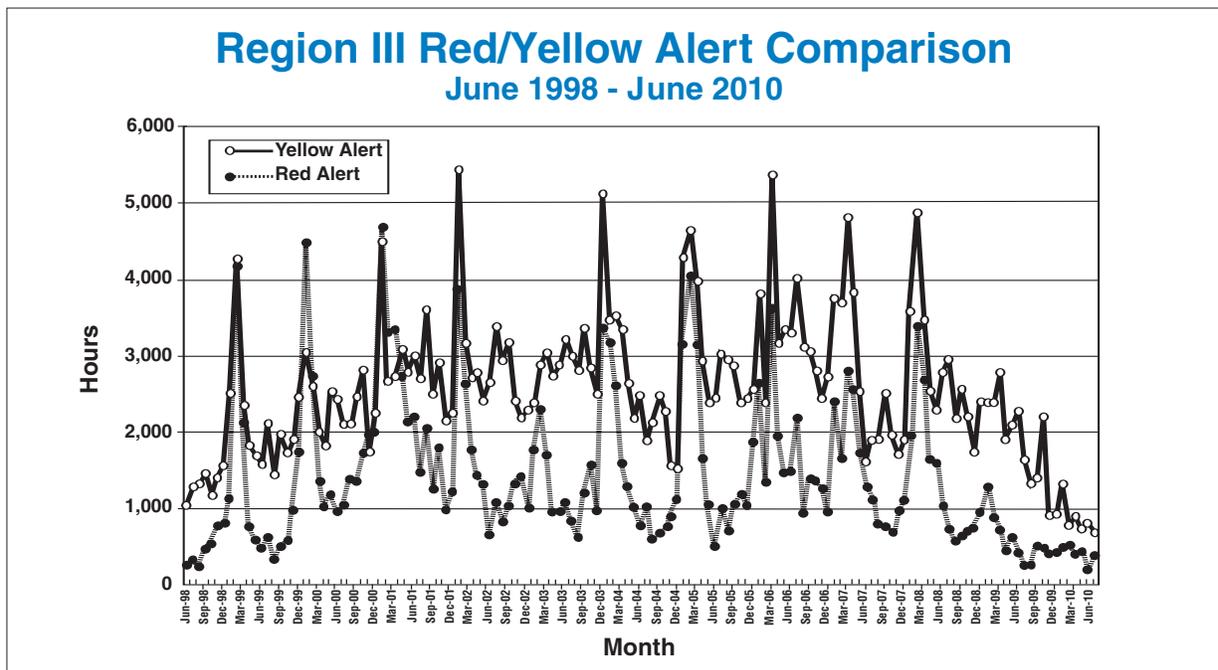
MIEMSS continues to work with various stakeholders, including the American Heart Association, the Executive Committee of the Maryland Stroke Alliance, physicians, and hospitals, on the develop-

ment 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 have been developed and are currently under review by system stakeholders. The regulations include structural and functional requirements for a hospital wishing to be designated as a Comprehensive Stroke Center.

MIEMSS received a grant from the regional chapter of the American Stroke Association (ASA) to accomplish online acute stroke education for prehospital providers. The American Heart Association's (AHA) Emergency Cardiac Care (ECC) branch deployed an online acute stroke prehospital care module. The stroke prehospital care module is an online course designed to increase a prehospital provider's knowledge about the two types of stroke and demonstrated potential stroke-related complaints. This course provides continuing education units (CEUs) at no charge to EMS personnel.

EMS Base Stations

Office staff continue to collaborate with the Office of the Medical Director on EMS Base Station verification during FY 2010. 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 2010, 17 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. Training was provided by a contractor on AIS coding and data abstraction for the trauma registry for all trauma centers' registrars and trauma managers. 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 that were identified during the 2008 Reverification Process. As a result of this process, several trauma centers have developed massive transfusion protocols and damage control surgery policies.

MIEMSS staff participated in the Burn Center reverification process conducted by the American Burn Association and the American College of Surgeon for the John Hopkins Bayview Adult Burn Center.

The Executive Director of MIEMSS appointed a work group staffed by Hospital Programs staff to review and update the current trauma center standards and regulations. A straw-man document was released to the members of Trauma Net for review and comment. The work group recommendations for the final draft are on hold until comments are received and the report on the current status and needs for the Maryland Trauma System is released by the Maryland Health Care Commission.

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 staff to coordinate the perinatal programs in the MIEMSS' Division of Health Care Facilities and Special Programs. (See page 33 for a complete list of perinatal centers.)

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.

Statewide, alert utilization again showed improvement, while the Maryland Department of Health and Mental Hygiene (DHMH) reported a unique 2009-2010 influenza season as it included the second wave of the H1N1 strain as well as seasonal influenza viruses. The seasonal influenza season ran from September 2009 to May 2010, with peak activity occurring in October 2009. Additionally, summer influenza activity, which normally decreases to numbers too low to detect, was higher than usual due to H1N1 (Source: Maryland Influenza Activity Report—2009-2010 Season Summary. Maryland Department of Health and Mental Hygiene (DHMH) Infectious Disease and Environmental Health Administration Office of Infectious Disease Epidemiology and Outbreak Response).



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 2009-2010 seasonal flu season.

In response to the non-seasonal H1N1 flu strain, MIEMSS partnered with DHMH and the Maryland Hospital Association and held a one-day H1N1 Summit for Maryland Hospitals. DHMH continues to monitor the number of reported H1N1 cases in Maryland, and MIEMSS is closely monitoring alert utilization as well. At this time, alerts do not appear to be increasing.

Public Access Automated External Defibrillator Program

The Public Access Automated External Defibrillator (AED) Program continues to flourish throughout Maryland. Under the Public Access Defibrillation (“PAD”) AED program, non-healthcare facilities that meet certain requirements are permitted to have an AED onsite to be used by trained laypersons in the event of a sudden cardiac arrest until EMS arrives. In FY 2010, MIEMSS processed 129 new applications and 197 renewal applications for a total of 326 AED program approvals. Currently, there are over 1,200 approved programs in the state, totaling approximately 2,900 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 Public Access Automated External Defibrillator Program has had 76 successful AED uses out of 354 reported incidents (22%). Success is measured by the patient having a return of pulse at EMS arrival or during EMS transport. Of the overall arrests, 207 were witnessed, and 60 of those witnessed arrests regained a pulse at the time of EMS arrival for a 30% save rate for witnessed cardiac arrests.

At the 2010 EMS Star of Life Awards Ceremony, MIEMSS was proud to honor the staff of the AED Program at the Talbot County YMCA and the Talbot County EMS System for saving the life of a member who collapsed from sudden cardiac arrest while exercising at the gym. The Talbot County YMCA participates in the Talbot County Operation Save-a-Heart program. Staff from both the YMCA and EMS were

in attendance at the ceremony and received the MIEMSS Director's Award for Excellence in EMS.

MIEMSS continues to work with the AED Task Force to evaluate the AED program for barriers and obstacles to participation and make recommendations to ease and encourage participation, especially in high-incidence locations of cardiac arrest. Looking ahead, MIEMSS will be expanding the role of the AED Task Force to address out-of-hospital sudden cardiac arrest from a more comprehensive perspective. Citizen CPR and AED will remain components of the overall objectives of the expanded Task Force. MIEMSS is also represented on the State Advisory Council on Heart Disease and Stroke which meets quarterly at DHMH.

STEMI System Development

MIEMSS continues to work with various stakeholders, including the Maryland Health Care Commission, American Heart Association, the Maryland Chapter of the American College of Cardiology, Maryland hospitals, and EMS providers on the development of a statewide system to treat patients with acute ST segment elevation myocardial infarction (STEMI). MIEMSS participates in the American Heart Association (AHA) Mid-Atlantic Affiliate of Mission Lifeline to identify best practices for statewide STEMI systems. MIEMSS will be working to designate all 23 hospitals that perform primary percutaneous coronary intervention (PCI) so that EMS providers will be able implement protocols to transport patients directly to hospitals that provide primary PCI. Effective July 1, 2008 all ALS providers were required to have received training in 12-lead electrocardiograph (ECG) administration and interpretation, and all ALS units in Maryland were required to be equipped with 12-lead ECG. Regional STEMI Committees have been formed and begun meeting to address the treatment of STEMI patients in Maryland. Each committee will 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.

INFORMATION TECHNOLOGY

Mission: To support MIEMSS and Maryland's EMS Community by providing technology leadership, support, and guidance to improve Maryland's emergency medical services through the appropriate use of information technology.

Major Focus in FY 2010

The Information Technology (IT) Department worked on five major areas of growth and improvement in FY 2010. 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.

Upgrading Applications

The HC Standard Patient Tracking application from Global Emergency Resources was upgraded, expanded, and moved to a virtual server platform. It continues to evolve as a highly available and sophisticated web-based patient and resource tracking application. HC Standard now gives the state and local agencies an effective mobile tool to track patients and resources during a major emergency. Two other long-standing applications, CHATS (County Hospital Alert Tracking System) and FRED (Facilities Resource Emergency Database) were upgraded and moved into the HC Standard software application. As a result they are centrally integrated with other HC Standard features for hospitals and healthcare officials, so that they are more available, robust, and secure.

Expanding Capabilities

The agency added capability in creating a new Learning Management System (LMS) for use by EMS providers statewide. The LMS was developed in-house, quickly, and for a very small cost, using open source software. The LMS saw its debut this spring as the MIEMSS Licensure & Certification (L&C) office used it to present and track an online review of new 2010 EMS medical protocols to 26,000 providers statewide. L&C is continuously developing new courses and content to present online using the LMS.

Another example of expanded capability was the development of the Helicopter Utilization Database (HUD) during FY 2010. This application, developed in-house by the MIEMSS IT Department, allows the collection and reporting of helicopter dispatch and mission information by SYSCOM and EMRC, so that helicopter utilization may be tracked and analyzed by the agency.

The IT Department also assisted the Maryland State Police in working with the Johns Hopkins University Applied Physics Lab in developing

ASTRAS (Asset Tracking System) for use in SYSCOM to track Medevac missions.

In FY 2010 the IT Department completed the successful procurement of a new commercial program to replace eMAIS® for electronic patient care reporting. ImageTrend, Inc. was awarded a contract in June 2010. MIEMSS is now hard at work implementing this new system that will upgrade and expand the capabilities of online patient care reporting by EMS providers. The ImageTrend system will offer greatly improved capabilities for EMS Operational Programs statewide to report on their local operations for quality improvement. MIEMSS has arranged to offer this program free of charge to all EMS operational units in the state.

Increasing Data Analysis and Reporting Capabilities

MIEMSS IT advanced the ability to analyze and report on collected data through collaboration with the National Study Center (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

Increasing Network Security and Stability

In FY 2010 the IT Department implemented a project to upgrade network servers and switches. This included the implementation of VMware virtual server, networking, and storage technology. 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 platform for continued network and continuity of operations improvements in FY 2011.

Improving Internal Services and Support for End Users

In FY 2010 the IT Department added project management services through the addition of Jim Darchicourt, an experienced, Project Management certified IT Director. He is facilitating a variety of improvement projects for IT and various Departments at MIEMSS, and mentoring others in project management. The agency also added IT management with Dave Balthis, who joined MIEMSS as Director of Communications and IT in FY 2010. Although his role is to provide executive management of the Communications Engineering Services and IT Departments and EMRC/SYSCOM, he has an IT management background and is providing valuable expertise to the agency for IT issues.

The IT Department also made great improvements for end users in FY 2010. New Help Desk and Networking support was added, and a large number of previously acquired new PCs were deployed to users.

Continuing Missions

The IT Department continued to support existing ongoing programs in FY 2010, including the following:

eMAIS®

The electronic Maryland Ambulance Information System was still employed by 16 counties, 9 EMS Operational Programs, and 7 commercial services in FY 2010. Prior to the development and implementation of eMAIS®, commercial, paid, and volunteer EMS providers filled out more than 750,000 paper forms each year. eMAIS® is more cost-effective and improves the quality of prehospital care data, as well as significantly reducing the amount of time between the occurrence of an EMS call and receipt of documentation of the call.

As noted above, a new system to replace eMAIS® will be deployed in FY 2011. eMAIS® will continue in use through most of FY 2011 until all users are transitioned onto the new ImageTrend system. Then eMAIS® will continue in limited use to report and analyze legacy patient care data.

The IT Department continued to scan patient care reports during FY 2010 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 of June 2010, MIEMSS successfully scanned approximately 90,000 MAIS forms and approximately 62,000 CMAIS forms (from commercial ambulance services). These numbers are down considerably from 234,000 MAIS forms the previous year. As more jurisdictions move toward a paperless environment by utilizing the ImageTrend system other third party electronic patient care record systems, scanning MAIS forms will decline and come to an end completely. MIEMSS expects to discontinue regular scanning operations by the end of calendar year 2012.

CHATS (County Hospital Alert Tracking System)

The CHATS web-based application shows healthcare providers the status and availability of hospitals in Maryland. In FY 2010 CHATS was upgraded as

part of the HC Standard Patient and Resource tracking application, making it more robust and more accessible to healthcare providers.

FRED (Facility Resource Emergency Database)

FRED 2.0, in use since 2004, alerts all healthcare 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 Patient and Resource tracking 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.

EMRC/SYSCOM Support

The IT Department continued to provide technical support to EMRC/SYSCOM, in coordination with the MIEMSS Communications Department. PC hardware was upgraded in FY 2010 to stabilize PC operations for EMRC/SYSCOM.

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 eventually to include hand injuries requiring specialty care; 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.

Maryland Cardiac Arrest Public Defibrillation (M-CAPD) Study

In 2001 the Maryland Cardiac Arrest Public Defibrillation Study (M-CAPD) was begun to address two main objectives: (1) to determine the impact of the Facility AED (Automated External Defibrillator) Program; and (2) to identify whether there is a need for the State to require that AEDs be placed in certain public locations. Associated data components of this study are being incorporated into the Maryland Cardiac Arrest Surveillance System.

Maryland Cardiac Arrest Surveillance System (M-CASS)

In order to address the public health burden of cardiac arrests and their associated EMS factors, MIEMSS established the Maryland Cardiac Arrest Surveillance System (M-CASS). The principal objectives of this surveillance system are: (1) to identify the epidemiology of out-of-hospital sudden cardiac arrest in Maryland; and (2) to evaluate the effectiveness of the Maryland EMS System in responding to cardiac arrests. The surveillance system captures all out-of-hospital sudden cardiac arrests where callers contacted the 9-1-1 emergency medical system in Maryland. Standardized evaluation templates (Utstein) are just one of the techniques used to analyze the system information. The Utstein criteria meet the American Heart Association recommended guidelines for uniform reporting of data from out-of-hospital cardiac arrest and are a scientifically accepted template. Since M-CASS' inception in January 2001, there are over 28,000 cardiac arrests documented in the system. The Automated External Defibrillator (AED) Task Force utilizes this data to review geographic locations of cardiac arrests.

renewed 6,457 prehospital provider licenses and certificates. The number of renewed certifications and licenses issued for FY 2010 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 has also continued with 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 will be the primary document depicting the content and depth of content covered in future EMS education courses and programs. The committee, comprised of representatives from volunteer, career, commercial, and educational programs, will review the standards and strategize how to implement them, as well as determine how best to implement the new levels of EMS providers in Maryland. In implementing the new standards, Maryland will adopt the Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), and Paramedic levels of the national EMS education standards. The committee has three subcommittees that are reviewing and preparing for the implementation of the Education Standards in Maryland. The three subcommittees are the ALS Committee of the State EMS Advisory Council (SEMSAC), the BLS Committee of SEMSAC, and the EMS Regulations Committee. Information on the National EMS Education Standards can be found at www.EMS.gov.

Two pilot EMT classes were recently completed, one at a community college and the other at a fire academy. Preliminary results from the pilot courses show that the course has greater pathophysiology, anatomy, and physiology than the current EMT-Basic curriculum. The lessons learned in these two pilots

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 2010, 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 below.

Throughout FY 2010, the Office of Licensure and Certification had a steady workload and issued 2,634 initial licenses and certificates, as well as

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

Level	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
EMD	732	832	794	995	1,027
FR	10,666	9,306	9,033	5,922	4,795

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

EMT-B	15,285	15,993	16,917	16,778	17,241
CRT-99	505	619	825	889	882
EMT-P	2,200	2,364	2,437	2,529	2,713
TOTAL	17,990	18,976	20,179	20,196	20,836

will be applied to future pilot courses coming up at a variety of locations throughout the State. Students in all the pilot courses are from a combination of volunteer, career, and commercial services. All programs are using a standardized syllabus to assess hours and requirements associated with the course. Efforts are underway to ensure that the course, once piloted, can be delivered in part through online learning. This hybrid approach will allow for easier access to volunteers and commercial-based students. The Maryland Fire & Rescue Institute (MFRI) is planning to pilot the new EMT course in early spring of 2011.

The Office of Licensure and Certification has successfully implemented an Instructors' Corner where BLS, ALS, EMD, and EMSC instructors can share educational resources including presentations, outlines, and other materials with other instructors statewide. MIEMSS has implemented a learning management system (LMS) where protocol updates, continuing education, and other EMS educational content can be attended by EMS providers statewide. The LMS uses [Articulate.com](http://www.articulate.com) software and allows for the asynchronous viewing of courses with a high degree of authenticity. The Office, in conjunction with other MIEMSS departments and MFRI, designed and developed the 2010 protocol training update for BLS and ALS providers.

MIEMSS is preparing to use the National Registry of Emergency Medical Technicians (NREMT) for testing EMTs in Maryland. This will align Maryland with the "National EMS Education Agenda for the Future: A Systems Approach." Further, the computer adaptive testing process allows for a more precise measurement of an EMTs entry-level abilities in a shorter time than the existing pencil-and-paper method. Currently, the NREMT test is used for CRT99s and Paramedics, and MIEMSS plans to use it for EMTs as well. Funding for the testing is being finalized and additional testing locations are being identified to accommodate the volume of EMT students testing annually. Funds to pay for NREMT initial testing and one retest will come from existing funds within MIEMSS' budget and will not be taken from other sources. MIEMSS only proposes using NREMT for initial testing and is not looking to mandate NREMT for recertification. Furthermore, currently certified Maryland EMTs do not need to take the NREMT exam to keep their Maryland certification current. The existing course structure and practical examinations will remain as they are when NREMT testing is initiated.

In addition to the 24-hour refresher and the 12-hour classroom (or online) and 12-hour skills class options to renew one's EMT certification, MIEMSS has developed and the EMS Board has approved regulations to expand the renewal options in an effort to ensure continued competency and to save costs. The first option allows for EMTs to complete the 12-hours of approved classroom continuing education, which can be achieved through approved online formats (see www.MFRI.org), and then complete a skills evaluation for continued skills competency. The skills evaluation is in lieu of the 12-hour skills class. This saves time and costs and ensures continued competency of skills through evaluation. The second option recognizes EMTs with current NREMTB certification. To renew his/her Maryland EMTB certification for 3 years, the EMT-B will submit his/her NREMT card, along with affiliation and protocol currency verification, to MIEMSS. Currently there are nearly 2,500 NREMTBs in Maryland; this option will allow for more EMTBs to renew their Maryland EMTB certification without having to take duplicate continuing education courses.

The BLS committee is developing policies to align with the draft regulations. Both the policies and regulations will become effective in the coming months. Once the policies and regulations are in place, EMTs will have four options to renew their EMT 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 test-out.

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, to minimize the impact of job-related 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 coordi-

nators 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. During FY 2010, MCISM staff held 61 defusings, taught one basic training class, and handled 120 crisis-related referral calls.

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 the Somerset County Commissioners, Richard Alcorta, MD, State EMS Medical Director, served as an independent facilitator to the Somerset SWOT (Strengths, Weaknesses, Opportunities, and Threats) Task Force. He assisted the participants of the Somerset SWOT Task Forum in arriving at a consensus during discussions and in drafting their final proposal. He and the MIEMSS Region IV Office worked with the Task Force over the past 16 months; their efforts culminated with a 74-page report to the Somerset County Commissioners, offering recommendations to be implemented in phases for improving the countywide delivery of EMS Services and for solidifying the Quality Assurance/ Quality improvement plan and process, while providing support to the EMS volunteers.

The 15th 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 Michael Millin, MD, MPH, FACEP, Assistant Professor at the Johns Hopkins School of Medicine and Medical Director for the BWI Airport Fire and Rescue Department. Dr. Millin presented "Lessons Learned from Deployment to Haiti Following the Devastating Earthquake." Other presentations included the following:

- "10 Things to Improve Outcome," presented by MIEMSS Executive Director, Robert Bass, MD
- "AAP/ACEP/ENA Joint Policy State-Guidelines for Care of Children in the Emergency Department," presented by Joseph Wright, MD, PPH, FAAP; Allen Walker, MD, MBA, FAAP; and Cynthia Wright-Johnson, MSN, RNC

- "Interfacility and Specialty Care Transport by the Registered Nurse (New Regulations)," presented by Barbara Newman, RN, MS (Director of Nursing Practice, Maryland Board of Nursing), with Elizabeth Berg, RN, BSN, CCRN; Webra Price-Douglas, PhD, CRNP; and Theresa Drayer, RN, BSN, CCRN, NREMT-P
- "Essential Processes: Due Process-Fairness to All and Operational Suspension vs. Suspension of Medical Credentials," presented by Sarah Sette, JD
- "Consequences of H1N1 Pandemic Flu of 2009: Modified EMD-Card 36, Vaccination and Testing Protocol, Governor's Executive Order," presented by Richard L. Alcorta, MD, FACEP
- "EMS Education Update: EMS Educational Standard Implementation, EMS Certification Renewal Options, NREMT for EMT-Basic," presented by William Seifarth, MS, NREMT-P

The 2010 updates and revisions for the *Maryland Medical Protocols for EMS Providers* were implemented statewide July 1, 2010. One copy of the pocket protocols was provided to all EMT-Bs, CRTs, and EMT-Ps currently certified or licensed in the State. This year MIEMSS posted the protocol update to the on-line MIEMSS Learning Management System which was received with positive reviews.

During FY 2010, 17 hospitals applied for redesignation as MIEMSS-approved Base Stations. Each of the five MIEMSS Regional EMS Advisory Councils formally supported the recommendations for redesignation of the hospitals within their regions. Ongoing Base Station management activities included issuing certifications to emergency department personnel completing the MIEMSS Base Station communications course. There were 676 Base Station Certificates issued to Emergency Department providers in FY 2010, and six new Base Station physician instructors were credentialed.

MIEMSS continues to collaborate with the Maryland Regional National Disaster Life Support (NDLS) Coalition, of which 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). The Coalition sponsored three BDLS courses and one ADLS course during the fiscal year, all at no charge to participating students. The course textbook is provided free to stu-

dents through Maryland Department of Health & Mental Hygiene (DHMH) grants by the Coalition.

This fiscal year the OMD added a part-time staff position, Protocol Administrator, which is held by Jeff Kelly, MS, EMT-P. The Protocol Administrator works with the Medical Director maintaining protocols, tracking protocol changes, conducting literature reviews, coordinating the Protocol Review Committee meetings, and providing a field provider's perspective on issues.

MIEMSS plans to replace the current eMAIS® data collection and reporting application with a new electronic Patient Care Reporting System provided by the successful bidder Image Trend. This will integrate the National EMS Information Systems (NEMSIS) data set into Maryland's EMS data system. The new reporting system will also improve the user interface, provide protocol references, and provide more robust data reporting capabilities.

The OMD addressed the shortage of manufactured syringes for pre-loaded medications: two examples being epinephrine 1:10,000 and dextrose 50%. The OMD provided guidance for alternative delivery methods while the manufacturer attempts to alleviate the shortage without compromising patient care.

An Executive Order was issued by Governor Martin O'Malley on November 6, 2009 with modifications to the *Maryland Medical Protocols for EMS Providers* in an effort to mitigate the effects of the H1N1 pandemic influenza event impacting the nation. The Optional Supplemental Protocol, Maryland Vaccination and Testing Program for EMT-Paramedic was amended allowing both EMT-Paramedics and CRTs trained by the EMS Operational Program and credentialed by the Medical Director to vaccinate public safety personnel, health care providers, and members of the general public with H1N1 (Swine) flu vaccine (LAIV and IM injection) after appropriate screening by a Vaccination and Testing Officer, registered nurse, or physician. The screening, administration, tracking, and dosage requirements for H1N1 (Swine) flu vaccine (LAIV and IM injection) were provided by the DHMH and/or the local health departments. Many of the local health departments found the EMS support in their vaccination programs to be very helpful in extending their vaccine delivery work force.

MIEMSS also played an important role in the evacuation of two nursing homes due to the extremely hot weather conditions and the failure of the environmental control systems in the nursing homes. MIEMSS field operations support personnel were able to assist in the patient movement and tracking process, using commercial ambulances services and

integrating the response with local EMS, DHMH, and emergency management personnel. Over 200 patients from the two facilities were safely relocated.

Maryland's EMS System is viewed internationally as a premier EMS System. In the last year, the office of the Medical Director provided a comprehensive overview of the Maryland EMS System to physicians and system managers from Germany, Ireland, and Korea.

Richard Alcorta, MD has been actively engaged in disaster preparedness. The Office of the Medical Director, through the Protocol Review Committee, has developed and exercised a modified Emergency Medical Dispatch protocol and EMS On-Scene protocol in the event of a Pandemic Infectious Disease process. The National Academy of Emergency Dispatchers (NAED) is excited about the advancements in both the dispatch protocol process and the EMS On-Scene protocols during a Pandemic. Richard Alcorta, MD was an invited speaker at the NAED international conference, sharing the exercise evidence and protocols.

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 thirteen 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 remaining one 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 2010, 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 2010.

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 presenters 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 300 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 grant from the Maryland Highway Safety Office for the procurement and implementation 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). A Request for Proposal (RFP) was written and approved by Maryland's Department of Information Technology (DoIT). An initial MIEMSS review of five submitted proposals was made for the identification of "qualified responses" based upon formatting, completeness, and compliance. A seven-member technical team (three MIEMSS and four Maryland EMS community representatives) reviewed each of the five proposals. A qualitative scoring instrument was developed so that each proposal could be scored and ranked on technical merit. Two proposals best met the requirements/desirables set forth in the RFP. Invitations were made to each of those two vendors for their product demonstration to Maryland EMS community representatives in April. Those two were again reviewed and scored. On June 6, 2010, an award was made to Image Trend, Inc. The content and functionality are currently being established for an October release in three EMSOPs.

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 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.

Data Confidentiality

MIEMSS maintains or has access to eight confidential databases used in ensuring quality EMS care delivery. The Data Access and Research Committee (DARC) 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 1400 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 59. 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 (formerly the Health Resources Services Administration [HRSA] program) 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 63. This year funds are being used to improve interoperable communications in Region I, implement patient tracking programs in Regions II, III, and V, 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 three 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.

Miscellaneous Grants

The Region III office is working 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 connected through an Urban Area Security Initiative grant. That portion of the PSInet project was completed this year.

Urban Area Security Initiatives (UASI)

In Region V, Montgomery and Prince Georges counties will benefit from several UASI grants. FY 2010 funding will provide handheld computers to all transport units for the patient-tracking pilot program. Hospitals will benefit from funding for burn and pediatric care and training. The FY 2009-funded project to purchase new and upgrade ambulance buses and mass casualty support units is continuing.

The Region V Administrator became project manager in June on a UASI grant for planning a Metropolitan Medical Response System in Montgomery County. This planning effort parallels efforts in Prince Georges County and the District of Columbia and a previously completed project in Northern Virginia. All plans will then be compared to ensure a smooth region-wide response.

The Region III Health and Medical Task Force continues to work with the Baltimore City Fire Department on the purchase of the necessary hardware for the electronic patient tracking application. The system was successfully piloted during multiple events throughout the year, including the relocation of patients as a result of the merging of two hospital campuses of the Western Maryland Health System. This project, as well as two mass casualty support vehicles and an alternate care site supply project, is being funded by FY 2008 Urban Area Security Initiative funds.

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

Primary Stroke Centers

This year the Office of Hospital Programs continued to accept applications from hospitals for designation as Primary Stroke Centers. Two hospitals have submitted letters of intent, with applications to be submitted to MIEMSS by December 31, 2010. The regional offices will assist in the scheduling and coordination of site visits to all the applicant hospitals.

STEMI Designation and Planning

Beginning late this fiscal year the regional programs assisted in the process to plan for the designations of the ST Elevation Myocardial Infarction (STEMI) centers and the new protocols requiring transports to these centers. After the initial meeting, the regional offices estab-



lished STEMI committees in each region to prepare plans for response to these patients and to identify areas that may require additional services.

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. The Regional offices assisted with EMS Hospital Base Station designation and re-designation site surveys conducted.

Quality Improvement

The regional offices strongly support the development of Quality Councils in each jurisdiction, as well as quality management education and implementation. The Region V Office staffs the Regional Jurisdictional Quality Improvement Committee and coordinated four Quality Assurance Officer Courses this fiscal year in Anne Arundel, Calvert, Harford, and Allegany counties. "Due Process" was added to a revised course and will be presented as Continuing Education next year.

In Region I, both Allegany and Garrett counties have continued work on their Quality Assurance and Quality Improvement Committees. Both have revamped the implementation of ambulance inspections, and are actively participating in this process. Both counties continue to implement the SWOT (Strengths, Weaknesses, Opportunities, and Threats) initiatives, most notably the recent successful legislation creating a sustainable Emergency Services Board for Garrett County. All of these initiatives have been supported through the Region I Office.

The Region III Medical Director's Committee made great strides during the past year to standardize the jurisdictional Quality Assurance reporting processes. Under

the leadership of Dr. Eric Nager, the Region III EMS Medical Director, jurisdictions are now receiving quarterly grades for their quality assurance data submissions.

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. The updating of all QA plans will be reviewed in the jurisdictional program review process conducted by the State EMS Medical Director. Jurisdictional Operational Programs are updating documents prior to the program review by the State EMS Medical Director. Medical Directors Agreements, Quality Assurance and Quality Improvement plans, and the quarterly submission of Quality Assurance reports are being requested and reviewed.

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 254 units were inspected this year. The inspections are valid for a period of two years. In the fall of 2009, the VAIP document was updated to reflect the changes in Maryland Medical Protocols for EMS Providers and the standards of care. An inspection standards update team, with representatives from across the state, worked on the revision. The VAIP was approved by the EMS Board March 9, 2010, and the books were ready for distribution late April. This year the VAIP document is available in book form, on CD, and on the MIEMSS web site. The application information on the web site and on the CD is interactive. The application and other documents required to request an inspection have been designed so that information can be completed on the form on the computer, the form saved and then emailed to the requestor's MIEMSS Regional Office. This feature will simplify the application process for the EMS provider. The website is being updated to provide examples of acceptable equipment and configurations.

The Region III Office led the implementation of the new Maryland Electronic Vehicle Inspection Program. This new portable electronic database is currently being utilized during voluntary ambulance inspections and will improve the ability to determine the locations of resources and identify areas of need.

Conferences and Training

Conferences

The Regional Offices support various regional and statewide conferences.

Region V, in coordination with the Emergency Education Council of Region V, Inc., once again present-

ed the annual continuing education conference, Pyramid, in Southern Maryland, on October 17-18, 2009. The conference provided continuing education opportunities over a two-day period for providers from the tri-county area of Charles, Calvert, and St. Mary's counties, as well as interested providers across the state. Among the speakers were regional and county medical directors in a panel discussion and Major Dennis Wood, of Prince George's County Fire and EMS, on "Taking Care of Our Own." More than 150 providers participated in the conference.

The Peninsula Regional Medical Center (PRMC) hosted its 19th Annual Trauma Conference on August 28, 2009 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 13th Annual Winterfest Conference in Tilghman Island. This is one of the most successful regional conferences held throughout the state.

The 8th 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 have developed a supportive learning environment that offers fire, EMS, EMD, and nursing topics. More than 300 EMS providers attended.

Frederick County Volunteer Fire and Rescue Association sponsored a one-day EMS Educational Conference, April 11, 2010. This conference was held at Frederick Memorial Hospital. Approximately 40 EMS providers attended the conference. Classes combined lectures and hands-on workshops. The evaluations indicated that the participants wanted more hands-on workshops for next year. The Frederick County Volunteer Fire and Rescue Association are planning on conducting the conference again in 2011.

The Regional Offices will be supporting a statewide conference in April 2011 in Ocean City at the Clarion Resort. The Region IV Office will be coordinating this effort on behalf of MIEMSS and the statewide organization committee. This will be the first time that the statewide conference will be held in the Ocean City.

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 eMAIS® and Protocol Rollout classes.

In response to increase focus on helicopter utilization, the regional programs coordinated multiple training sessions across the state with prehospital providers in conjunction with the Maryland State Police Aviation Division on “Should They Go by Air or Ground?”

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. In some regions, there are education committees and councils staffed by the regional offices to bring the program coordinators together and identify priorities for training.

The regional offices are also responsible for conducting the written certification and licensure examinations. This year they conducted 27 First Responder and 56 EMT-Basic exams for classes, as well as 176 individual exams in their offices.

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. The outbreak of H1N1 resurfaced in the fall. MIEMSS coordinated a Critical Care Surge Committee to plan for that outbreak and identify strategies to assist hospitals to react to increasing demands for care and thresholds for the implementation of those strategies. A Hospital Based Demand System Status (HBDSS) score was developed to measure the stress on the healthcare system. During the outbreak MIEMSS personnel staffed a position in the Maryland Department of Health & Mental Hygiene (DHMH) operations center and completed daily hospital surveys to measure the components of the HBDSS and determine the number of flu-like patients admitted to the hospitals.

Maryland experienced record snow storms during the winter. MIEMSS staffed a position at the State Emergency Operations Center to assist local EMS programs and hospitals to ensure services remained available. MIEMSS assisted in the transportation of dialysis patients and provided information to hospitals to avoid roof collapses due to the weight of the snow.

MIEMSS personnel also responded to oversee the medical coverage of the repatriation of American citizens after the Haitian earthquake. Six patients received care and one patient was transported to a hospital when they reached Andrews Air Force Base. The Prince Georges Fire and Rescue services provided the direct care of these patients, and DHMH was on hand to assess any concerns regarding diseases they might be carrying.

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. In March 2009, the Tri-State Healthcare Coalition conducted an Emergency Alerting Exercise. The objective of this exercise was to see what forms of notification work best. (In the past, no procedure was in place to contact Coalition members for assistance. It was decided to try various forms of notification to see what system or systems work best.) The Coalition is planning a full-scale exercise in July 2010 between Frederick Memorial Hospital and Washington County Hospital, which will be sharing equipment and resources.

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, they will be able to use the multiple funding sources to complete their priorities.

The Region IV Health and Medical Committee assisted with a regional disaster exercise and planning.

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 Georges counties.

Emergency Response Exercises

MIEMSS regional offices supported more than 13 exercises during the past fiscal year. Support included planning and coordination, arranging for moulage and enlisting volunteer victims, scheduling data collectors, and drafting after-action reports and improvement plans. The Maryland EMS Moulage team provided moulage to

4 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 4 exercises, the moulage team moulaged over 200 victims. Some of the more notable exercises included:

- MIEMSS joined with many organizations from Anne Arundel County to participate in “Operation Rescue on the Rails” at Maryland Transit Administration, Anne Arundel County, Baltimore-Washington Medical Center on March 14, 2010. The purpose of this exercise was to evaluate participating agencies' actions against their current response plans and capabilities for a mass casualty/terrorism incident.
- MIEMSS assisted Frederick City Police and State Farm Mutual Automobile Insurance Company in Frederick, Maryland with the planning, evaluation, organizing the moulage, and filming of an exercise that was requested by State Farm Mutual Automobile Insurance Company. The scenario for this exercise was an active shooter. State Farm wanted to test their employees' response for a building evacuation and the response of their crisis team. The exercise also provided an opportunity for the local police, fire, and EMS to test their response to an active shooter.
- MIEMSS participated in the October Capital Shield Event in Montgomery County, in conjunction with county and federal agencies.
- Personnel from Regional programs traveled to Memphis, Tennessee to assist the Department of Homeland Security in a patient-tracking data exchange exercise. Utilizing draft data standards from the “Tracking Emergency Patients (TEP)” project, data were exchanged from Maryland's HC Standard application to the National Disaster Medical System's Joint Patient Assessment and Tracking System (JPATS) and ultimately to the two systems in Memphis, DMS First Track and UPP IRMS. Through the process, all participants were able to view the status of the patients during this simulation of evacuating patients from Maryland to Tennessee after a hurricane.

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

Annual sustainment visits were coordinated by the Region V Administrator and staffed in each region by the Regional Administrators. Statewide contact lists were updated and several Chempacks were relocated in conjunction with the Centers for Disease Control.

Health and Medical Monitoring Application

Version 3.0 of HC Standard was implemented during November and was the primary means to collect hospital surveys during H1N1. This computer application will incorporate 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 is expected to be implemented in late 2010. HC Standard will be the central database for all patient tracking programs being implemented throughout the state.

In the National Capital Region, the prehospital and full health and medical situational awareness applications continue development. Data will be exchanged from the Maryland HC Standard to similar applications in the District of Columbia and Northern Virginia.

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, HC Standard, and COOP plans, 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 30 formal members and another 50 in the process of being cleared by DHS. They were on call during June but were not deployed. They were chosen for specialty training in critical care transport and may be deployed for assisting with mass evacuations in the future.

MIEMSS completed the revision of its Continuity of Operations (COOP) Plan to include information specific to the Pandemic Influenza which will assist with future outbreaks. This process involves the entire agency and staff. The Associate Administrator in Region IV completed the plan and will oversee its implementation agency-wide.

Region-Specific Activities

Region I

The Region I Office supported local committees, including the Local Emergency Planning Committee, Surge Planning, Disaster Planning, and Mass Fatality Planning. The office also hosted EMS Fellowship students orientating to Rural Emergency Medical Issues. The Region I Administrator has attended numerous training and drills, including ICS courses, Grant Development, Quality Assurance Officer, and a tabletop exercise.

The Region I Office ensured timely communication of relevant EMS issues by participating in the Allegany - Garrett Counties Volunteer Fire and Rescue Association, the Allegany County EMS Committee, the Allegany County Emergency Services Board, and the Garrett County Fire and Rescue Association.

The Western EMRC has been established, located at the new 911 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 currently provides for Garrett and Allegany counties and will include Washington County in the near future.

Region II

The Region II Office is assigned to maintain records and coordinate support services for exercises that take place across the state. The Regional Administrator is involved in the planning process for the scheduled move of Washington County Hospital to their new facility. The Regional Administrator, along with support from MIEMSS staff, will be tracking patients during the move by using the new HC Standard patient tracking program. Region II has established their Regional STEMI Committee. Frederick Memorial Hospital and Washington County Hospital are working closely with the local EMS jurisdictions on quality assurance matters.

One of the specific issues that they are looking at is the time between first EMS contact to “balloon” time for STEMI patients.

Region III

An Associate Regional Administrator Jeffrey Huggins began working in the MIEMSS Region III Office in early 2010. Mr. Huggins comes to the agency with a degree in Emergency Health Services from the University of Maryland Baltimore County and is well versed in disaster preparedness and response.

Region III supported several exercises within the region, including a MTA (Maryland Transit Administration) Light Rail Mass Casualty Incident Exercise in Anne Arundel County and the University of Maryland Medical Center's Free State Response Exercise.

Region IV

The Region IV Office worked with the Somerset SWOT Task Force, facilitated by State EMS Medical Director Richard Alcorta, MD, during the past 16 months. The SWOT (Strengths, Weaknesses, Opportunities, and Threats) process concluded with a 74-page final report presented to the Somerset County Commissioners on June 8, 2010. This report received a unanimous vote of approval. Three phases of recommendations were included in the report. Some recommendations were completed during the SWOT process. A countywide quality assurance quality and quality improvement plan was adopted and \$55,000 in scholarship funds have been obtained for EMT-B through paramedic training at Wor-Wic Community College.

Shore Health Systems broke ground on a new free-standing Emergency Department that is expected to open in the fall of 2010. This facility is located in Queen Anne's County.

Region V

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 Fire and Life Safety Committee of the Maryland State Firemen's Association and the Risk Watch® Subcommittee, playing an active role in statewide prevention activities. In addition, the office has continued to work with DHMH and injury prevention groups across the state through the Partnership for a Safer Maryland, an advocacy group.

In the area of Quality Improvement, the Regional 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.

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 2009-May 2010:

- 3 New Basic Life Support Services Licenses Issued
- 1 New Advanced Life Support Licenses Issued
- 2 New Specialty Care Transport Licenses Issued
- 1 New Advanced Air Ambulance License Issued
- 80 Intra-Cycle Vehicle Licenses Issued
 - 18 Semi-Annual Vehicle Licenses
 - 15 BLS Vehicles
 - 3 ALS Vehicles
 - 29 New Vehicles Added
 - 21 BLS Vehicles
 - 8 ALS Vehicles
 - 33 Vehicle License Changes
 - 2 Licensing Downgrades
 - 27 License Transfers (BLS to BLS or ALS to ALS)
 - 4 Vehicle License Upgrades (BLS to ALS)

Annual Inspection—June 2010:

- 39 Commercial Ambulance Service Licenses Issued
 - 35 Ground Ambulance Services
 - 8 Basic Life Support Services
 - 27 Advanced Life Support Services
 - 9 Specialty Care Services
 - 3 Neonatal Services
 - 4 Air Ambulance Service Licenses Issued
- 368 Vehicles Inspected
 - 230 BLS vehicles
 - 128 ALS/SCT vehicles
 - 10 Neonatal vehicles

The State Office of Commercial Ambulance Licensing and Regulation (SOCALR) marked its seven-teenth year of operation serving the commercial ambulance industry. SOCALR has continued to license new commercial ambulance services, but we have also experienced the loss of some companies. SOCALR issued seven new commercial ambulance licenses in FY 2010 with at least one in each service license category. At the same time, three companies ceased operations. Altogether, the continued growth and range of licensure illustrate the Maryland's ongoing need for private ambulance services.

FY 2010 resulted in a 6% increase from FY 2009. There was a 7% increase in BLS vehicles operating in the State and a 9% increase in ALS-licensed vehicles. Overall, the number of commercial ambulance units transporting throughout the state is increasing, even as the number of total licensed services remains the same.

SOCALR plays a role in the EMS community beyond the licensing capacity. Inspectors ensure compliance with federal, state, and local laws. SOCALR expanded its involvement within the state through growing participation in quality assurance programs, EMS transport safety, and disaster preparedness. Key initiatives included participation in SECURE (safe transport in emergency vehicles), CPS (child passenger safety), and multiple state agency committees.

SOCALR also played a vital role in the coordination and movement of hundreds of patients from Braddock Hospital and Memorial Hospital of Maryland to Western Maryland Regional Medical Center. Numerous commercial ambulance services carried out the inter-facility transports to ensure continuity of care, as patients were transferred to the new Western Maryland Regional Medical Center facility. Lastly, members of SOCALR devoted many hours to support emergency management during the blizzards of 2010. In addition, they helped in the evacuation of patients from two nursing homes when their environmental control systems failed during extreme hot weather conditions.



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

- Peninsula Regional Medical Center, Salisbury
- Washington County Hospital, Hagerstown
- 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

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
- 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 County Health System
- 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 6,471 trauma patients from June 2009 to May 2010, according to the Maryland State Trauma Registry. (See pages 64 to 69 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.

The Shock Trauma Center staff were very active in prehospital EMS educational activities. Tours were given to 25 groups. Evening educational programs open to prehospital and hospital care providers were held 7 times and linked via live broadcasts to 13 remote sites across the state. Broadcast locations included the Western Maryland Regional Medical Center in Cumberland, Washington County Health System 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 Public Safety, 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 165 EMS providers who participated in 11 ALS Airway Skills Labs. In the Observation Program, 191 EMS providers observed in the Trauma Resuscitation Unit, and 109 EMS providers in Critical Care. In addition, 22 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 educational center focusing on brain injuries, critical care and organ support, resuscitation, surgical outcomes,

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	

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 groundbreaking ceremony on May 13, 2010, marked the start of 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 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.
- 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.

- The final component is My Future My Career or 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.

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 the following three objectives: (1) education through in-service training for the Trauma Resuscitation Unit (TRU) nursing personnel on the screening process for domestic violence patients; (2) community outreach achieved by hosting an annual domestic violence seminar during Domestic Violence Month in October; and (3) research through studying the prevalence and severity of domestic violence cases seen in a trauma center, including the financial burden on the community. In conjunction with the above objectives, Shock Trauma offers lectures to EMS providers that increase their knowledge in the following areas: awareness of domestic violence in society, screening patients of domestic violence, resources available to help victims and what they can do to prevent domestic violence in their communities.

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, followed 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 250 teenagers have participated in these classes. Twenty-eight 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 2010, more than 500 offenders participated in this program.

The prevention staff attended health/safety fairs, reaching thousands of Marylanders with prevention education materials. The staff also coordinated a 3-D event at the University of Maryland Medical Center/School Athletic Center, during December 2009, and plan to repeat it in December 2010, which is Drinking, Drugging, and Driving Awareness Month. Over 1500 people attended last year's event.

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. Other highlights include an article published in the *Journal of Trauma Nursing* (Vol.16, No. 4, Oct.-Dec. 2009). The program also presented grand rounds at the Shock Trauma Center and received an award from Maryland Division of the American Trauma Society. The prevention staff have also partnered with WBAL-TV's "3-D Project, Don't Drive Distracted." In addition, they are working with the University of Maryland Medical Center Foundation to provide the Trauma Prevention Program to private high schools throughout the State. Staff members Bev Dearing, MSN, RN, and Debbie Yohn, RN, are Certified Prevention Professionals in the state of Maryland.

Level I

The Johns Hopkins Hospital, Adult Trauma Center

Located in Baltimore City, the Johns Hopkins Hospital Adult Trauma Center reported receiving 2,071 trauma patients from June 2009 to May 2010, according to the Maryland State Trauma Registry. (See pages 64 to 69 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, and Albert Chi, MD, are the division's full-time trauma surgeons. Amy P. Rushing, MD is the Adult Trauma Service 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.

The Johns Hopkins Hospital Adult Trauma Center, housed in the "#1 Hospital in America" according to the *U.S. News & World Report* for 20 consecutive years (1991-2010), continues to provide 24-hour a day in-house trauma attending surgeon coverage. A core group of six 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 the 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 related to trauma care, quality of care studies, and violence and injury prevention.

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 4-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 published a commentary on the topic of DVT preventability 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 (IRU) 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.

Community outreach and prevention efforts at the 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 currently expanded to include working with ICU nurses to provide 24/7 coverage, and it has been highlighted as a part of the curriculum of the Johns Hopkins Bloomberg School of Public Health's Summer Institute on Injury Prevention.

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. The mission of the Partnership is to advocate for injury and violence prevention, and to promote education and surveillance in Maryland through statewide partnerships. In 2010, the Partnership has focused on identifying the top four injury indicators for the State of Maryland, and has established four injury-specific teams to address those topics (falls, interpersonal violence, motor vehicle crashes, and poisonings).

Level II

Johns Hopkins Bayview Medical Center Trauma Center

Located in Baltimore City, the trauma center at Johns Hopkins Bayview Medical Center entered into the Maryland State Trauma Registry 1,783 trauma patients, from June 2009 to May 2010. (See pages 64 to 69 for additional patient data in various categories.) Bruce Gibson, MD, is the center's Interim Director, with Robert Dice, RN, MS, as its Trauma Program Manager, and Zeina Khouri-Stevens, RN, PhD, as the Nursing Director of Trauma, Burn, and Surgical Care.



The trauma service at Bayview will welcome a new clinical medical director in August 2010. Nathaniel McQuay, MD, FACS, will join Bayview as its director of trauma and co-director of surgical critical care. Dr. McQuay comes to Bayview from St. Luke's Hospital in Bethlehem, Pennsylvania. He 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 comprehensive care to all trauma patients, including treatment for direct injuries and meeting their psychosocial, physical, and rehabilitative needs. In FY 2010, the center registered 1,783 patients in the Maryland State Trauma Registry. Patient outcomes were as expected with a survival rate of 97%. Bayview's survival rate has remained at this level for the past 5 years.

For the past two years, the trauma center at Johns Hopkins Bayview has 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 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 mainly serving the citizens of eastern Baltimore City, eastern Baltimore County, and southern Harford County. The trauma team members and the hospital administrators have 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 consolidation of resources under the direction of Dr. Gibson, with the assistance of Michael Cooley, CRNP. The trauma service admits all trauma patients to its clinical team. 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.

Our policy for trauma diversion shows that the trauma center remains open to receive patients an average of 97% of available hours each month.

Johns Hopkins Bayview was recently re-designated as an EMS Base Station. This designation was granted for two years. Bayview has made vast improvements in its base station activities to meet state requirements. Successful designation as a base station is also a requirement for the hospital's trauma center designation.

EMS Week activities this year were celebrated with an educational conference featuring the hospital's comprehensive cardiology center. Dr. Jeffrey Trost presented "When EMS Needs EMS," featuring the reunion of a patient with the EMS team that treated him in the prehospital setting. The EMS team correctly identified the patient's ST-elevation myocardial infarction (STEMI) and relayed this information to Bayview's ED. The "Heart Attack Team" (HAT) treated the patient who was discharged a few days later and has resumed his employment as a mechanic for the Baltimore County Fire Department. Bayview also held daily drawings for gift cards during EMS week; EMS providers who transport patients to its ED were eligible for the drawing.

Johns Hopkins Bayview recently renovated its helipad. The new pad is asphalt and is painted and trimmed in accordance with aviation standards. A double-headed arrow shows the preferred approach and departure path to the helipad. The hospital's name lines the western side of the pad. These two features assist users unfamiliar with the helipad. Bayview receives approximately 30% of its burn patients via medevac and stands ready to receive trauma patients via helicopter as well.

The JHBMC Trauma program is a multi-disciplinary program dedicated to 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 demonstrate its commitment to the community by providing optimal trauma care for the steady volume of trauma patients it receives.

According to the Maryland State Trauma Registry, Prince George's Hospital Center received 2,988 trauma patients from June 2009 through May 2010. (See pages 64 to 69 for additional patient data in various categories.)

K. Singh Taneja is the Executive Director of Dimensions Healthcare Associates and Vice-President for Ambulatory Services, including 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.

The Trauma Service at Prince George's Hospital Center (PGHC) continues to provide the highest quality of care for its trauma patients. During the past year, we have a unit-based Trauma Physician's Assistant (PA), who assists Dr. Carnell Cooper and Dr. Gabriel Ryb, medical director and assistant medical director, respectively, on daily rounds and discharge rounds. This PA remains on the med-surg floors to execute decisions determined by the Attending Physicians. In addition, the readily available PA has facilitated optimal patient care and timely communication between our healthcare professionals and patients' families. This position has contributed to an improvement in both staff and patient satisfaction.

The hospital has also recently added a Wound Care Specialist Physician and a Nurse to its team. These professionals play an important role while working along with the other physician staff in selecting the plan of care to best manage our patients' complex wounds.

Quality improvement activities continue to include daily patient rounds, monthly Peer Review, and monthly Grand Rounds/Morbidity and Mortality Reviews. 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, thus providing a forum for a multi-disciplinary perspective on trauma care and outcome improvements. Attendance at these case presentations has continued to grow over the last year. We are also now participating in the monthly trauma educational web broadcasts hosted by the Shock Trauma Center. These sessions provide an additional forum for hospital and EMS staff to learn more about the care of the trauma

patient as well as receive trauma continuing education credits.

During the past several years the hospital has been able to secure capital grants that have allowed us to transition from a film medical imaging system to a new state-of-the-art digital medical imaging system (PACs). As a result, our physicians are able to view the radiographic images of their patients from many areas of the hospital - and from outside, if authorized.

PGHC has been active in trauma/injury prevention legislative initiatives. During the 2010 legislative session, Dr. Carnell Cooper provided testimony in support of the motorcycle and ATV helmet laws and the Trauma Fund Bill.

As part of PGHC's commitment to education, the hospital continues to host TNCC (Trauma Nursing Core Course) classes several times per year. The majority of the Emergency Department nursing staff maintains current TNCC verification status. 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.

The organization has set its sights on a system-wide service excellence and patient satisfaction mission. Several of the initiatives as part of this plan included the development of a Patient Satisfaction Council, a Patient Through-Put Council, and the Emergency Services Task Force.

In July 2008, the Emergency Services Task Force was established. The core work group was designed around Dr. Carnell Cooper, Director of Trauma, K. Singh Taneja, Vice-President for Dimensions Health, and Mark Arsenault, RN, Associate Vice-President for Dimensions Emergency and Disaster Services. A rapid assessment of the Emergency Department (ED) and trauma processes and redesign of the management structure were implemented. Almost two years later, emergency services has seen a 15% increase in ED volume, along with a 75% decrease in ambulance diversion and a 50% decrease in patients leaving before completion of treatment.

The hospital continues to be an active member of the Prince George's County Health Care Coalition, an entity comprised of hospitals in Prince George's County, the local health department, Fire/EMS, the Office of Emergency Management, MIEMSS, Kaiser Permanente, and representatives from nursing homes. Mark Arsenault remains the Chairperson of this important county group.

PGHC remains cutting-edge in providing top healthcare for our patients and community. Dimensions Healthcare facilities strongly responded to the H1N1 pandemic not only ensuring that our staff

were immunized and educated, but partnering with the County Health Department and running multiple public education forums and immunization clinics.

Despite the many challenges faced by the hospital, we continue to make great strides and remarkable improvements in our system, allowing us to offer first-rate care to our patients.

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 1,636 trauma patients from June 2009 through May 2010, according to the Maryland State Trauma Registry. (See pages 64 to 69 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. 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 and Trauma Director and monthly departmental CME-approved Trauma Morbidity and Mortality Conferences. In addition, a new multi-disciplinary physician review process has been implemented, under the guidance of the Performance Improvement Department, to improve loop-closure between the individual specialties involved in trauma care. The hospital also participates 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 continues to stand as the only designated trauma center in Montgomery County, serving primarily the residents of Bethesda, Potomac, Silver Spring, Kensington, Germantown, and Gaithersburg. It also provides back-up support as needed to the residents of Frederick, Washington, and Prince George's counties.

From June 2009 through May 2010, the trauma center attended to 1,614 trauma patients, according to the Maryland State Trauma Registry. (See pages 64 to 69 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 Trauma Program staff also includes trauma case reviewers, Patricia Baker, RN and Taryn Giza, RN, as well as Trauma Registrar Tania Zaidi.

On July 1, 2009, Suburban Hospital officially became a member of Johns Hopkins Medicine.

Suburban Hospital continues to be a leader in Region V for maintaining hospital diversion times to a minimum while providing safe, quality care to all patients. Its administration and frontline staff are fully committed to keeping Suburban's doors open to ensure that trauma and other vital healthcare services are available to the community at all times. This was made possible by the successful implementation of an organizational "Code C" team response that involves top-level administrators, ED physicians and nurses, transportation, and housekeeping. This past spring,

Voula McDonough, RN, BSN, Emergency Department Clinical Educator, participated in the First Annual Johns Hopkins Medicine Patient Safety Summit with a poster presentation. Also, this past spring, the Suburban Hospital Emergency Department was recognized as being in the 90th percentile in the Press Ganey Patient Satisfaction Scores nationwide.

The Suburban Hospital Trauma Program remains dedicated to providing the highest level of quality trauma care. A driving force in the quality management process at Suburban is the concurrent and retrospective review of all trauma charts. Through that process, clinical and system issues are rapidly identified, then timely addressed with individual providers within and outside the trauma center. In addition, the development of new policies and treatment guidelines, along with extensive continuing education programs, complement the review of pertinent and difficult trauma cases, which are discussed monthly during formal morbidity and mortality conferences. These reviews serve also as an educational forum for all trauma surgeons, emergency department physicians, intensivists, surgical residents, nurse practitioners, physician assistants, and registered nurses.

The Trauma Center staff continues to be committed to injury prevention. Through participation in community activities and legislative initiatives, the staff remains involved in various efforts designed to educate the public about pedestrian safety, child-related safety issues, responsible drinking, and drug awareness. Over the past year, the trauma staff has again partnered with the Montgomery County Department of Juvenile Services to make presentations at the Juvenile Drug Court for youths at risk for using drugs and alcohol. Trauma Roo, the American Trauma Society's children's safety mascot, has made several appearances on behalf of Suburban Hospital, spreading the word on seat belt and pedestrian safety.

In May 2010, Governor Martin O'Malley declared May as Trauma Awareness Month in Maryland. Dr. Westerland, Medical Director of Trauma Services, along with state government officials and representatives from the nine Maryland trauma centers, participated in the media event announcing the governor's proclamation. The media event also kicked-off a public awareness campaign on distracted driving. Other prevention-related activities included the hospital's "Fall Prevention and Balance" programs organized by the Physical Medicine Department and presented at Montgomery County senior centers. Trained physical therapists from Suburban Hospital 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.

The Bethesda Hospitals' Emergency Preparedness Partnership (BHEPP), composed of Suburban Hospital, the National Institutes of Health Clinical Center (NIH CC), the National Institutes of Health National Library of Medicine (NIH NLM), and the National Naval Medical Center (NNMC), continues 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, Suburban Hospital is also growing. With the strong support of the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health and Johns Hopkins Medicine, the hospital continues to offer easy access to cardiac surgery and other advanced cardiovascular treatments. Operational since 2006, the cardiac program and the NIH Heart Center work diligently to meet the national standard of less than 90-minute door-to-balloon time. To date, the program has markedly improved in this area and reported a 100% success rate in June, July, and August 2010.

Other ongoing improvements include initiatives such as electronic real-time transmission of EKGs from prehospital providers resulting in the activation of the cardiac catheterization team prior to the patient's arrival in the ED, and a 24-hour in-house cardiac team created to assist with transitioning STEMI patients to the cath lab upon the arrival of the interventional cardiologist and other members of the cath lab team. The cardiac program has become involved in the Region V EMS Council STEMI Collaborative. Concomitantly, the Suburban Hospital - NIH Stroke Center continues its commitment to providing advanced care to stroke patients. Suburban is certified as a Primary Stroke Center by the Joint Commission and was named a specialty referral center for stroke by MIEMSS.

Dany Westerband, MD, FACS, Medical Director of Trauma Services, remains heavily involved in trauma education. In addition to being the Surgical Residency Liaison Director for Suburban Hospital, he is also an Instructor of ATLS (Advanced Trauma Life Support), an Instructor of ATOM (Advanced Trauma Operative Management), an Instructor of ASSET (Advanced Surgical Skills for Exposure in Trauma), an Instructor of FCCS (Fundamental Critical Care Support), and an Instructor of NDLS (National Disaster Life Support). Among his numerous professional memberships, which include the American Association for the Surgery of Trauma (AAST), Dr. Westerband is also an active member of both the Maryland and the District of Columbia chapters of the American College of Surgeons' Committee on Trauma. Dr. Westerband was active in the planning of the Annual Maryland Committee on Trauma Conference held in Baltimore, Maryland where he also participated as a speaker. Last September he was appointed by Governor O'Malley to the 12-member Maryland EMS Board.

Melissa Meyers, RN, BSN, MBA, the Trauma Program Director, is the current vice-chair of the Maryland Trauma Center Network and a board member of the Maryland Chapters of the American Trauma Society (ATS) and the Society of Trauma Nurses (STN). Ms. Meyers also represents the Maryland Trauma Center Network on the State Emergency Medical Services Advisory Council (SEMSAC). Ms. Meyers is also an active Instructor of ATNC (Advanced Trauma Nursing Course).

The trauma program is also involved in site-specific EMS education programs. The Suburban Hospital Emergency Department is 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 2009, 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 staff, outside trauma centers, and EMS providers. The November 2009 conference was attended by over 150 trauma care providers, including physicians, RNs, physician assistants, and EMS providers.

Level III

Peninsula Regional Medical Center Trauma Center

Located in Salisbury, 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 1,409 trauma patients from June 2009 to May 2010, according to the Maryland State Trauma Registry. (See pages 64 to 69 for additional patient data in various categories.) Walter P. Lischick, MD serves as the Trauma Medical Director, and Lynn H. Foster, RN, BSN as the Trauma Program Manager. In addition to being a designated Level III Trauma Center, PRMC is also a JCAHO-certified AMI and Stroke Center.

The Peninsula Regional Medical Center (PRMC) Trauma Center continues to coordinate and participate in community-based injury prevention initiatives. During the pre-homecoming and pre-prom periods in the fall of 2009 and the spring of 2010, 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 and the Worcester, Wicomico, and Somerset Highway Advisory Committees, as well as local wellness community events.

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 twentieth year. Conference topics are applicable to the daily practice of prehospital 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 Recertifications/Refreshers, and ALS Skills are just a few of the classes offered. In addition, the annual Stroke Conference for EMS providers was held. Again there was positive feedback. Peninsula Regional Medical Center continues to promote open

communication between the Medical Center and the surrounding EMS community through bi-monthly EMS Advisory Committee meetings. Prehospital providers are now being integrated into the monthly Trauma M&M meetings to facilitate a more thorough review and educational process in trauma care.

The specialized orthopedic equipment that was purchased in FY 2008 with grant monies from the Maryland Trauma Fund continues to be utilized by our orthopedic traumatologist Florian Huber, MD, who joined our staff in September 2008. Since his addition to our medical staff, our orthopedic transfers have decreased, allowing our residents to remain near their homes. Another Trauma Fund equipment grant in FY 2009/2010 purchased additional warming equipment for our Trauma Operating Room.

Level III

Washington County Health Systems Trauma Center

Located in Hagerstown, the Washington County Hospital Trauma Center received 798 trauma patients from June 2009 to May 2010, according to the Maryland State Trauma Registry. (See pages 64 to 69 for additional patient data in various categories.) Karl P. Riggle, MD, FACS, is the Director of Trauma Services; Marc E. Kross, MD, PhD, FACS, is Surgeon-in-Chief of Trauma Services; Susie Burlison, RN, BSN, MSN, MBA is Trauma/EMS Manager; and Beth Fields, BSN, NREMT-P, is the Trauma Registrar.

During the past year, the Trauma Center at Washington County Hospital has continued to provide trauma services to residents of Washington and Frederick counties, Southern Pennsylvania, and the Eastern Panhandle of West Virginia. 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. Over 82% of the trauma patients treated at Washington County Hospital arrived by ground EMS.

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

The staff of the Trauma Center continues to be active in injury prevention throughout the community. In coordination with the Washington County SAFE

Kids Coalition, safety events were held in targeted neighborhoods and at the Children's Safety Village of Washington County, focusing on child passenger safety, bicycle safety, and injury prevention. All first-grade students in Washington County are treated to a mock trauma setup and injury prevention lesson as part of the hospital's First-Grade Tour Week. Trauma Center staff also participated in the annual Medical Academy hosted by Washington County Hospital for high-school students interested in medical careers. Students spent a week taking part in activities with EMS, flight crews, and staff from various units, such as the Operating Room, Emergency Department, Physical Therapy, Laboratory, and Infection Control that would provide care to a trauma patient. Students also spent time in the medical library completing a mini research project. The trauma center also joined the safe communities coalition to have Hagerstown awarded 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.)

Trauma education continues to be a focus for the Trauma Program. Two multi-disciplinary trauma conferences for direct care providers were held in conjunction with Hagerstown Community College, and 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 health-care and community groups. Dr. Kross, Surgeon-in-Chief, and Beth Fields, Trauma Registrar, served on the planning committee for the Maryland Committee on Trauma (COT) Symposium. Dr. Kross also served as faculty for the Maryland COT Symposium and 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 again held its annual Trauma Team Recognition Day. To celebrate trauma awareness month the staff focused on seat belt safety in the community. Two extrication drills, along with public education, were set up at Washington County Hospital and Robinwood Medical Center for both staff and visitors to learn about seat belt safety and trauma awareness.



Level III Western Maryland Regional Medical Center

Located in Cumberland, the Trauma Center at Western Maryland Regional Medical Center received 632 patients from June 2009 to May 2010, according to the Maryland State Trauma Registry. (See pages 64 to 69 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.

A great deal of change took place for the Western Maryland Health System (WMHS) in this past year. The staff that has taken care of the more than 150,000 people in the service area of WMHS has remained the same, but they are now providing care in a new facility. The trauma center that originated in the Memorial Hospital and later was located on the Memorial Campus closed its doors at 4:00 PM on November 21, 2009. Joined with the former Sacred Heart Hospital, of the Health System, these two facilities became the new Western Maryland Regional Medical Center (WMRMC), now in operation on Willow Brook Road in Cumberland.

The seamless transition allowed both hospitals to close 4 hours ahead of schedule and safely transfer over 200 patients into the Regional Medical Center. Combining the strengths of these hospitals has proven beneficial for the trauma system. Cardiothoracic surgeons and MRI capabilities are now under one roof in the new state-of-the-art structure. The 275-bed hospital offers more trauma bays and doubled the space of both of the former emergency departments (EDs) combined. Radiology advances have allowed dedicated CT and X-ray suites for Trauma and ED patients. In July 2009, the ED moved to the system of electronic medical records and continues this “green” initiative in its new home.

The Maryland State Police Aviation Command's continued relationship with the Health System remained strong this year as they brought the last trauma patient into the Memorial Campus just before the closing. They would also bring in the first trauma patient into the new

facility. Maryland State Police have joined forces with the health system to provide “traveling road shows” to speak on behalf of the services of the State Police and the many services, such as trauma, cardiac, stroke, and cancer treatment, offered at the WMRMC. These shows have taken place in Maryland and West Virginia, and plan to expand into Pennsylvania in a grassroots effort to reach the EMS providers that bring patients into our service area.

“Trauma Nurses Talk Tough,” an initiative designed and spearheaded by Elizabeth Wooster, Clinical Coordinator for the ED, again reached the target demographic of teenage drivers. This program reached nearly 2,000 students in grades 11 and 12 in all Region I high schools, as well as West Virginia schools. Trauma Services has been active in the community, staffing medical tents at the Mountain Marathon, the Rocky Gap Triathlon in Cumberland, and the Savage Man Triathlon at Deep Creek Lake State Park in Garrett County.

The 8th Annual Miltenberger Seminar was held again at the Rocky Gap Lodge and Resort, with more than 300 attendees in March 2010. The planning committee is made up of MIEMSS, Fire, EMS, dispatchers, and WMHS employees. Excelling in rave reviews was “Shock Talk,” by Dr. Bill May from WMRMC's ED, and a local case review that was narrated by Trauma Nurse Coordinator, Chuck Barrick, RN. This case review was inspirational and depicted the life-saving efforts by the WMRMC's Trauma Team, which includes ED and operating room staff. The patient, a 15-year-old who was shot at close range, was taken to WMRMC by Trooper 5 and later sent to Shock Trauma for definitive care. The young man and staff from WMRMC were on stage at the 2010 Hero Awards hosted by the R Adams Cowley Shock Trauma Center.

Adult Burns Johns Hopkins Burn Center Johns Hopkins Bayview Medical Center

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 is Carol Miller, RN, MSN.

The Johns Hopkins Burn Center (JHBC) managed more than 680 patient visits between June 2009 and May 2010. Of these, 422 (62%) required inpatient admission to the Burn Center, whereas 258 (38%) were successfully treated as outpatients. In November 2009, the American Burn Association (ABA) verified the Johns Hopkins Burn Center at Bayview based on adult burn center requirements and criteria. The reviewers found no deficiencies and complimented the burn team on a successful survey. Based on this verification, MIEMSS has designated the Johns Hopkins Burn Center at Bayview as the state's adult burn center until 2012.

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

Some of the community outreach efforts currently provided by the Johns Hopkins Burn Center include: 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 clinical education programs currently provided by the Burn Center include: Advanced Burn Life Support (ABLS) provider certification courses, the Emergency Department Burn Poster Program, the Military Burn Education Program, and 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 Emergency Department 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, the Department of Defense, and the U.S. 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.

Final Disposition Distribution (Inpatient & ED)

Disposition	Count	Percent
Acute Care Hospital	1	<1.0%
Against Medical Advice	3	<1.0%
Death	13	2.0%
Home	553	81.0%
Home w/Services	50	7.0%
Hospice	2	<1.0%
Not Available (still inpatient)	8	1.0%
Other Burn Center	8	1.0%
Psychiatric Hospital	5	<1.0%
Rehabilitation Center	14	2.0%
Residential Facility	1	<1.0%
Skilled Nursing Facility	22	3.0%
Total	680	97.0%*

Mode of Arrival at JHBC (Inpatient & ED)

Mode	Count	Percent
Public ALS	213	31.0%
Public BLS	18	3.0%
Commercial Ambulance	146	21.0%
Commercial Helicopter	35	5.0%
MD State Police Med-Evac	24	4.0%
Not Recorded	10	1.0%
Private Vehicle	9	1.0%
Walk	225	33.0%
Total	680	99.0%*

Burn Wound Types (Inpatient & ED)

Type	Count	Percent
Chemical	29	4.0%
Contact	43	6.0%
Electrical	25	4.0%
Explosion	29	4.0%
Flame	245	40.0%
Frostbite/Extreme Cold	3	<1.0%
Inhalation, Smoke	8	1.0%
Late Effect, Burn	2	<1.0%
Not Recorded	11	2.0%
Other Burn	4	<1.0%
Other Non-Burn	1	<1.0%
Radiation	1	<1.0%
Readmission	1	<1.0%
Scald	253	37.0%
Skin Disease	21	3.0%
Unknown	4	<1.0%
Total	680	101.0%*

*does not total 100 due to rounding

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 2009 to May 2010, the Pediatric Burn Service at the Johns Hopkins Children's Center saw 230 burn cases, of which 136 children with severe burn injuries were admitted. (See pages 74 to 76 for additional pediatric burn data in various categories.) 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, over 300 outpatient burned children were treated at the Pediatric Outpatient Burn Clinic located in the David Rubinstein 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 that need additional outpatient care.

Burns in children require special expertise and pose a unique set of medical and psychological chal-

lenges. The unique synergy of multiple pediatric subspecialties under one roof at Hopkins Children's Center offers the best-tailored treatment 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 Center 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 Centers' 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 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 2 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

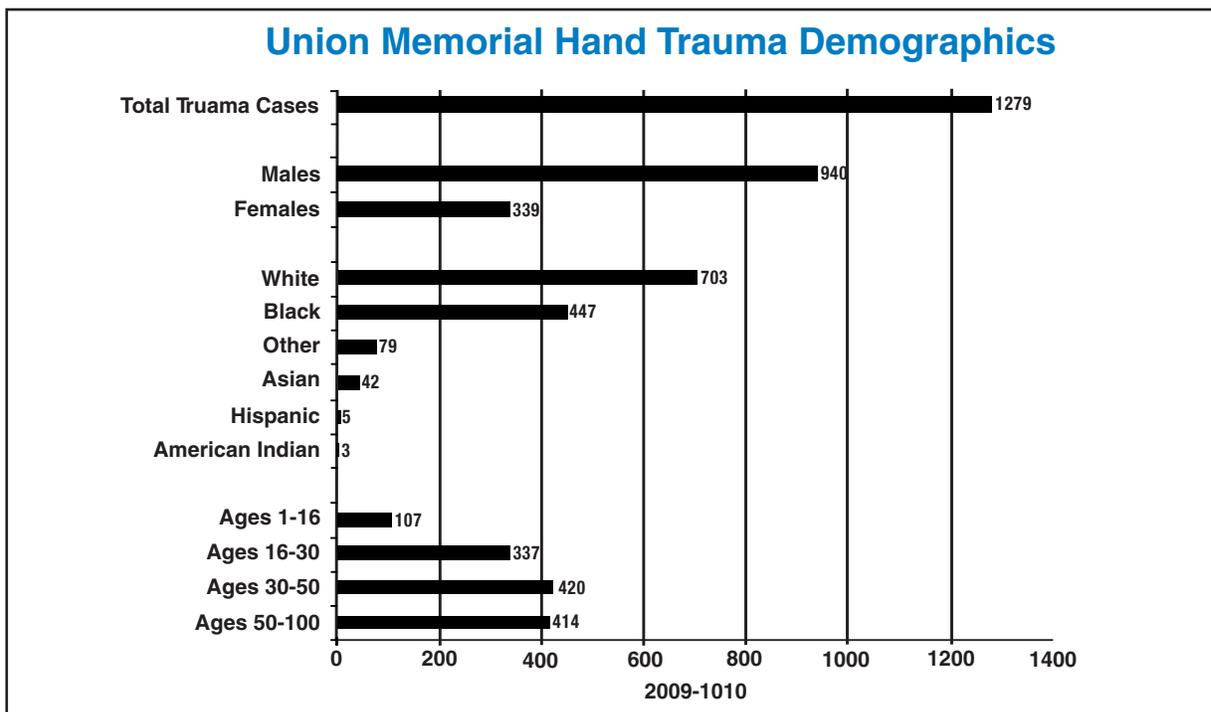
From June 2009 to May 2010, Children's National Medical Center, as a pediatric burn specialty referral center, treated as inpatients 102 children with burn injuries who were residents of Maryland or who were injured in Maryland. (See pages 74 to 76 for additional pediatric burn data in various categories.) 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 (CNMC) 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 2011 to serve as a Maryland Burn Center. CNMC 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.

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, 102 children from Maryland have been admitted to the Burn Service. Outpatient burn clinic visits totaled 1,454, and 117 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® Champion Management 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.

Union Memorial Hand Trauma Demographics



The Curtis National Hand Center At Union Memorial Hospital

The Curtis National Hand Center at Union Memorial Hospital, located in Baltimore City, serves as the State's referral center for the specialized care of injuries to the hand, wrist, and elbow.

During the past fiscal year (June 2009 to May 2010), 1,279 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. 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-eight 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 Injury Location graphic). The majority of patients seeking services are white males over the age of 30 (see Demographics bar graph).

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

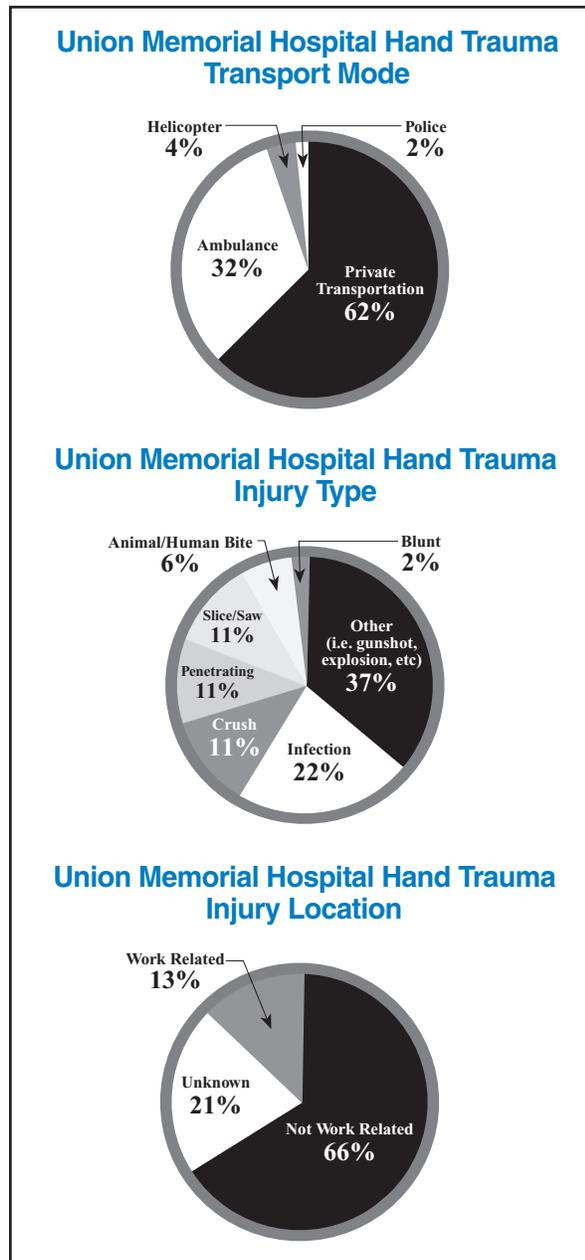
The Hyperbaric Medicine Center of the R Adams Cowley Shock Trauma Center of the University of Maryland Medical System is the statewide referral center for victims of diving accidents, carbon monoxide poisoning, smoke inhalation, and gas gangrene. It is the only multi-place chamber in Maryland, and is 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.

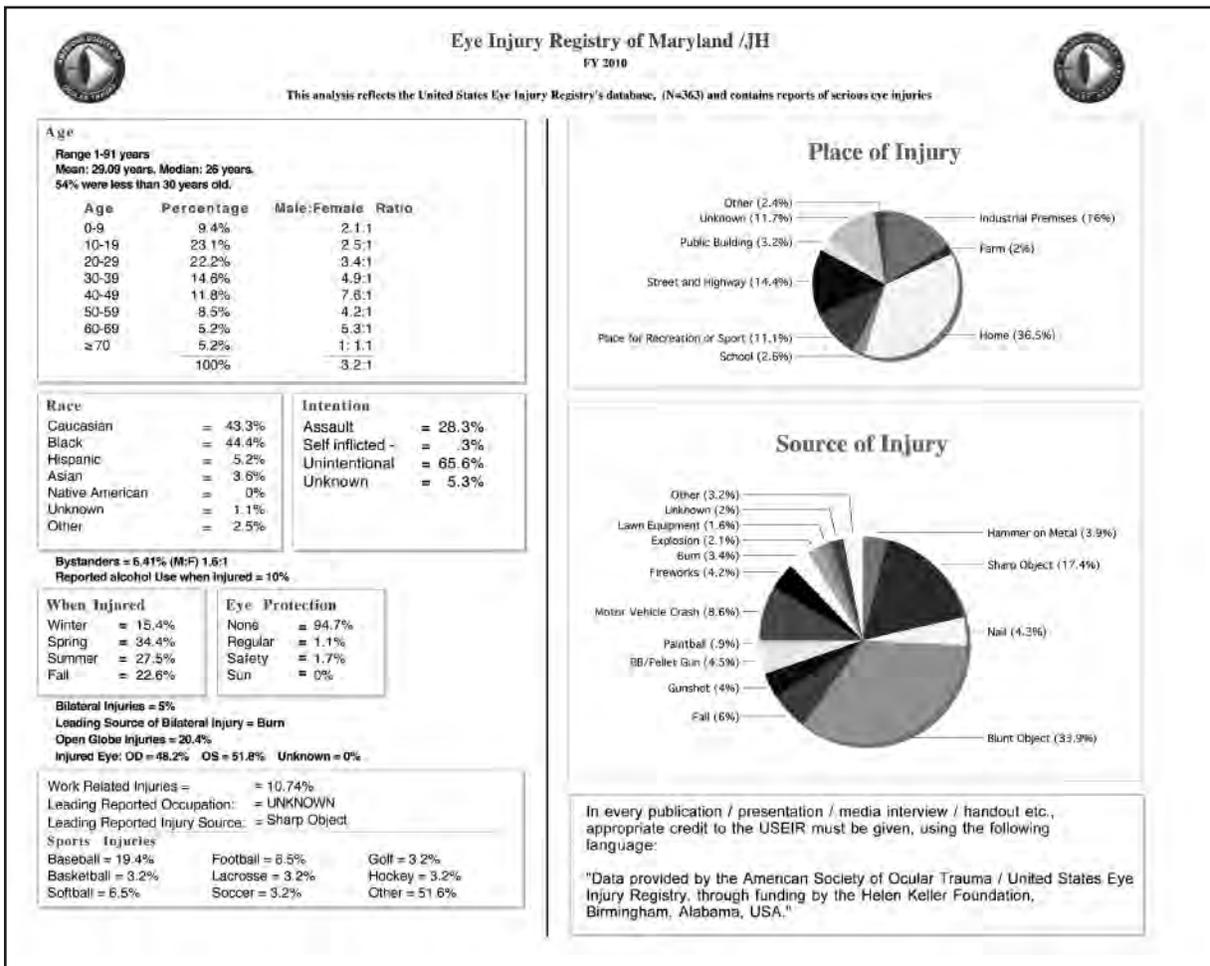
Among the types of cases treated at the Hyperbaric Medicine Center are carbon monoxide poisoning/smoke inhalation; acute gas embolism; decompression sickness (the bends); necrotizing acute soft tissue infections; osteoradionecrosis; gangrene; late effects of radiation; compromised skin grafts and flaps;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

The Johns Hopkins Hospital in Baltimore is the location of the designated Eye Trauma Center of the Wilmer Eye Institute. It was the first statewide eye trauma center in the United States, and the Johns Hopkins Hospital is committed to providing the resources needed for it to remain a leading center for ocular trauma in the U.S. Strategic imperatives on patient care, teaching, and research are incorporated into the eye trauma program. 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; the Associate Director for FY 2010 is David Baranano, MD; Shailaja Chopde, BSN, is the Eye Trauma Coordinator.

The Wilmer Eye Institute (WEI) has, for years, established itself as "the premier eye care center in the world," including eye trauma. The WEI has expertise in all aspects of eye disease as they relate to eye trauma, including Oculoplastic Surgery, Neuro-

Ophthalmology, Pediatric Ophthalmology, Glaucoma, Uveitis, Retinal Surgery, and Eye Pathology.

In August 2009, the WEI opened the "Robert H. & Clarice Smith Building and the Maurice Bendann Surgical Pavilion." This new facility has further enhanced efficiency and care for eye trauma patients; they are now cared for on one floor, complemented by adjacent parking access for all surgical patients. As the only eye trauma center designated by the Maryland Institute for Emergency Medical Services Systems, Wilmer provides individualized care 24-hour-a-day for blunt, penetrating, chemical, and other eye injuries. As required, Wilmer's physicians can consult with neurologists, plastic surgeons, otolaryngologists, and social workers to address the patient's complete needs during these episodes of acute care.

In FY 2010, the total number of serious eye injuries was 363 (see Eye Injury Registry of Maryland/JH tables). Out of this number, the age range of 10-19 years recorded the most number of injuries, with the age range of 20-29 years coming in second. These two categories accounted for 45.3% of total eye traumas. A little over 36.5% of these traumas happened at home. The data for injury source indicated that blunt objects are still by far the most common method of eye injury (33.9%). Most of the injuries were unintentional (65.6%), followed by assault

(28.3%). It is worth noting that 94.7% of all eye trauma patients did not wear any eye protection. See page 50 for the WEI ocular trauma statistics for FY 2010 as reported to U.S. Eye Injury Registry.

On June 12, 2010, the Wilmer nurses coordinated a community outreach program at an event sponsored by the Philippine Nurses Association - Maryland Chapter and the Rotary Club of Pikesville-Owings Mills, Maryland. The nurses educated the community on fireworks and on eye injury preventions, including the importance of eye protection. A poster was displayed and handouts distributed. This event was huge success and attended by the club members and their families from Maryland, DC, and Virginia.

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 2010, 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 2009 to May 2010, the Pediatric Trauma Center (PTC) at the Johns Hopkins Children's Center admitted 465 out of 814 children seen under the age of fifteen years with severe injuries. (See pages 70 to 73 for additional pediatric trauma data in various categories.) Dylan Stewart, MD leads the Pediatric Trauma Service as the Director of Pediatric Trauma. 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 20 years), the Pediatric Trauma Service at the Johns Hopkins Children's Center provides the high-

est level of care (Level 1) for pediatric trauma patients.

Dr. Stewart, who joined the General Pediatric Service faculty in January 2010, serves as Director of the Pediatric Trauma Program. He began his surgical training at the University of Maryland. He received a competitive National Institutes of Health 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 Healing Hands.

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 American College of Surgeons, Committee on Trauma, Maryland Chapter, 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. Studies conducted during this period include:

- A retrospective secondary data analysis, to assess the difference in clinical outcomes in patients with penetrating injuries to the torso that have been immobilized versus those not immobilized, using statewide prehospital data and the state trauma registry will provide scientific evidence either to support continued use of time and equipment resources, or to reassess use of these resources in the prehospital setting.
- Most recently, in collaboration with the School of Public Health Environmental Health Sciences Department, radiation doses in trauma patients are being evaluated. The data showed that when the use of radiologic imaging is considered essential, cumulative radiation exposure could be very high. In young patients with long time horizons, the benefit of each imaging study and the cumulative radiation dose should be weighed against the long-term risks of increased exposure. The abstract was presented at the Radiological Society of North America (RSNA) meeting and the *Journal of Trauma* has accepted the manuscript for publication.
- Multi-center studies include the traumatic bowel injury study coordinated by Dr. David Mooney of Harvard Children's Hospital. The results revealed that repeat CT scans are not necessary and that delayed diagnosis prolongs the patient's hospital stay and complication rate.
- A second study spearheaded by Assistant Professor of Surgery Richard Falcone, (Cincinnati Children's Hospital Medical Center) is analyzing socioeconomic disparities in infant mortality among non-accidental trauma patients.

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 multi-disciplinary approach to care. In addition to her direct supervision of the Pediatric Trauma 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, 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. Headed by Mahseeyahu Ben Selassie, MSW, MPH, the program's Parent Safety Leadership Group (PSLG), which includes stakeholders, residents, parents, caregivers, and other community partners concerned with reducing childhood injuries and death, has become a citywide model. This program, initially focusing on fire and burn-related injuries in East Baltimore, has expanded to West Baltimore, and trains community residents to become community fire safety advocates. Members of the PSLG partnered with the Baltimore City Fire

Department and canvassed their communities to make sure that every home had working smoke detectors on every floor. The IFCK-Maryland Program also partnered with the Baltimore City Fire Department to co-sponsor the Summer Fire Safety Camp for juvenile fire starters. Fire safety education and information was provided to over 300 kids from Baltimore City last year.

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 and 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. CARES' operating costs are covered through a three-year grant (2008-2010) to the Center for Injury Research and Policy.

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. We also intend to have research collaboration with the Simulation Center to evaluate the benefits of simulated trauma education in a scientific manner.

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 doors to the new 205-bed Charlotte R. Bloomberg Children's Center building open in 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 2009 to May 2010, the Children's National Medical Center, as a pediatric specialty referral center, treated 851 Maryland children for trauma injuries. Of these, 467 children had multiple trauma injuries, with 356 of the 467 brought directly to CNMC by Maryland EMS. The remaining 111 multiple trauma patients were transfers to CNMC after stabilization in another Maryland Emergency Department. (See pages 70 to 73 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 Center 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 2009, the Maryland Poison Center (MPC) received 64,975 calls. While 37,320 of these calls involved a human exposure, 2,180 involved animal exposures, and the remaining 25,475 were requests for information where no exposure occurred. Fifty 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-three 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 1,795 cases in 2009. In 473 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 12 specialists at the MPC have over 190 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 2009, MPC staff authored or co-authored 18 research posters, presentations and published articles. Areas of research included poison prevention education, acetaminophen overdoses/treatment, therapeutic errors in older adults and children, surveillance utilizing geographic data, modafinil toxicity, and bupropion overdoses.

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 2009, the MPC provided speakers and/or materials for 108 programs and health affairs in 17 Maryland counties, Baltimore City, and Washington D.C. The programs and events led by MPC staff were attended by more than 8,000 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, childcare agencies, pharmacies, hospital perinatal education programs, CPR instructors, parish nurses, Red Cross, and Head Start and Healthy Start programs. In all, more than 175,000 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 15-21, 2009) activities included mailings to emergency departments and pharmacies throughout the state. A Poison Prevention Week poster contest for public schools in Wicomico County was co-sponsored by the MPC and Safe Kids Lower Shore. 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 2009, 51 programs were conducted at hospitals, fire departments, colleges, and state, regional, and national conferences. These programs were attended by more than 1,300 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 101,124 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 2009, 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 2009)

Circumstance	Number of Patients	Percentage
Unintentional	29,233	78.3
Intentional	6,432	17.2
Adverse Reaction	1,212	3.2
Other & Unknown	443	1.3
TOTAL	37,320	100.0

Medical Outcome of Poisoning (CY 2009)

Medical Outcome	Number of Patients	Percentage
No Effect/Minor Effect	33,886	90.7
Moderate Effect	1,779	4.8
Major Effect	209	0.6
Death	32	0.1
Other & Unknown	1,414	3.8
TOTAL	37,320	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 2009)

Region	Number of Exposures	Percentage
Region I (Garrett, Allegany)	880	2.4
Region II (Washington, Frederick)	3,234	8.6
Region III (Carroll, Howard, Harford, Anne Arundel, Baltimore County, Baltimore City)	23,465	62.9
Region IV (Cecil, Kent, Queen Anne's, Talbot, Caroline, Dorchester, Wicomico, Worcester, Somerset)	4,034	10.8
Region V (*Montgomery, *Prince George's, Charles, Calvert, St. Mary's)	4,017	10.8
Unknown County/ Other state	1,690	4.5
TOTAL	37,320	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 13,376 human exposures in Maryland were reported to the National Capital Poison Center in 2009.*

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 neuro-trauma, 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 2010, trauma centers in Maryland referred 1,657 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 2009 to May 2010)

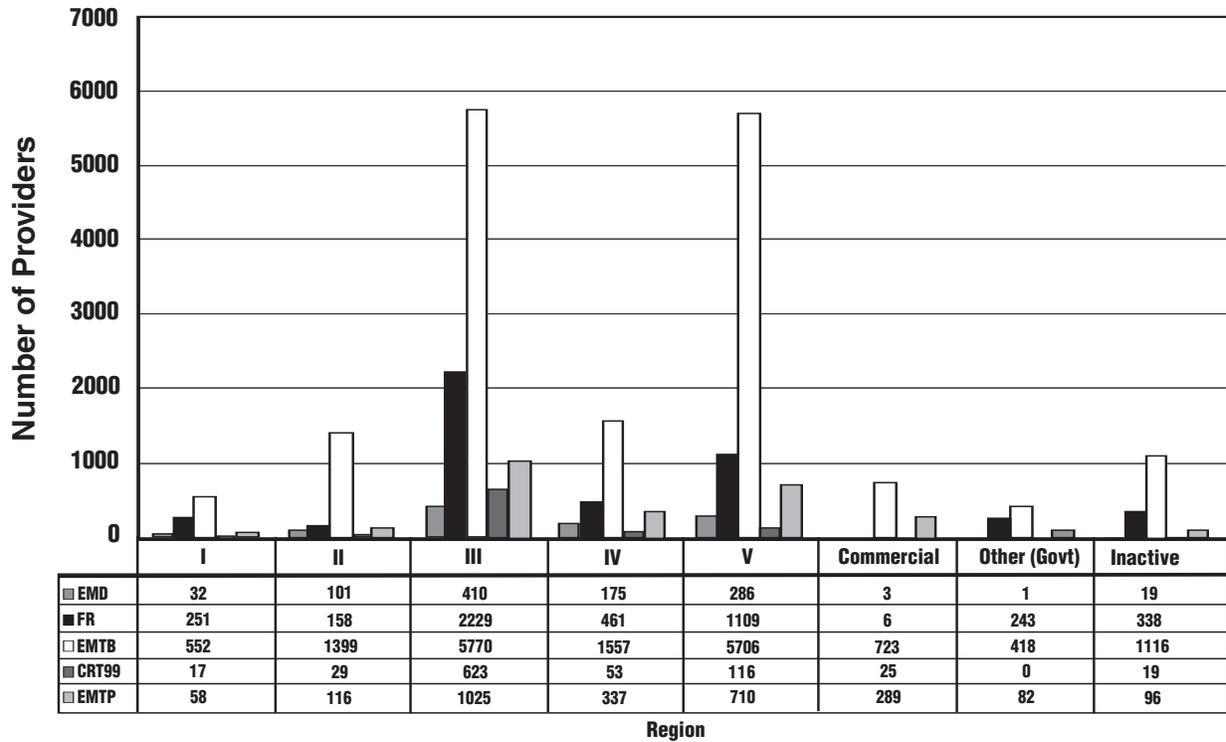
Source: Maryland State Trauma Registry

Rehabilitation Center	Number
Adventist Health Care	35
Genesis Long-Term Care Facilities	75
Good Samaritan Hospital of Maryland	47
Kernan Hospital	432
Maryland General Hospital	78
National Rehabilitation Hospital Washington, DC	49
Sinai Rehabilitation Hospital	60
University Specialty Center	75
Washington Adventist Hospital	20
Washington County Hospital Inpatient Rehabilitation Services	51

Note: Total patients ages 15 and over who went to rehabilitation centers = 1,657

MARYLAND EMS STATISTICS

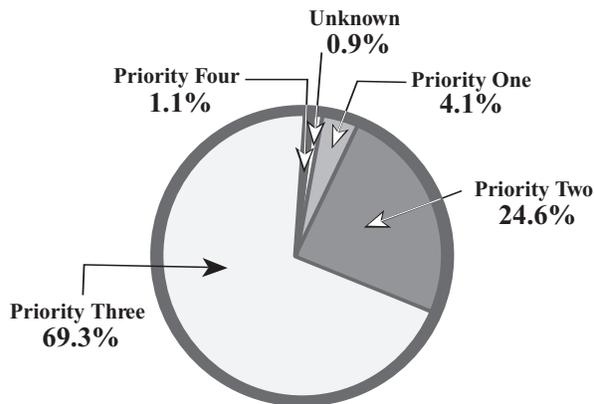
Number of EMS Providers (Primary Affiliation) by Region



Types of EMS Calls

Patient Priority For Injury Calls

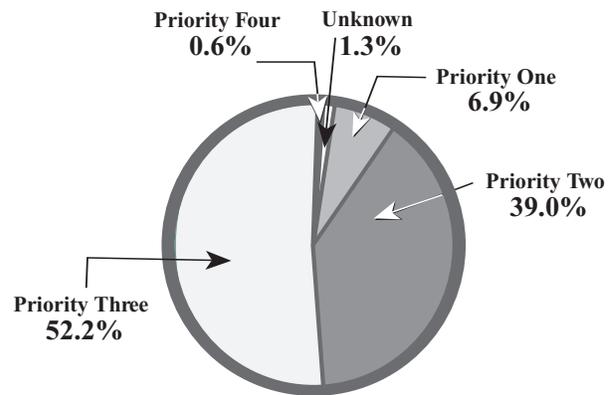
Calendar Year 2009



Source: Paper and electronic Maryland Ambulance Information System Data

Patient Priority For Medical Calls

Calendar Year 2009



Source: Paper and electronic Maryland Ambulance Information System Data

Public Safety EMS Units

Patient Transportation Vehicles

Region	Ambulances						Buses		
	BLS			ALS			Type I	Type II	Type III
	Inservice	Ready Reserve	Reserve Unstocked	Inservice	Ready Reserve	Reserve Unstocked	20+ Pts	10-19Pts	<10 Pts
Region I	0	0	0	38	0	0	0	0	0
Region II	37	0	3	23	0	0	0	0	0
Region III	16	1	2	163	18	37	1	0	0
Region IV	35	2	0	111	15	0	0	0	0
Region V	142	15	17	35	6	5	3	0	0
STATEWIDE TOTAL	230	18	22	370	39	42	4	0	0

Source: Vehicle data reported by the Jurisdictional Programs

Patient Transportation Vehicle Definitions

BLS Transport Vehicle: A vehicle equipped to carry and treat a patient as per EMT-Basic Protocols

- **Inservice:** Fully stocked and staffed unit ready to be dispatched
- **Ready Reserve:** Fully Stocked but not staffed unit. Could replace an Inservice unit or be added to Inservice fleet by calling in additional personnel
- **Reserve Unstocked:** Ambulance outfitted to accept cots and equipment. Can be used to replace an Inservice unit by transferring supplies, equipment, and personnel. Can be added to Inservice fleet with additional supplies, equipment, and personnel

ALS Transport Vehicle: A vehicle equipped to carry and treat a patient as per Cardiac Rescue Technician (CRT, CRT99) or EMT-P Protocols

- **Inservice:** Fully stocked and staffed unit ready to be dispatched
- **Ready Reserve:** Fully Stocked but not staffed unit. Could replace an Inservice unit or be added to Inservice fleet by calling in additional personnel
- **Reserve Unstocked:** Ambulance outfitted to accept cots and equipment. Can be used to replace an Inservice unit by transferring supplies, equipment, and personnel. Can be added to Inservice fleet with additional supplies, equipment, and personnel

Ambu Bus: A passenger bus configured or modified to transport as many as 20 bed-ridden patients.

Public Safety EMS Units

Region	Non-Transport Support					Disaster Supplies		
	BLS First Response	Suppression BLS First Response	ALS Chase		ALS Engines	MCSU Type I	MCSU Type II	MCSU Type III
			Non Supervisory	Supervisory		100+ Pts	50 Pts	25 Pts
Region I	8	13	2	1	4	0	1	2
Region II	54	1	22	4	1	0	3	1
Region III	98	185	21	20	69	10	2	0
Region IV	37	10	22	11	0	0	0	6
Region V	51	40	11	9	24	4	2	3
STATEWIDE TOTAL	248	249	78	45	98	14	8	12

Source: Vehicle data reported by the Jurisdictional Programs

Non-Transport Support Definitions

BLS First Response Vehicle: A vehicle intended as a rapid response unit to arrive at a patient scene and treat patients as per EMTB or First Responder Protocols until the appropriate level of transport unit can arrive.

Suppression BLS First Response: Suppression apparatus (a Fire Engine, Ladder Truck, Rescue Squad) equipped to respond as the closest EMS unit to high priority calls as a secondary duty.

ALS Chase Vehicle: A vehicle equipped to treat patients according to Cardiac Rescue Technician (CRT, CRT99) or EMTP Protocols. The ALS provider may accompany and treat the patient in the BLS Transport Vehicle, thereby upgrading the vehicle to ALS.

- **Non-Supervisory:** A smaller utility unit equipped to provide ALS care. Often dispatched with a BLS transport vehicle to care for patients requiring ALS care.
- **Supervisory:** A smaller utility unit equipped to provide ALS care. Often dispatched with a BLS transport vehicle to care for patients requiring ALS care. This unit also has personnel management, quality improvement, and incident management responsibilities.

ALS Engine: Suppression apparatus (a Fire Engine, Ladder Truck, Rescue Squad) which is staffed and equipped to begin ALS care. Often dispatched to upgrade a BLS Transport unit.

Disaster Supplies Definitions

MCSU: A Mass Casualty Support Unit which carries adequate patient care equipment to treat a defined number of patients in the event of a multiple casualty incident. It may be a trailer or motorized vehicle.

- Type 1 MCSU is stocked to handle at least 100 patients.
 - Type 2 MCSU is stocked to handle at least 50 patients.
 - Type 3 MCSU is stocked to handle at least 25 patients.
- 4 MCSUs in Baltimore City have a capacity of 350 patients.
1 MCSU at BWI Airport has a capacity of 350 patients.

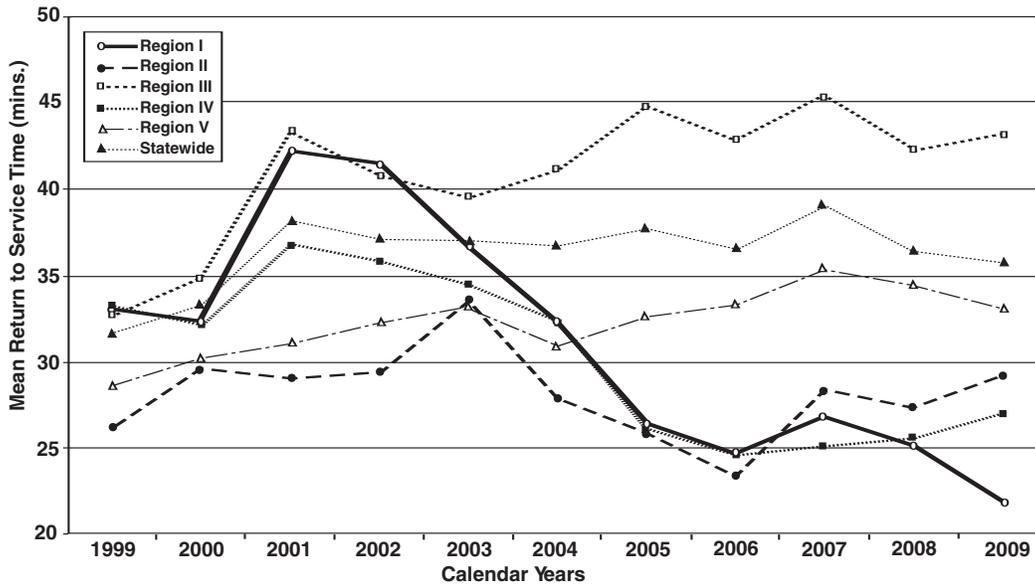
MIEMSS Grant Disbursements (FY 2010) by Region

	50/50 Matching Fund Grant for AEDs, Monitor Defibrillators and Upgrades	ALS Training Funds	Emergency Dispatch Programs	HPP Bioterrorism Grants BT-VII (FFY 2009)	Totals By Region
Region I	\$48,755	\$31,269	\$4,400	\$20,946	\$105,370
Region II	\$55,077	\$36,932	\$4,400	\$32,914	\$129,323
Region III	\$114,501	\$103,680	\$13,200	\$115,200	\$346,581
Region IV	\$84,260	\$70,758	\$19,800	\$94,255	\$269,073
Region V	\$98,500	\$88,800	\$13,200	\$82,285	\$282,785
Total	\$401,093	\$331,439	\$55,000	\$345,600	\$1,133,132

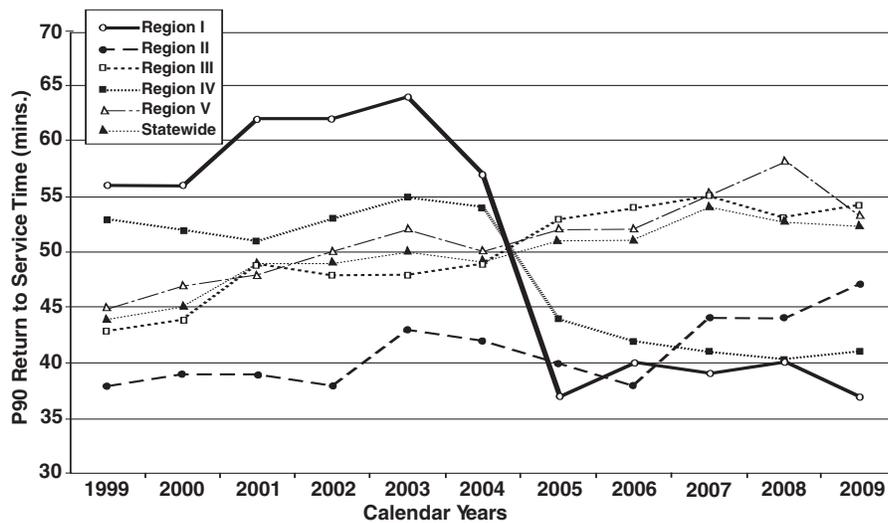
NOTE: Does not include Miscellaneous Grants described on page 26.

Public Safety EMS Units

Region/State EMS Units' Return To Service Mean Time Analysis Calendar Years 1999 - 2009

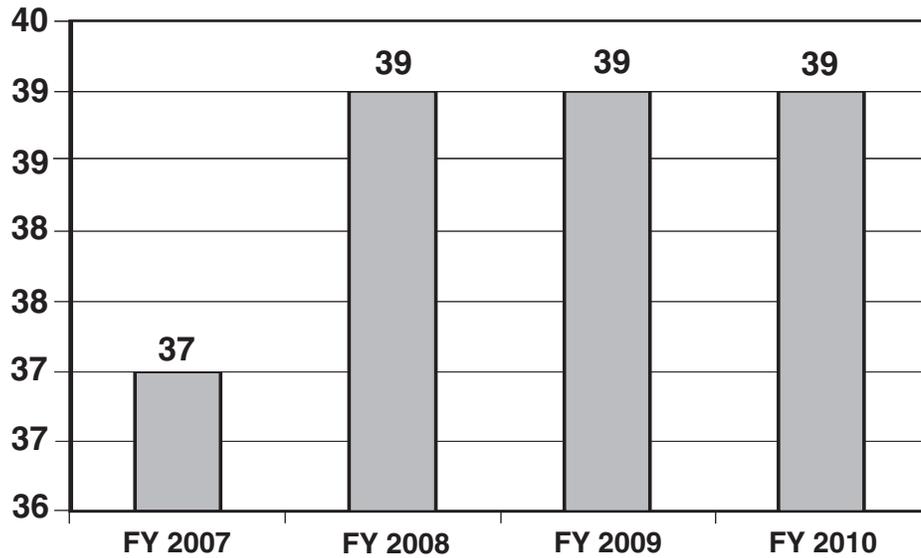


Region/State EMS Units' Return To Service P90 Time Analysis Calendar Years 1999 - 2009

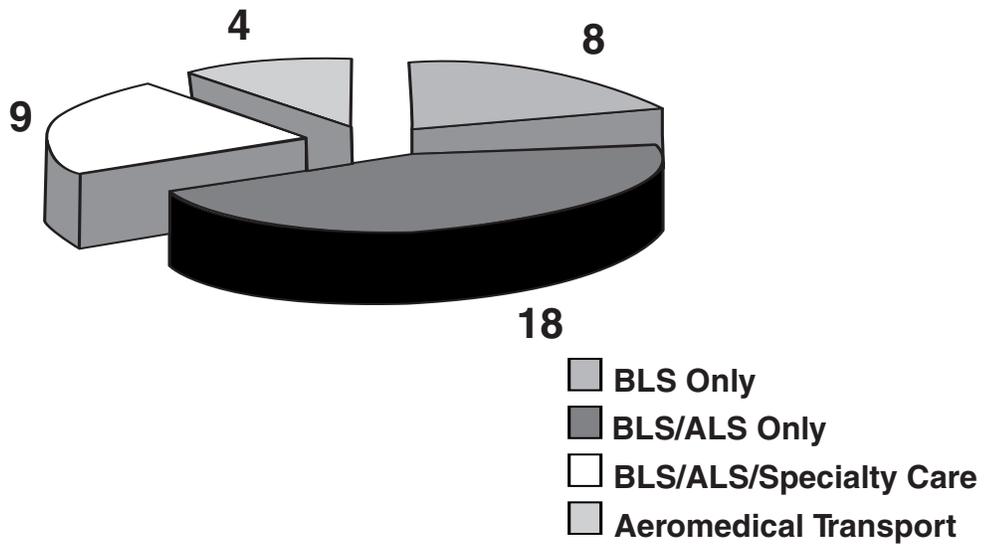


Commercial Ambulance Services

Commercial Ambulance Services (Ground & Air)
(FY 2007 - FY 2010)

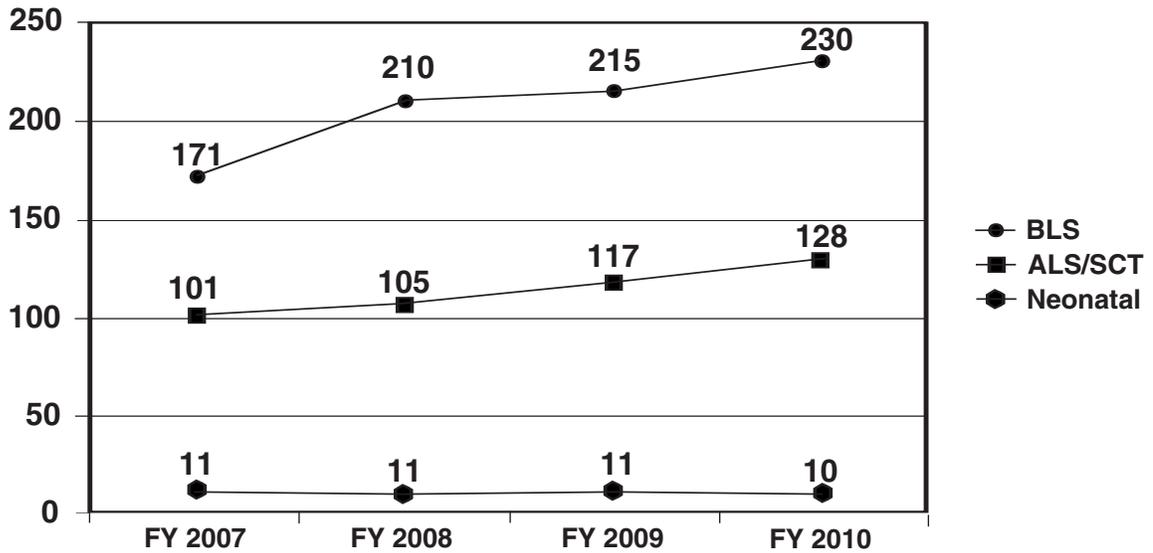


Commercial Services by License Type
(FY 2010)



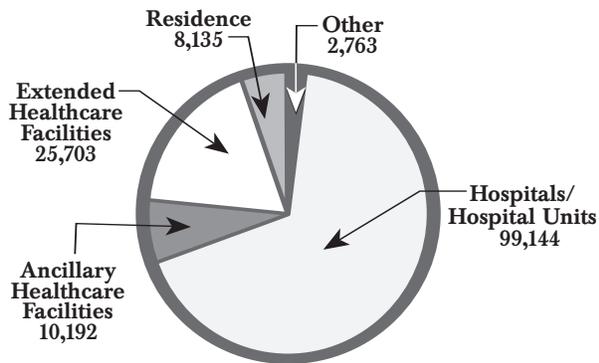
Commercial Ambulance Services

Commercial Ground Ambulance Vehicles by Type (FY 2007 - FY 2010)



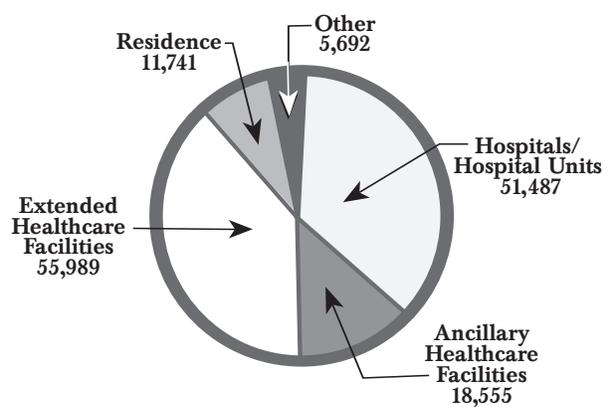
Commercial Origin Location Types

CY 2009



Commercial Destination Location Types

CY 2009



Source: Commercial Maryland Ambulance Information System (CMAIS)

Notes:

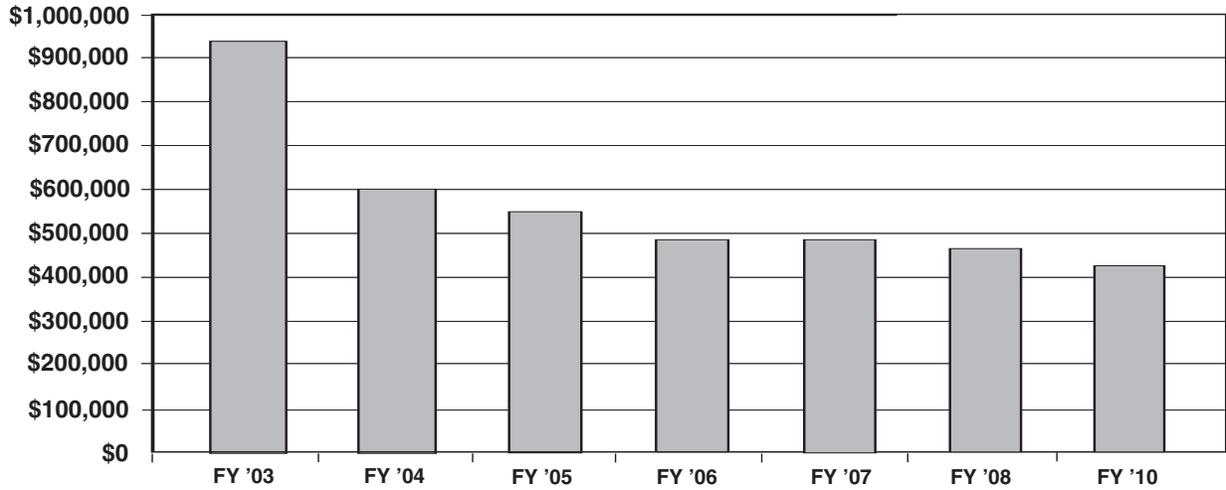
Hospitals = Hospitals & Hospital EDs, CCUs, & Perinatal Units

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

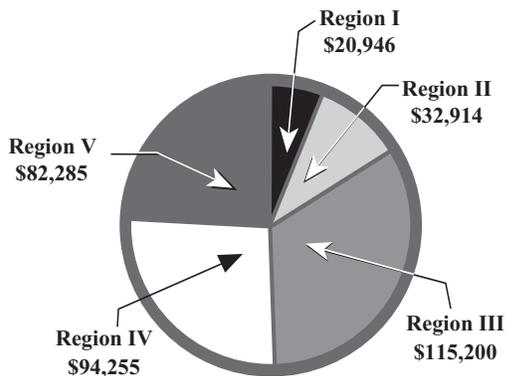
Extended Healthcare Facilities = Nursing Home, Adult Day Care, Rehab

**Health Preparedness Program (HPP)
Bioterrorism Funding for Maryland EMS
(Federal FY 2003 – FY 2009)**

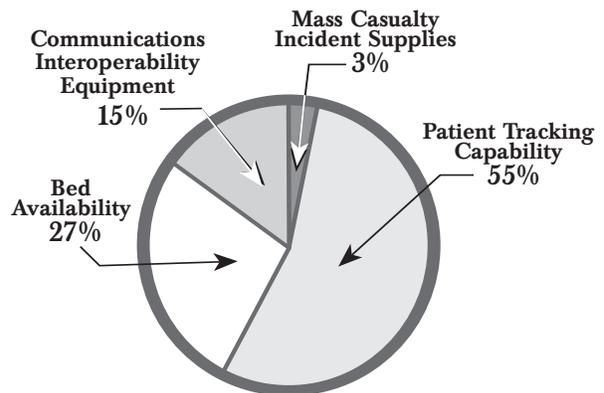
**HPP Bioterrorism Funding Totals
(Federal FY 2003 – FY 2009)**



**HPP Bioterrorism Funding Allocation
By Maryland EMS Region
(Federal FY 2009)**



**HPP Bioterrorism Funding Categories
(Federal FY 2009)**



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 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
Under 1 year	216	206	240
1 to 4 years	596	563	582
5 to 9 years	549	545	514
10 to 14 years	812	763	748
15 to 24 years	5,618	5,458	4,844
25 to 44 years	7,098	6,846	6,534
45 to 64 years	4,784	4,610	4,977
65 + years	2,223	2,429	2,618
Unknown	9	13	10
TOTAL	21,905	21,433	21,067

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	Sinai Hospital of Baltimore	SH
Johns Hopkins Medical System	JHH	Suburban Hospital – Johns Hopkins Medicine	SUB
Peninsula Regional Medical Center	PEN	Washington County Hospital Association	WCH
Prince George's Hospital Center	PGH	Western Maryland Regional	WMRMC
R Adams Cowley Shock Trauma Center	STC	Medical Center	

Total Cases Reported by Trauma Centers

(3-Year Comparison)

Source: Maryland State Trauma Registry

Trauma Center	June 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
The Johns Hopkins Bayview Medical Center	1,815	1,631	1,783
Johns Hopkins Medical System	2,490	2,407	2,071
Peninsula Regional Medical Center	1,685	1,587	1,409
Prince George's Hospital Center	3,042	3,117	2,988
R Adams Cowley Shock Trauma Center	6,386	6,173	6,471
Sinai Hospital of Baltimore	1,773	1,616	1,636
Suburban Hospital–Johns Hopkins Medicine	1,488	1,671	1,614
Washington County Hospital Association	853	783	798
Western Maryland Regional Medical Center	644	781	632
TOTAL	20,176	19,766	19,402

Occurrence of Injury by County: Scene Origin Cases Only

(June 2009 to May 2010)

Source: Maryland State Trauma Registry

County of Injury	Number
Allegany County	349
Anne Arundel County	1,028
Baltimore County	2,533
Calvert County	99
Caroline County	49
Carroll County	283
Cecil County	61
Charles County	212
Dorchester County	93
Frederick County	351
Garrett County	35
Harford County	440
Howard County	453
Kent County	51
Montgomery County	1,423
Prince George's County	1,940
Queen Anne's County	155
St. Mary's County	107
Somerset County	100
Talbot County	36
Washington County	481
Wicomico County	490
Worcester County	281
Baltimore City	4,610
Virginia	73
West Virginia	148
Pennsylvania	107
Washington, DC	224
Delaware	106
Other	1
Not Indicated	716
TOTAL	17,035

Note: Scene origin cases represent 87.8 % of the total trauma cases treated statewide.

Residence of Patients by County: Scene Origin Cases Only

(June 2009 to May 2010)

Source: Maryland State Trauma Registry

County of Residence	Number
Allegany County	313
Anne Arundel County	914
Baltimore County	2,561
Calvert County	133
Caroline County	58
Carroll County	311
Cecil County	67
Charles County	243
Dorchester County	79
Frederick County	337
Garrett County	26
Harford County	527
Howard County	416
Kent County	54
Montgomery County	1,386
Prince George's County	2,009
Queen Anne's County	113
St. Mary's County	78
Somerset County	83
Talbot County	35
Washington County	397
Wicomico County	471
Worcester County	201
Baltimore City	4,296
Virginia	334
West Virginia	225
Pennsylvania	336
Washington, DC	446
Delaware	208
Other	329
Not Indicated	49
TOTAL	17,035

Note: Scene origin cases represent 87.8 % 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

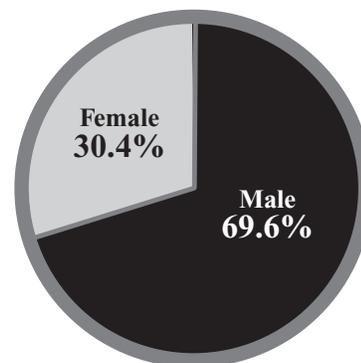
Protective Device	June 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
None	21.4%	22.6%	24.6%
Seatbelt	29.5%	29.0%	28.4%
Airbag & Seatbelt	18.6%	20.6%	21.2%
Airbag Only	3.8%	4.3%	4.1%
Infant/Child Seat	0.2%	0.1%	0.2%
Protective Helmet	13.1%	14.0%	13.6%
Padding/Protective Clothing	0.1%	0.1%	0.1%
Other Protective Device	0.1%	0.1%	0.0%
Unknown	13.2%	9.2%	7.8%
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 2009 to May 2010)

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 2009 to May 2010)

Source: Maryland State Trauma Registry

Modality Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMRMC	TOTAL
Ground Ambulance	93.6%	82.3%	80.2%	83.5%	94.2%	76.1%	96.5%	84.9%	82.0%	84.4%
Helicopter	0.1%	0.6%	9.9%	11.7%	0.0%	23.2%	0.9%	4.2%	10.6%	9.7%
Other	6.3%	17.1%	9.9%	4.8%	5.8%	0.7%	2.6%	10.9%	7.4%	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. In previous years, all patients were included.

Origin of Patient Transport to Trauma Centers

(June 2009 to May 2010)

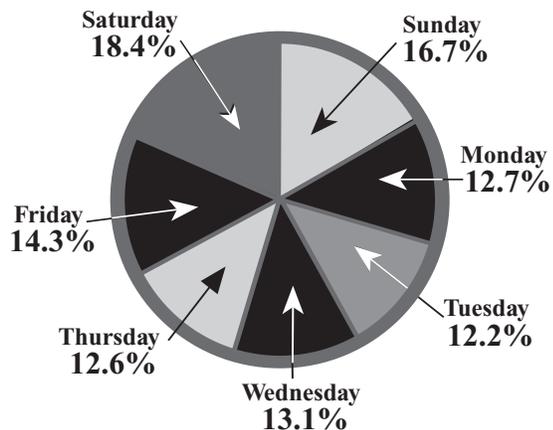
Source: Maryland State Trauma Registry

Origin Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMRMC	TOTAL
Scene of Injury	98.8%	93.7%	89.9%	97.1%	95.5%	73.3%	95.5%	95.4%	93.1%	88.0%
Hospital Transfer	0.0%	5.0%	2.0%	2.3%	1.3%	26.5%	2.7%	1.0%	1.3%	10.3%
Other	1.2%	1.3%	8.1%	0.6%	3.2%	0.2%	1.8%	3.6%	5.6%	1.7%
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 2009 to May 2010)

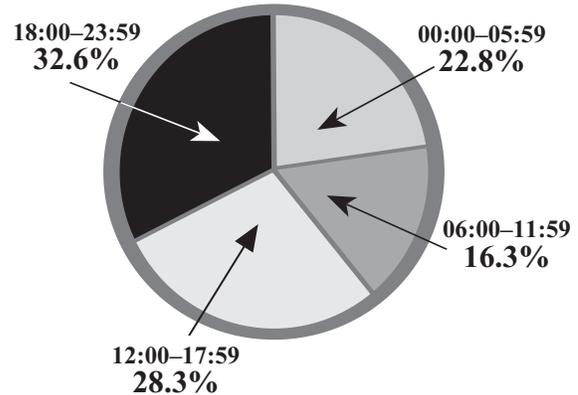
Source: Maryland State Trauma Registry



Emergency Department Arrivals by Time of Day: Primary Admissions Only

(June 2009 to May 2010)

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 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
Under 1 year	2	1	0
1 to 4 years	2	0	2
5 to 14 years	8	5	6
15 to 24 years	152	170	134
25 to 44 years	226	188	199
45 to 64 years	145	134	145
65+ years	198	189	181
Unknown	6	9	5
TOTAL	739	696	672
Deaths Overall as a Percentage of the Total Injuries Treated	3.7%	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 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
Under 1 year	28	35	32
1 to 4 years	137	110	121
5 to 14 years	326	315	306
15 to 24 years	5,573	5,408	4,805
25 to 44 years	7,097	6,846	6,534
45 to 64 years	4,784	4,610	4,977
65+ years	2,223	2,429	2,618
Unknown	8	13	9
TOTAL	20,176	19,766	19,402

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 2009 to May 2010)

Source: Maryland State Trauma Registry

Age	Number of Injured Patients		Number of Deaths	
	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	32	27	0	0
1 to 4 years	121	94	2	2
5 to 14 years	306	254	6	5
15 to 24 years	4,805	4,274	134	121
25 to 44 years	6,534	5,796	199	179
45 to 64 years	4,977	4,387	145	127
65+ years	2,618	2,349	181	162
Unknown	9	7	5	3
TOTAL	19,402	17,188	672	599

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 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
Motor Vehicle Crash	35.1%	34.0%	31.7%
Motorcycle Crash	5.8%	6.4%	5.8%
Pedestrian Incident	5.7%	5.0%	5.6%
Fall	22.7%	24.0%	26.8%
Gunshot Wound	7.1%	7.5%	6.9%
Stab Wound	7.2%	6.3%	7.0%
Other	16.4%	16.8%	16.2%
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.

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

(June 2009 to May 2010)

Source: Maryland State Trauma Registry

Blood Alcohol Content	Motor Vehicle				Total
	Crash	Assault	Fall	Other	
Negative	58.5%	44.9%	56.4%	58.3%	55.0%
Positive	26.1%	36.8%	17.7%	14.6%	25.2%
Undetermined	15.4%	18.3%	25.9%	27.1%	19.8%
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 2009 to May 2010)

Source: Maryland State Trauma Registry

Age	Motor Vehicle		Pedestrian	Fall	Gunshot Wound	Stab Wound	Other	Total
	Crash	Motorcycle						
Under 1 year	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.1%	0.1%
1 to 4 years	0.3%	0.0%	0.1%	0.6%	0.0%	0.0%	0.6%	0.4%
5 to 14 years	1.0%	0.5%	1.9%	1.0%	0.6%	0.7%	2.1%	1.2%
15 to 24 years	26.2%	20.7%	19.8%	7.4%	44.2%	37.2%	22.0%	21.8%
25 to 44 years	35.4%	41.1%	30.6%	19.0%	42.7%	43.5%	38.5%	32.6%
45 to 64 years	25.3%	35.1%	35.0%	31.4%	11.0%	17.4%	30.6%	27.3%
65+ years	11.8%	2.6%	12.3%	40.3%	1.1%	1.2%	6.1%	16.5%
Unknown	0.0%	0.0%	0.3%	0.0%	0.4%	0.0%	0.0%	0.1%
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. 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 2009 to May 2010)

Source: Maryland State Trauma Registry

Etiology	Percentage
Motor Vehicle Crash	37.9%
Motorcycle Crash	6.9%
Pedestrian Incident	6.7%
Fall	31.6%
Other	16.8%
Unknown	0.1%
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 2009 to May 2010)

Source: Maryland State Trauma Registry

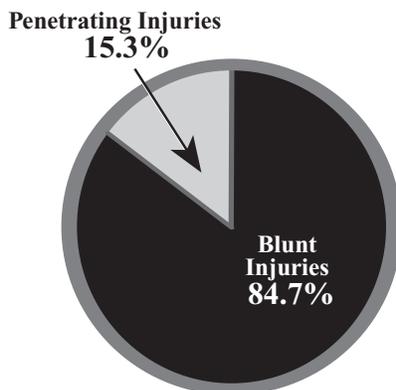
Etiology	Percentage
Motorcycle Crash	0.1%
Gunshot Wound	46.0%
Stabbing	46.3%
Fall	2.1%
Other	5.4%
Unknown	0.1%
TOTAL	100.0%

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

Injury Type Distribution of Patients: Primary Admissions Only

(June 2009 to May 2010)

Source: Maryland State Trauma Registry

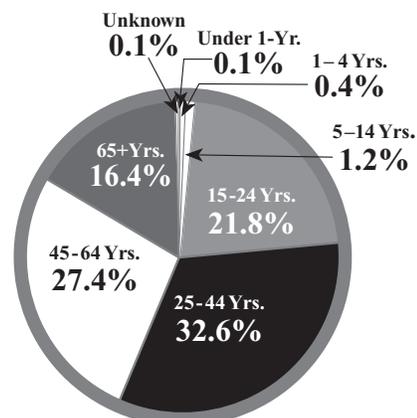


Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival.

Age Distribution of Patients: Primary Admissions Only

(June 2009 to May 2010)

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.

Final Disposition of Patients: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

Final Disposition	June 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
Inpatient Rehab Facility	11.2%	11.7%	12.4%
Skilled Nursing Facility	1.7%	2.1%	2.3%
Residential Facility	1.1%	1.3%	1.3%
Specialty Referral Center	4.2%	4.3%	3.5%
Home with Services	2.8%	2.5%	2.6%
Home	68.7%	67.9%	68.2%
Acute Care Hospital	2.1%	1.8%	1.9%
Against Medical Advice	2.2%	2.1%	1.8%
Morgue/Died	5.2%	5.1%	5.0%
Left Without Treatment	0.1%	0.4%	0.4%
Other	0.7%	0.8%	0.6%
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 Penetrating Injuries: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

ISS	June 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
1 to 12	73.4%	71.2%	73.3%
13 to 19	10.8%	11.8%	11.3%
20 to 35	10.8%	12.2%	10.5%
36 to 75	5.0%	4.8%	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 2009 to May 2010)

Source: Maryland State Trauma Registry

ISS	Blunt	Penetrating	Total
1 to 12	69.3%	73.3%	69.9%
13 to 19	16.5%	11.3%	15.7%
20 to 35	11.7%	10.5%	11.5%
36 to 75	2.5%	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 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
1 to 12	70.2%	69.6%	69.3%
13 to 19	16.0%	15.8%	16.5%
20 to 35	11.0%	11.8%	11.7%
36 to 75	2.8%	2.8%	2.5%
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 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
1 to 12	70.7%	69.8%	69.9%
13 to 19	15.2%	15.2%	15.7%
20 to 35	11.0%	11.9%	11.5%
36 to 75	3.1%	3.1%	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 PEDIATRIC TRAUMA STATISTICS

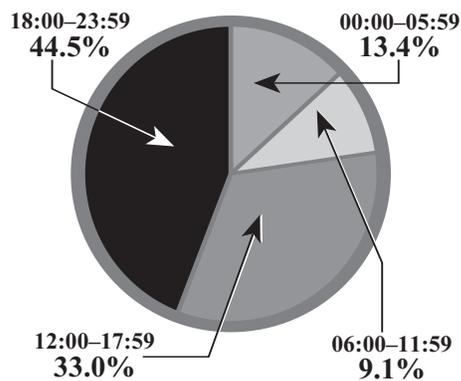
Legend Code	
Children's National Medical Center	CNMC
Johns Hopkins Pediatric Trauma Center	JHP

Total Cases Treated at Pediatric Trauma Centers (3-Year Comparison)			
Trauma Center	June 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
CNMC	889	851	851
JHP	840	816	814
TOTAL	1,729	1,667	1,665

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.

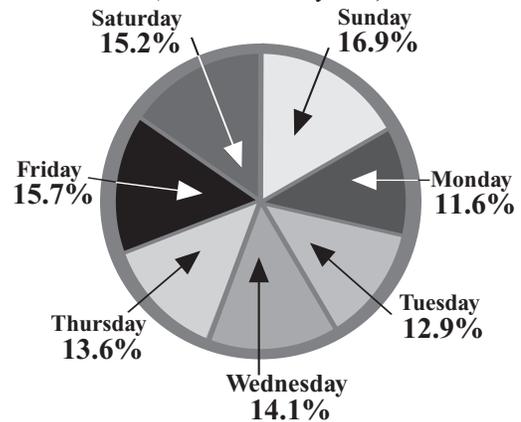
Emergency Department Arrivals by Time of Day: Children Treated at Pediatric Trauma Centers

(June 2009 to May 2010)



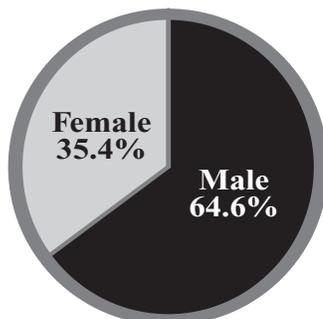
Emergency Department Arrivals by Day of Week: Children Treated at Pediatric Trauma Centers

(June 2009 to May 2010)



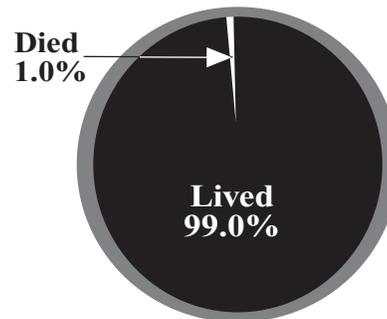
Gender Profile: Children Treated at Pediatric Trauma Centers

(June 2009 to May 2010)



Outcome Profile: Children Treated at Pediatric Trauma Centers

(June 2009 to May 2010)



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 2009 to May 2010)*

Modality Type	CNMC	JHP	Total
Ground Ambulance	65.3%	81.9%	75.3%
Helicopter	17.1%	16.1%	16.5%
Other	17.6%	2.0%	8.2%
TOTAL	100.0%	100.0%	100.0%

Note: Only patients brought directly from the scene to a trauma center are included in this table. In previous years, all patients were included. 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 2009 to May 2010)*

Origin	CNMC	JHP	Total
Scene of Injury	48.2%	75.5%	61.6%
Hospital Transfer	43.6%	24.3%	34.1%
Other	8.2%	0.2%	4.3%
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 2009 to May 2010)*

Age	Number of Injured Patients		Number of Deaths	
	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	209	208	4	4
1 to 4 years	461	436	7	7
5 to 9 years	407	385	2	1
10 to 14 years	549	522	3	3
15+ years	39	38	0	0
TOTAL	1,665	1,589	16	15

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 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
Inpatient Rehab Facility	3.0%	1.4%	2.5%
Skilled Nursing Facility	0.1%	0.0%	0.0%
Residential Facility	0.1%	0.3%	0.0%
Specialty Referral Center	0.3%	0.0%	0.1%
Home with Services	0.6%	0.8%	1.1%
Home	94.2%	95.5%	94.1%
Acute Care Hospital	0.1%	0.4%	0.1%
Against Medical Advice	0.1%	0.1%	0.1%
Morgue/Died	0.8%	1.0%	1.0%
Foster Care	0.3%	0.3%	0.7%
Other	0.4%	0.2%	0.3%
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 2009 to May 2010)

Age	Motor Vehicle		Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
	Crash	Motorcycle						
Under 1 year	5.8%	0.0%	2.0%	17.4%	0.0%	0.0%	12.4%	12.2%
1 to 4 years	27.4%	11.1%	19.6%	36.6%	9.1%	17.6%	16.5%	27.9%
5 to 9 years	34.0%	11.1%	31.3%	22.4%	18.2%	26.5%	20.5%	24.7%
10 to 14 years	32.1%	77.8%	45.1%	21.6%	72.7%	55.9%	45.8%	32.8%
15+ years	0.7%	0.0%	2.0%	2.0%	0.0%	0.0%	4.8%	2.4%
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 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
Blunt	95.0%	94.5%	94.9%
Penetrating	2.8%	3.7%	3.9%
Near Drowning	0.5%	0.7%	0.4%
Hanging	0.2%	0.2%	0.1%
Ingestion	0.0%	0.0%	0.1%
Crush	0.0%	0.2%	0.3%
Snake Bite/Spider Bite	0.1%	0.1%	0.0%
Animal Bite/Human Bite	1.3%	0.3%	0.3%
Other	0.1%	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.

Number of Injuries by Age

3-Year Comparison

Children Treated at Pediatric Trauma Centers

Age	June 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
Under 1 year	189	171	209
1 to 4 years	459	453	461
5 to 9 years	441	435	407
10 to 14 years	594	558	549
15+ years	46	50	39
TOTAL	1,729	1,667	1,665

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 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
Motor Vehicle Crash	20.9%	16.7%	17.0%
Motorcycle Crash	1.4%	1.2%	0.5%
Pedestrian Incident	9.8%	9.3%	9.3%
Gunshot Wound	1.2%	1.0%	0.7%
Stabbing*	1.2%	1.1%	2.1%
Fall	42.0%	46.0%	46.3%
Other	23.5%	24.7%	24.1%
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 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
Under 1 year	4	3	4
1 to 4 years	2	7	7
5 to 9 years	4	5	2
10 to 14 years	3	1	3
15+ years	0	0	0
TOTAL	13	16	16

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 2009 to May 2010)

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
Under 1 year	4.6%	0.0%	1.6%	17.5%	0.0%	0.0%	11.0%	11.3%
1 to 4 years	26.1%	5.0%	17.4%	38.2%	5.6%	13.6%	17.6%	28.1%
5 to 9 years	33.2%	15.0%	29.3%	21.9%	22.2%	20.5%	22.5%	24.9%
10 to 14 years	36.1%	80.0%	51.7%	22.4%	72.2%	65.9%	48.9%	35.7%
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 2009 to May 2010)*

County of Residence	Number
Allegany County	1
Anne Arundel County	82
Baltimore County	107
Calvert County	10
Caroline County	8
Carroll County	29
Cecil County	9
Charles County	20
Dorchester County	2
Frederick County	16
Harford County	38
Howard County	38
Kent County	2
Montgomery County	110
Prince George's County	210
Queen Anne's County	18
St. Mary's County	17
Somerset County	1
Talbot County	3
Washington County	2
Baltimore City	246
Virginia	13
Pennsylvania	9
Washington, DC	20
Delaware	3
Other	10
TOTAL	1,024

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 61.5% 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 2009 to May 2010)*

County of Injury	Number
Anne Arundel County	72
Baltimore County	146
Calvert County	13
Caroline County	8
Carroll County	33
Cecil County	10
Charles County	18
Dorchester County	3
Frederick County	24
Harford County	45
Howard County	42
Kent County	5
Montgomery County	98
Prince George's County	217
Queen Anne's County	19
St. Mary's County	19
Somerset County	1
Talbot County	5
Washington County	2
Baltimore City	204
Virginia	4
Pennsylvania	2
Washington, DC	21
Delaware	1
Not Indicated	12
TOTAL	1,024

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 61.5% 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 2007 to May 2008	June 2008 to May 2009	June 2009 to May 2010
None	34.8%	41.7%	40.9%
Seatbelt	20.3%	17.5%	19.7%
Airbag & Seatbelt	2.3%	0.7%	2.7%
Airbag Only	0.6%	1.2%	0.0%
Infant/Child Seat	14.0%	14.3%	16.0%
Protective Helmet	9.1%	8.1%	7.2%
Padding/Protective Clothing	1.2%	1.0%	0.5%
Unknown	17.7%	15.5%	13.0%
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.

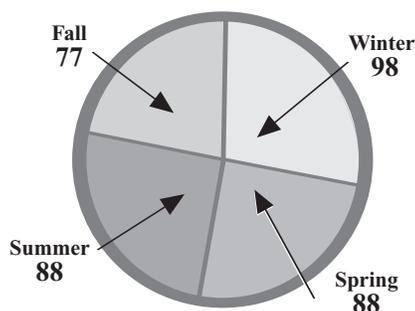
MARYLAND PEDIATRIC BURN STATISTICS

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

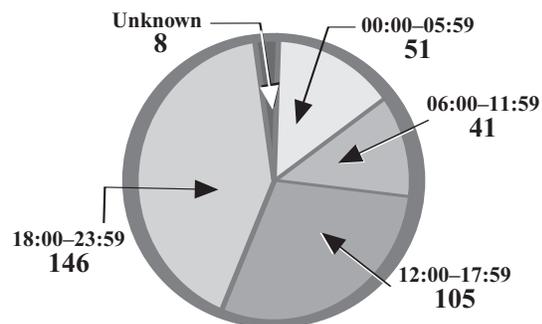
Total Number of Pediatric Burn Cases	
<i>Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (June 2009 to May 2010)</i>	
<i>Source: Maryland State Trauma Registry</i>	
Burn Center	Number
Children's National Medical Center Pediatric Burn Center	102
Johns Hopkins Pediatric Burn Center	230
Johns Hopkins Burn Center (at Bayview)	19
TOTAL	351

Place of Injury	
<i>Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (June 2009 to May 2010)</i>	
<i>Source: Maryland State Trauma Registry</i>	
Place of Injury	Number
Home	303
Place for Recreation or Sport	5
Street/Highway	9
Public Building	2
Other Specified Place	6
Unspecified Place	26
TOTAL	351

Season of the Year Distribution



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 2009 to May 2010)
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 2009 to May 2010)*

Source: Maryland State Trauma Registry

County of Injury	Number
Allegany County	1
Anne Arundel County	16
Baltimore County	56
Caroline County	2
Carroll County	6
Cecil County	2
Charles County	6
Frederick County	4
Harford County	15
Howard County	12
Montgomery County	35
Prince George's County	45
Queen Anne's County	1
Somerset County	4
St. Mary's County	6
Talbot County	3
Washington County	2
Wicomico County	3
Worcester County	3
Baltimore City	68
West Virginia	3
Pennsylvania	20
Other	4
Not Indicated	34
TOTAL	351

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 2009 to May 2010)*

Source: Maryland State Trauma Registry

County of Residence	Number
Allegany County	1
Anne Arundel County	18
Baltimore County	58
Caroline County	2
Carroll County	7
Cecil County	5
Charles County	7
Frederick County	5
Harford County	18
Howard County	14
Montgomery County	35
Prince George's County	44
Queen Anne's County	1
Somerset County	4
St. Mary's County	6
Talbot County	4
Washington County	3
Wicomico County	3
Worcester County	1
Baltimore City	76
Virginia	1
West Virginia	3
Pennsylvania	24
Washington, DC	1
Other	8
Not Valued	2
TOTAL	351

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 2009 to May 2010)*

Source: Maryland State Trauma Registry

Modality Type	CNMCBC	JHPBC	JHBC	Total
Ground Ambulance	63	133	3	199
Helicopter	4	22	0	26
Other	34	62	16	112
Not Valued	1	13	0	14
TOTAL	102	230	19	351

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 2009 to May 2010)

Source: Maryland State Trauma Registry

Age Range	Electrical	Chemical	Thermal			Inhalation	Unknown	Total
			Flame	Contact	Scald			
Under 1 year	0	1	0	21	27	1	1	51
1 to 4 years	1	2	9	51	112	1	6	182
5 to 9 years	1	0	14	17	34	2	2	70
10 to 14 years	1	0	15	6	18	0	0	40
15 years and over	0	0	0	0	6	1	0	7
Not Valued	0	0	0	0	1	0	0	1
TOTAL	3	3	38	95	198	5	9	351

Final Disposition of Patients

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (June 2009 to May 2010)

Source: Maryland State Trauma Registry

Final Disposition	Number
Inpatient Rehab Facility	16
Specialty Referral Center	9
Home with Services	22
Home	298
Medical Examiner/Morgue	3
Foster Care	2
Not Indicated	1
TOTAL	351

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 2009 to May 2010)

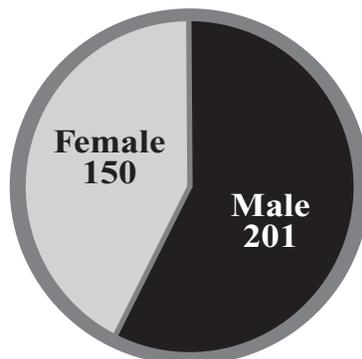
Source: Maryland State Trauma Registry

Length of Stay	Less Than 10% TBSA	10 - 19% TBSA	20% or Greater TBSA	Not Valued	Total
1 Day	212	6	1	16	235
2 - 3 Days	44	8	1	11	64
4 - 7 Days	16	4	3	4	27
8 - 14 Days	4	4	0	3	11
15 - 21 Days	2	1	1	1	5
22 - 28 Days	1	2	1	0	4
Over 28 Days	1	0	1	3	5
TOTAL	280	25	8	38	351

Gender Distribution

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at Johns Hopkins Burn Center at Bayview June 2009 to May 2010

Source: Maryland State Trauma Registry



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 new Shock, Trauma and Anesthesiology Research - Organized Research Center (STAR-ORC) will become 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. The new center becomes the seventh ORC at the UMSOM. The STAR-ORC is led by Alan I. Faden, MD, 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 40 cases were enrolled into CIREN during the 2008-2009 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 200 teens in Southern Maryland to evaluate their driving behaviors and the levels of parental involvement in the development of their driving skills. While data collection continues through September 2010, preliminary results were given at a meeting of the Association for the Advancement of Automotive Medicine and to other traffic safety partners.

During the past year, the Maryland CODES (Crash Outcome Data Evaluation System) 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 18 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 December 2009 webinar had 80 participants join to learn about NHTSA's CODES program's current status, operational objectives, and how CODES applica-



tions can be of help to them, their State, and their current projects. Finally, 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 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 two to three trainees per year for two-year fellowships. The first NIH-supported R Adams Cowley Research Fellow started in July 2007, and four additional 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 this past year. 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.

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