



*Maryland Institute for
Emergency Medical Services Systems*



*2008-2009
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.



2008–2009 ANNUAL REPORT

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Mission/Vision/Key Goals

MISSION

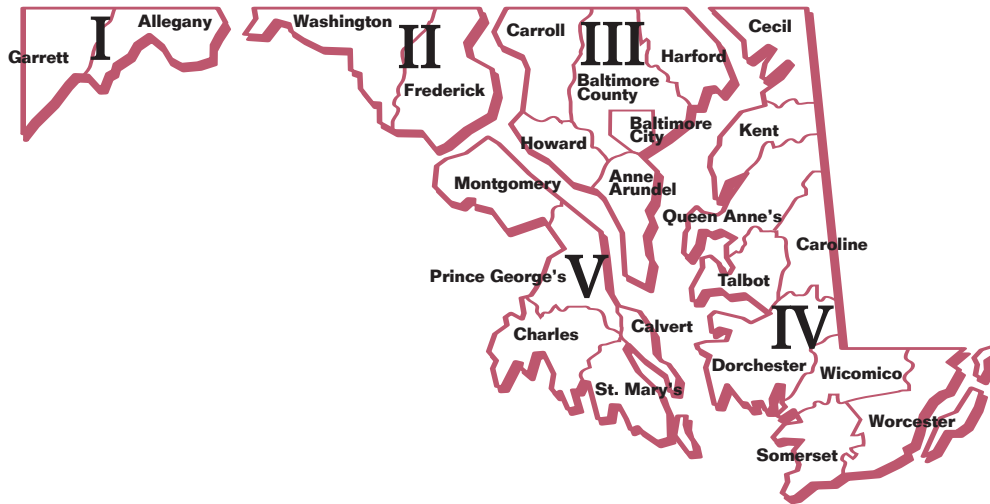
Consistent with Maryland law and guided by the EMS Plan, to provide the resources (communications, infrastructure, grants, and training), leadership (vision, expertise, and coordination), and oversight (medical, regulatory, and administrative) necessary for Maryland's statewide emergency medical services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

VISION

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

KEY GOALS

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



FROM THE EMS BOARD CHAIRMAN



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

This past year has been framed by the events of September 28, 2008, when Trooper 2 of the Maryland State Police Aviation Command fleet crashed in a wooded area in Forestville. Helicopter Pilot Corporal Stephen H. Bunker, Flight Paramedic Mickey C. Lippy, and EMT-B Tonya Mallard from the Waldorf Volunteer Fire Department tragically died while on a life-saving mission. Ashley Younger, one of the patients being transported, was killed. The second patient, Jordan Wells, survived the crash and continues her medical treatment. This accident struck to the very core of the EMS system in Maryland. The Emergency Medical Services Board, MIEMSS, and the Maryland State Police committed to honoring the lives of those who died by redoubling efforts to ensure that Maryland's Medevac service is effective and efficient and will continue to serve as the model for safe emergency helicopter transport.

On October 9, 2008, a protocol change went into effect requiring medical consultation for all Medevac requests for trauma Category "C," "mechanisms of injury" patients, or "D," those patients with certain comorbid factors who appear otherwise without apparent injury. This alteration was made to offer EMS providers working under difficult conditions the opportunity to review the patient's medical condition

with medical personnel and to discuss the most appropriate transport mode and destination given that condition. Prior to this action and the crash, protocols had been amended to require ground transport when the drive time from the scene to the facility was less than 30 minutes. MIEMSS is tracking these trends and reviewing patient data to ensure that patients are being transported to the proper facilities for treatment.

Following the crash, the EMS Board appointed a panel comprised of experts in emergency medicine, trauma, EMS, field triage, and the use of Medevac services to make recommendations regarding the transport of trauma patients from the scene of an incident.

The Expert Panel for Helicopter Emergency Medical Services concluded that:

- Maryland is a long-standing model EMS and trauma system that integrates all components.
- Maryland trauma system performance meets and likely exceeds the national average.
- Field trauma triage protocols are consistent with national guidelines.
- MSP Aviation has been recognized nationally and internationally in helicopter operations and should continue its leadership role.
- The role of the centralized MIEMSS SYSCOM center is unique, a national model, and should be strengthened.
- Helicopter EMS is an essential component of an EMS and trauma system that contributes to improved outcomes.
- Helicopter over-triage in Maryland appears to exceed other areas of the country.
- MSP Aviation should become FAA Part 135 certified.
- MSP Aviation should become CAMTS accredited.
- Maryland may need fewer helicopters which will require an in-depth multidisciplinary analysis.

During the 2009 General Assembly session, the report of a workgroup named by the Speaker of the House was supportive of the Statewide EMS system and Maryland's Medevac program and made recommendations that will enhance our efforts to upgrade helicopter safety. The workgroup also encouraged continued oversight and evaluation to ensure efficient and

effective operations and best medical practices. Their report endorsed the Expert Panel recommendations, the multi-mission capability of the Maryland State Police, and the implementation of the helicopter replacement program.

Several other pieces of legislation that would have significantly altered Maryland's EMS system, public safety, and Medevac programs were unsuccessful. Efforts to split law enforcement and Medevac helicopter operations, to privatize the medical portion of helicopter services, to abolish the current Maryland model of emergency medical services organization and operation, and to delay the procurement of MSP replacement helicopters were defeated.

Funding has been approved to equip the current fleet with additional safety enhancements. The Maryland State Police is moving toward accreditation and higher-level FAA compliance that will improve fleet operations and medical oversight. In addition, a capital budget allocation of over \$50 million for initial purchases for a replacement fleet was approved.

Out of this tragedy has come a commitment, shared by the Board, the Expert Panel, the General Assembly, and the EMS community, to continue efforts to improve the safety, reliability, efficiency, and medical outcomes of the Medevac program and emergency medical services in Maryland. Our thanks go out to Governor O'Malley, the General Assembly, our partners in the EMS Operations Fund, including the Maryland State Police, the Maryland Fire and Rescue Institute, the Shock Trauma Center, and the Maryland State Firemen's Association, the Statewide EMS Advisory Council, the EMS community, and the citizens of Maryland for their support.

The 2008-2009 MIEMSS Annual Report is dedicated to the lives of those who died in the crash of Trooper 2 on September 28, 2009. Our thoughts and prayers remain with them and with their families.



MIEMSS

FROM THE EXECUTIVE DIRECTOR



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

The ability of our emergency medical service providers to respond to life-threatening emergencies, to provide the effective care required by emergency patients even under the most challenging circumstances, and to ensure the ongoing and seamless operation of our renowned statewide EMS system has never been more tested than it was during the past year. The loss of life resulting from the crash of the Maryland State Police Trooper 2 Medevac helicopter was devastating to our entire EMS community, and emergency medical services personnel throughout the country joined with us to mourn our fallen comrades. It is to the memory of those lost that we dedicate this 2008-2009 Annual Report.

In the weeks and months after the crash, our EMS system responded to the myriad of issues and challenges that followed. EMS providers and jurisdictions; hospitals and trauma centers; physicians, nurses, and allied health care personnel; and local, county, and state officials all joined together to ensure that our EMS system remained strong and capable of meeting the current and future emergency care needs of our citizens. Input from experts in trauma care, helicopter systems, and EMS provided useful insight into how the system should

move forward. Protocols were revised and implemented, and dispatchers and providers were trained in their application. Helicopter quality improvement initiatives were expanded to include the development of an electronic Helicopter Utilization Database (“HUD”) that will provide detailed documentation, tracking, and medical review for each scene medevac transport in Maryland. The electronic system, which took several months to develop, is scheduled for full implementation in September 2009. All together, these efforts will provide a strong foundation to help ensure that Maryland continues to provide safe and effective emergency care to the critically ill and injured.

Our statewide system responded to other changes during the year, as well. In January 2009, the *National EMS Education Standards* were formally released by the National Highway Traffic Safety Administration. These education standards, which replace the old National Standard Curriculum, will help guide EMS education program managers and educators throughout the county by outlining the minimal standards and competencies for entry-level EMS providers.

The *National EMS Education Standards* offer an opportunity for a broad transformation from the way EMS education has occurred in the past. Previously, standard curricula that were typically prescriptive were taught in EMS provider educational courses. That approach resulted in curricula that could become quickly out-of-date as new research indicated that various pre-hospital therapies and treatments should be changed. The National Standard Curricula were viewed as static while containing dynamic medical content that frequently needing updating.

Unlike standard curricula, however, the new *Education Standards* are broad enough to allow educational programs more flexibility to enhance and improve their programs; an added advantage is that educational programs will not have to change what they teach as frequently as they have had to in the past. Each component

of the new *Education Standards* identifies minimal terminal learning objectives for each level of licensure.

Adoption of the approach that is embodied in the *Education Standards* mirrors the educational approach that other allied health professions have, which is to adopt broader education standards that would allow educational programs and instructors to develop more creative ways to teach. Over the next several years, working along with our partners, we will be reviewing the new *National EMS Education Standards* and working to incorporate them into educational programs for EMS providers in Maryland.

In the last several months of this fiscal year, much effort has been devoted toward preparations for the upcoming flu season. Unlike previous flu seasons, however, the anticipated outbreak of the H1N1 (“swine flu”) virus has resulted in even closer coordination and planning of response activities with state and local public health officials. The virus presents special concerns for

EMS providers who must provide patient care and treatment in uncontrolled environments, often within the confined space of an ambulance, and typically without full access to the patient's medical history. Federal and state agencies have developed a variety of resources to assist emergency personnel in preparing to respond to and provide care for persons who may be ill or have been exposed to the flu virus. Updated information and links may be found at the MIEMSS website at www.miemss.org.

As we close the 2008-2009 fiscal year, I want to express my sincere gratitude to our EMS providers for their strength of commitment, selfless dedication, and untiring efforts. Maryland's statewide EMS system continues to be the model system that it has been for so many years. Together, we will move forward to ensure that our statewide system continues to meet the needs of the critically ill and injured.

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 FY 2009 budget information is displayed by state object code and department in the charts on pages 5-6.

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.

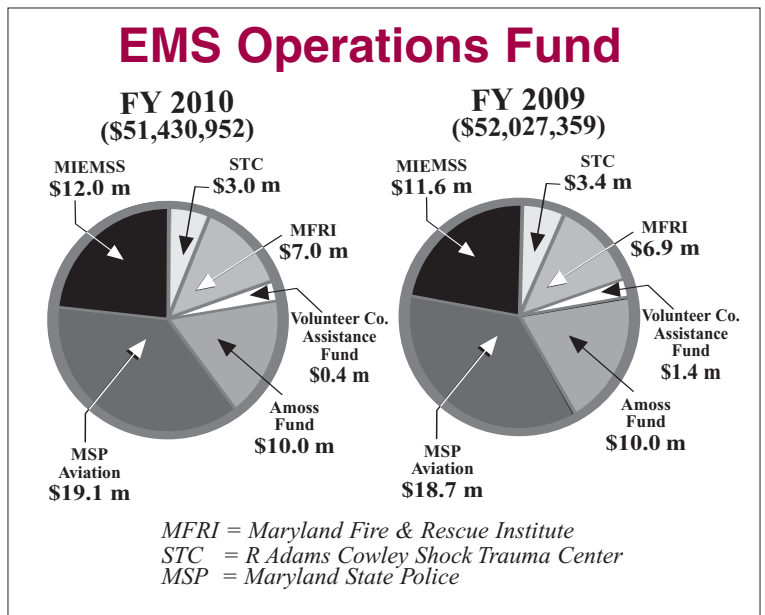
FY 2009 was a year of significant personal and public tragedy for the Maryland State Police (MSP) Aviation Command. Pilot Steve Bunker, Trooper/Flight Paramedic Mickey Lippy, Waldorf EMT Tonya Mallard, and patient Ashley Younger were killed in the crash of Trooper 2 on September 28,

2008. Injured in the crash was patient Jordan Wells. Just six weeks later the Aviation Command was again shocked by another tragedy when F/Sgt Tobin Triebel, Flight Paramedic and head of Training, was struck by a vehicle and killed while jogging. The following months have been marked by much internal and external reflection and review. The MSP Aviation Command remains a strong program that is well-integrated into a strong statewide system of care, and further improvements are underway.

In FY 2009 there were 2,414 patients transported by the Maryland State Police (MSP) Aviation Command. Of these patients, 2,356 (98%) were transported from the scene of injury at the request of the local fire services, and 58 (2%) were transported between hospitals to a higher level of care.

Types of calls included the following:

• Motor vehicle crashes	1,066
• Falls	394
• Pedestrians	105
• Assaults	60
• Gunshot wounds	56
• Burns	42
• Stabbings	32
• Hand injuries	15
• Drownings	13
• Industrial accidents	10
• Eye injuries	4
• Electrocutions	3
• Hyperbaric patients	2



ANALYSIS, INFORMATICS, AND RESEARCH

Mission: To contribute to MIEMSS' mission of reducing preventable deaths, disability, and discomfort from injury and acute illness by supporting the ongoing effort of improvement of the EMS system through scientific analysis of EMS data, research, and development of EMS information collection and dissemination tools.

MIEMSS FY 2009 EMS Operations Fund Appropriation by Department

Administrative Offices	
Executive Director, Legal Office	\$639,473
Financial & Human Resources Administration	1,348,882
Planning/Program Development/Total Quality Management	216,714
Communications	
Equipment	1,289,714
Maintenance	1,708,432
EMRC/SYSCOM	1,037,544
Education/Public Information	
Education, Licensure, & Certification/Compliance	1,343,825
Public Information & Media Services	522,671
Information Technology	1,432,366
Medical Services	
Office of Medical Director	567,454
Office of Hospital Programs	318,534
EMS-Children	163,345
Regional Administration	894,659
TOTAL	\$11,483,613

MIEMSS FY 2009 Expenditure by Object Code (Includes All Funds)

FY 2009	Actual
Number of Positions	95.1
Salaries and Wages	\$7,465,566
Technical/Special Fees	425,099
Communication	1,765,165
Travel	154,647
Fuel and Utilities	130,771
Motor Vehicle Operation and Maintenance	215,210
Contractual Services	1,831,698
Supplies and Materials	204,891
Equipment—Replacement	157,729
Equipment—Additional	116,670
Fixed Charges	86,435
Grants	1,531,417
Total Expenditure	\$14,085,298

The primary focus of the Analysis, Informatics, and Research (AIR) Office has been to develop MIEMSS' data systems for advanced integrated analysis. AIR has provided data support and analysis to the various quality improvement processes, including the MIEMSS' quality improvement councils, Confidential Data Access Committee, the Maryland Cardiac Arrest Surveillance System (MCASS), the stroke and trauma systems, and aeromedical operations. Of particular noteworthy support was the maintenance and improvement planning of the electronic Maryland Ambulance Information System (eMAIS).

Over the past year MIEMSS continued to develop research relationships with partners, including the National Study Center for Trauma and EMS, the R Adams Cowley Shock Trauma Center, and the Johns Hopkins Hospital. Efforts were made to develop pediatric research in conjunction with national research groups such as the Pediatric Emergency Care Applied Research Network (PECARN). Two abstracts were submitted for publication concerning the triage and airway management of our prehospital EMS, geriatric patient population.

ATTORNEY GENERAL'S OFFICE

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

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

The Attorney General's Office reviewed and prosecuted 30 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.

The Attorney General's Office participated in a variety of committees, task forces, and work groups. The Attorney General's Office worked with MIEMSS to institute regulations for the designation of primary

stroke centers, hand and upper extremity trauma centers, and acute cardiac interventional centers and to implement changes to the burn center regulations.

The Attorney General's Office also oversaw the participation of MIEMSS in the Emergency Medical Services Do Not Resuscitate program.

The Attorney General's Office made educational presentations at several venues, including Pyramid and the annual Medical Directors Symposium. In addition, the Attorney General's Office participated in task forces monitoring the Automated External Defibrillator (AED) program, the Yellow Alert program, Infection Control programs (including drafting regulations), and developing EMAIS® to replace the current paper runsheet with a computer software application, as well as a joint task force with the Department of Health to implement the requirements of Senate Bill 718. The Attorney General's Office also provided support for a taskforce conducting a comprehensive review of the perinatal standards in Maryland.

The Attorney's General's Office assisted in the administration of several state and federal grant programs and assisted in drafting and implementing several significant technology contracts.

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 continues to lead in the design, implementation, and maintenance of the Statewide Public Safety microwave system. During the past fiscal year, the Communications Department has deployed over seventeen new microwave systems across the state. The Communications Department has continued its partnership role with other state agencies by designing and implementing communication circuits in support of the Department of Homeland Security Border Protection Agency and the Department of Natural Resources' (DNR) new narrow-band high-band radio system.

The Communications Department 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 microwave system.

Communications Engineering Services is still 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.

The Communications Department also continues to acquire and deploy new narrowband-capable base stations in preparation for the 2013 narrow-banding mandate. To date, the infrastructures in Regions I, II, III, and V are narrowband-ready. MIEMSS Communications has 24 base stations to be replaced, and then mobile and portable replacements will be addressed.

The Communications Department has completed the installation of wireless links, routers, switches, and IP phones at 21 hospitals and 8 tower sites as part of a Baltimore Urban Area Security Initiative (UASI) grant. This grant extended the Public Safety Intranet (PSI) to all 21 hospitals and provided each hospital with a Digital Emergency Medical System Telephone (DEMSTEL) IP phone in its Emergency Department and Command Center.

MIEMSS Communications continues to perform site surveys and deploy wireless links, routers, switches, and IP phones throughout the State as part of a PSIC grant with the goal of establishing PSI connectivity and deploying DEMSTEL phones to every hospital, county Public Safety Answering Point (PSAP), and county Emergency Operations Center (EOC).

In addition, MIEMSS Communications continues to be the lead agency in the deployment and maintenance of the Public Safety Intranet (PSI) to support a growing list of Public Safety applications by State, County, and Local public safety partners. This network is the foundation of the CMARC, MESIN, WAGIN, and DEMSTEL interoperability solutions.

Communications Engineering Services completed a major equipment relocation effort at the FAA's Mt. Airy tower. This tower site is critical to the public safety radio systems of Howard, Carroll, Frederick, and Montgomery counties, as well as state agencies. The successful relocation effort was accomplished with minimal disruption to these vital systems.

MIEMSS Communications 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 will deploy high-capacity microwave to key hospitals surrounding Washington, D.C.

The Communications Department played a key role in the deployment of resources to support the 2009 Presidential Inauguration by deploying wireless connectivity along with traditional radio connectivity to the D.C. Fire liaison, as well as to the Disaster Medical Assistance Team (DMAT) located in Prince Georges County. In addition, the Department provided a live DEMSTEL voice conference between public safety entities.

MIEMSS Communications completed a double-hop 4.9 GHz microwave system in support of the temporary relocation of Allegany County's PSAP to its backup center. This provides the transport system necessary to ensure continued operation of the EMS and Allegany County Public Safety communications from the new Allegany Backup EOC during the relocation of Allegany County's primary PSAP.

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 in Maryland. This software solution, not commercially available from the voter manufacturer, allows the department to investigate the move to IP-based communications, which allows greater survivability of systems. Evaluation of VoIP technology continues into FY 2010, as a necessary building block for a TCP/IP command center supporting both legacy and P-25 digital radio systems.

MIEMSS Communications acquired both commercial and open source software tools to assist in the proper engineering design of radio and microwave systems. The tools utilize the latest Space Shuttle Radar Topology Mapping to accurately predict radio propagation and path deficiencies.

In addition, the Department evaluated the latest IP base multimedia logging recorder technologies in support of a PSIC grant. MIEMSS Communications expects to purchase a new multimedia recorder in support of the PSIC grant and the DEMSTEL IP phone system in early FY 2010.

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 2009

• Incidents Reported to IRC	381
• IRC Investigations Initiated	311
• IRC Investigations Conducted	272
• IRC Investigations (FY 2008)	
Continued	39
• IRC Complaints Forwarded to PRP	31
• Complaints Dismissed by PRP	2
• Complaints Forwarded to EMS Board	29

EMS Board Action

• Reprimands	2
• Probation	16
• Suspensions	3
• Revocations	4
• Remedial training	1
• Surrenders	2
• Evaluations	2
• Applications Denied	3
• Case Resolution Conferences	4
• Dismissed	3
• Counseling	1
• Rehab	8
• Random Testing	8

Hearings conducted by OAH	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 2009, the EMS/DNR program provided 148 in-service trainings to 675 health-care providers about the use of the forms. Additionally, the EMS/DNR program responded to 317 phone calls from the public for assistance in obtaining and using the forms.

EMERGENCY HEALTH SERVICES DEPARTMENT

UNIVERSITY OF MARYLAND, 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.

This year Dr. Brian Maguire was named a recipient of a coveted Fulbright Fellowship for work in Australia on preventing injuries among EMS personnel.

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 10 students in Federal, Maryland State, and Baltimore based agencies. All students worked on projects of value for their agencies, producing work product that will be used by the agencies in an ongoing fashion. Three students were hired by the agency they were placed with and another asked to apply for an opening position.

The clinical paramedic program has continued to see an increase in student enrollment and is preparing to implement the new EMS education standards.

The department's Graduate Program continues to prepare local and international students for leadership roles in various aspects of EMS, including the increasingly important cross-over between health, EMS, and emergency management. Both faculty and students are publishing research in respected peer-reviewed journals; this adds to the discourse of EMS developments. Our 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 quali-



fied emergency physicians.

The department's Critical Care Transport program continues to grow, now having served over 8000 students through 534 courses offered nationwide and internationally. The program has grown to 45 educational sites across the country and continues to grow with additional sites being negotiated in Hawaii, Texas, and Utah. 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 600 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 most recent addition to the course offerings is the critical care transport symposium which is held annually in spring. The program has been drawing participants from places as far as Trinidad and Canada and is becoming another nationally talked about program with support of the IAFP and eJEMS.

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.

The department's Center for Emergency Education and Disaster Research (CEEDR) continues to conduct externally funded research and training. Among the many projects of CEEDR has been work with the Maryland Department of Health and Mental Hygiene, local emergency management agencies, and various private consulting companies. CEEDR is currently helping the Federal Emergency Management Agency to construct a course for nationwide use at the university level that is focused on preparedness for mega-scale catastrophic disasters.

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 facility regulations, 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 five Regional Pediatric EMS Advisory Committees, the federal EMSC Partnership grant and research activities, the Safe Kids Maryland state coalition with 8 local coalitions, the Maryland RISK WATCH® Champion Management Team with 12 local communities, and the Child Passenger Safety & Occupant Protection Healthcare grant project.

National Appointments in EMS & EMSC

In Spring 2009, two members of the MIEMSS EMSC Program were appointed to the National Highway Safety Administration (NHTSA) Solutions for Safely Transporting Children in Emergency Vehicles work group: the MIEMSS EMSC Director Cynthia Wright-Johnson, MSN, RN, representing the Emergency Nurses Association, and Associate State EMS Pediatric Medical Director Joseph L. Wright, MD, MPH, FAAP, representing EMSC National Resource Center, have joined with experts from across the country on a two-year NHTSA project to identify best practices for EMS. Also in Spring 2009, Dr. Wright was appointed to the Committee on Pediatric Emergency Medicine (COPEM), part of the American Academy of Pediatrics (AAP), 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 was appointed as the National Association of State EMS Officials' EMSC Council Liaison Representative. In addition, Dr. Wright was appointed to 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.

EMSC Program Activities

The state PEMAC Committee continued to meet on a bimonthly basis throughout FY 2009 with the inclusion of web-based meeting capabilities and the creation of a new website for PEMAC that includes meeting handouts. PEMAC has standing subcommittees: Pediatric Protocol Development; Education & PEPP Steering Committee; 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, Kids in Disasters, 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 - Education; March - Protocols; May - Evidence-Based Practice; July - Pediatric Transport; 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.

Following the Maryland EMS Symposium on May 17, 2009, 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. On May 17, 2009, eight 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 and a downloadable calendar with safety obser-

vances for 2009 can be found at www.miemss.org/EMSCwww/RightCare.html. Also on May 17, the Maryland EMS for Children Award was presented to Mrs. Rose Ann Soloway, RN, MSED in recognition for her involvement in Maryland's poison training for EMS providers and nurses, for her long (and often late) hours on the emergency phone number for the poison center, for her collaboration with the Maryland Poison Center, especially for advocating for children (the most at-risk group for unintentional poisonings) and for advising emergency care professionals on how to handle poison emergencies when they occur.

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 is transitioning to a new centralized burn data registry with new reports to assist local communities with their prevention activities.

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 met in December to share resources as all states work on the federal EMSC Performance Measures and again in June at the EMSC Annual Meeting to identify priorities for pediatric EMS Research.

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 C-spine assessment in 2008; planning for focus groups on Asthma Scoring in 2009; 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 received a three-year renewal for the 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.

Month and Location	Conference Title	Pediatric Components
July 2008 Middletown, MD	Pediatric Case Reviews	Pediatric Case Reviews with a Focus on Spinal Immobilization - Cases from the Region and Hands-On Practice for Pediatric Spinal Immobilization
September 2008 Solomons, MD	Pyramid 2008	Preconference: BLS Pediatric Education for Prehospital Professionals Workshops: Pediatric Case Reviews; Talking with Tweens & Teens in an Emergency; Violent Crashes: Understanding Teens, Teen Drivers, and Prevention Strategies That Can Help; SCORE: Safe Concussion Outcome, Recovery & Education Program; Commotio Cordis: Sudden Death in the Young Athlete; ATVs, BMX, & Motor Cross: Tweens & Teens on Wheels Displays: EMSC Performance Measures, SECURE Ambulance Safety, Child Passenger Safety (CPS) & Occupant Protection (OP) Healthcare Project
September 2008 Ocean City, MD	Peninsula Regional Medical Center Trauma Conference	Display: SECURE Ambulance Safety
October 2008 Silver Spring, MD	Emergency Nurses Association Barbara Proctor Conference	Display: CPS & OP Healthcare Project
December 2008 Ocean Pines, MD	PEPP	ALS Pediatric Education for Prehospital Professionals Course
January 2009 Tilghman Island, MD	Winterfest Conference 2009	Preconference: BLS Pediatric Education for Prehospital Professionals Workshops: Sudden Death in the Young Athlete; Secure: Are You Safe in the Back of Your Ambulance?; SCORE: Safe Concussion Outcome, Recovery & Education Program Displays: EMSC Performance Measures, SECURE Ambulance Safety, CPS & OP Healthcare Project
March 2009 Rocky Gap, MD	Miltenberger Emergency Services Seminar 2009	Preconference: Pediatric Hands-On Airway Workshop for Instructors Workshops: Pediatric Hands-On Airway Workshop; Hot, Hot, Hot: Assessing Pediatric Fever; Pediatric Assessment and Communication - Techniques for Success Displays: SECURE Ambulance Safety, CPS & OP Healthcare Project
March 2009 Reno, NV	National ENA Leadership Conference 2009	Presentation: Coalitions for Injury Prevention: ENCARE, ATS, Injury Free, RISK WATCH®, Safe Kids - Collaboration without Competition
March 2009 Nashville, TN	National Life Savers 2009	Poster: Child Passenger Safety & Occupant Protection Education: Getting Healthcare Providers Involved
April 2009 Ocean City, MD	ENA by the Bay 2009	Preconference: Injury Prevention Provider Workshop Poster Sessions: EMSC & CPS Projects Displays: SECURE Ambulance Safety, CPS & OP Healthcare Project
May 2009 Annapolis, MD	Maryland EMS Symposium 2009	Preconference: Pediatric Vascular Access Workshop Workshops: Unrecognized Cardiac Emergencies in Children; Kids and Falls: The Long and Short of It; The Deadly Combo: CO and Children; Seizing Midazolam; Stepwise Approach to Oxygen Therapy for Kids; Pediatric Medical Cases: The "Once in a Career" Calls Displays: EMSC Performance Measures, SECURE Ambulance Safety, CPS & OP Healthcare Project
June 2009 Alexandria, VA	National EMSC Program Meeting 2009	Presentation: Once Upon a Time: Brief History of EMS in the United States for EMSC Managers
June 2009 Ocean City, MD	Maryland State Firemen's Convention	Workshops: Raising Safe Kids One Stage at a Time, RISKWATCH 101 in the Fire Ambassadors Workshop Displays: Raising Safe Kids One Step at a Time: Interactive Stations and Displays - Focus on Home Safety and Pedestrian Safety

Pediatric EMS & Hospital Education

During each of the EMS and Emergency Nursing educational seminars and conferences in Maryland for 2008-2009, pediatric displays and/or pediatric topics were presented to highlight both protocol changes and findings from ongoing EMSC PECARN studies. Topics included: pediatric medical emergencies, unrecognized cardiac emergencies, all terrain vehicle injuries, consequences of mild traumatic brain injury, and pediatric assessment and case reviews. Preconference activities that utilized a hands-on approach included: BLS Pediatric Education for Prehospital Professionals (PEPP), Instructors Course for Pediatric Airway Management and Pediatric Vascular Access workshops. The EMSC Program staff and medical directors from PEMAC continue to support the Maryland Enhanced PEPP courses and to coordinate the statewide PEPP Steering Committee to facilitate sharing of faculty resources, on-site pediatric medical directors, and identify material that correlates with the Maryland EMS Medical Protocols. Updates and information for coordinators and faculty can be found at www.miemss.org/EMSCwww/PEPPEnhanced2.htm

In addition to educational seminars and conferences, the Maryland EMSC program supported the offering of a Pediatric Case Review with a Focus on Spinal Immobilization in Middletown, MD. The program featured pediatric trauma cases from Region II and hands-on skill review for providers to practice pediatric spinal immobilization. Also offered were a BLS PEPP Course at Winterfest in January 2009 and an ALS PEPP course in Ocean Pines, MD in December 2008. Both courses included updates for new and returning PEPP instructors. The Maryland EMSC program worked collaboratively with the MIEMSS SEMSAC BLS Subcommittee to produce a Lower Extremity Resource for EMS Instructors. Ongoing projects include a revision to the 24-hour refresher curriculum for EMT-Bs and the production of a training DVD on establishing intraosseous (IO) access.

Injury Prevention and Life Safety

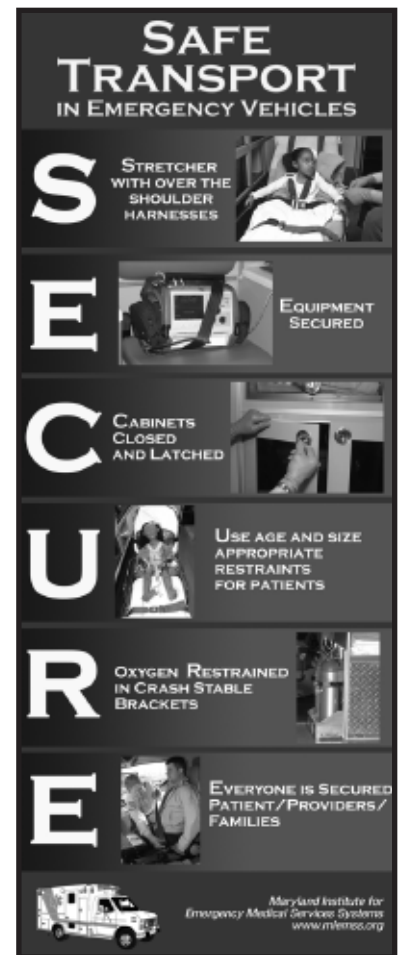
The EMSC Program staff participates in national, state, and local Safe Kids coalitions; the Maryland division of the American Trauma Society (ATS); the Maryland Occupant Task Force; and the Child Passenger Safety Board coordinated by the State Highway Administration. This collaboration provides a consistent flow of information to the five regional pediatric committees and the state PEMAC on injury prevention resources and initiatives. EMSC continues to participate on the Child Fatality Review Committee in collaboration with the Maternal Child Health Department and with 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 with a focus on teen driving.

The Maryland RISK WATCH® Champion Management Team is led by the MIEMSS EMSC Program and the Office of the State Fire Marshal, in collaboration with the Maryland State Firemen's Association (MSFA) Fire Prevention & Life Safety Committee and 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 sixth year 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 (Calvert County and Tilghman Island are new to the list this year) working with RISK WATCH® materials and planning for 2008-2009 school, after-school, day-care, and department programs. These include:

- **Carroll County** has RW Injury Prevention at Winfield Elementary School.
- **Cecil County Emergency Services** joined the RW Team, and the Emergency Operations Center is leading the program.
- **Frederick County** has resources for after-school programs in both private and public programs.
- **Howard County's Safe Kids Coalition** has the RW materials for displays and events.
- **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 the 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 both RISK WATCH® Injury Prevention and “Raising Safe Kids - One Stage at a Time” were at the MSFA Convention in Ocean City with educational materials for families and children. Over 400 children and 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. The “steps” included the following stations:

- **9-1-1: Make the Right Call** with the MSFA Simulator and Miss Fire Prevention volunteers and handouts for children

- **Find the Hazards Inside & Out** with the tabletop HAZARD HOUSE focus on fire and injury risk areas with handouts for children and parents

- **Poisons Act Quickly** - 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

- **Get Out & Stay Out: When the Smoke Alarm Sounds**

- o Doll house with EDITH plan materials and live demonstrations of “Get Low and GO” from Miss Fire Prevention & Committee volunteers featuring Sarah
- o Tabletop Display of different smoke alarms and the teaching tools used in our special needs Risk Watch® programs

- o Third table with Burn & Scald prevention materials from Francis Fuchs Special Center and CNMC & MedStar Burn Centers

- **Walk Safe - Cross Safe:** Safe Kids display with materials from the November Railroad Safety campaign and Walk to School / Bus to School safely

- **Raising Kids Safety One Stage at a Time** - Safe Kids Maryland display on the new campaign from Safe Kids USA, along with a running DVD of programs from various injury prevention programs

- **Information Tools for adults and teens:** Websites and templates for injury and fire prevention handouts to plan for company events.

- **Electric Safety Display** - Electrical house was in the PEPCO room and the MSFA Risk Watch® display featured electrical outlet plugs that are large enough to NOT be a choking hazard

The EMSC Program of MIEMSS is the lead for the coordination of the Safe Kids Maryland Coalition and holds quarterly meetings in partnership with the Occupant Protection Task Force at Maryland Highway Safety Office. The state coalition website (www.safekidsmd.org) has been expanded to include online resources and the electronic mailing list for more than 700 members. In addition, the website has been expanded to include meeting minutes and will have links to the local coalitions and subcommittee risk-area agency contacts. For 2008-2009, the coalition meetings have included risk-area topic presentations. Information is on the website from these presentations: Poison Risks Seen in Children & Youth -Maryland Poison Center; Water Safety with Children & Youth -Department of Natural Resources; Child Passenger Safety Update - Kids in Safety Seats; Fire & Burn Safety -Office of State Fire Marshal and Maryland State Firemen's Association and Ladies Auxiliary; Toy Safety - Safe Kids Worldwide; Raising Safe Kids - One Stage at a Time - Safe Kids Week in April; Pedestrian Safety - Safe Routes to School and International Walk This Way Campaign in June.

Child Passenger Safety & Occupant Protection Healthcare Project

The EMSC Program continues to provide leadership for the eighth 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 health care professional practices. A new focus for this grant year has been extending CPS & OP resources to school health professionals across the state. To that end, a CPS & OP presentation was given at a meeting of the School Health Services Coordinators,

and an interactive educational display will provide outreach to school health nurses at the School Health Interdisciplinary Program (SHIP) during the summer of 2009.

Additional focus areas for project activities during 2008 - 2009 included emergency departments and EMS vehicle safety. Emergency Nurses Association (ENA) activities included a statewide mailing of up-to-date CPS & OP resources in October to emergency department contacts in celebration of Emergency Nurses Week™; interactive displays at two regional ENA meetings (Mid-Maryland and Baltimore) and the state ENA by the Bay conference. "SECURE" workshops and interactive displays have been conducted at each EMS regional and state conference in collaboration with the MIEMSS State Office of Commercial Ambulance Licensing & Regulation and the MIEMSS Public Information & Media Services Department. These educational programs provide best practices for securing children, their families, EMS and hospital providers, and equipment within EMS transport vehicles. Posters have been made and were distributed at the MSFA Annual Convention in Ocean City.

The major project for the year has been the production of an educational DVD focused on safe transport of high-risk neonates (for use in NICUs and newborn nurseries in Maryland). The Project Coordinator presented an educational poster at the National Lifesavers Conference in March entitled "Child Passenger Safety & Occupant Protection Education: Getting Healthcare Providers Involved." A special educational summit was held in September for neonatal intensive care unit (NICU) and newborn nursery staff, as well as CPS advocates on safe transport issues for high-risk neonates.

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; and
4. CPS & OP healthcare informational displays and demonstrations of the project products at EMS, nursing, and pediatric conferences across the state.

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 2009, the Emergency Medical Resource Center (EMRC) handled 209,178 telephone calls and 155,196 radio calls. Of these 364,374 calls, 134,945 were communications involving a patient or incidents with multiple patients, while 18,764 of these calls involved on-line medical direction.

In FY 2009, the System Communications Center (SYSCOM) handled 29,972 telephone calls and 2,816 radio calls. Of these 32,788 calls, 4,390 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 and in response to specific requests related to the war in Iraq.

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 575 calls for the Maryland Department of Health and Mental Hygiene (DHMH) 24-hour Duty Officer.

OFFICE OF POLICY, REGULATION, AND GOVERNMENT AFFAIRS

Each year, MIEMSS - along with EMS providers, physicians, nurses, hospitals and other health care providers - works with the Legislative and Executive branches of State government on policy and legislation that affect all the various components of the statewide EMS System, as well as Maryland's health care system in general.

At the outset of the 2009 Maryland General Assembly Session, a 14-member House of Delegates' Workgroup was formed in January to explore a range of cross-jurisdictional issues related to the organization, operation, safety, and efficiency of the Maryland EMS System. The Workgroup, which was organized into three subgroups, focused on whether the EMS system is operating in an efficient, effective, and safe manner and serving the best interests of the citizens of the State.

The Workgroup concluded that the EMS System responded appropriately and swiftly to issues raised in the 2008 Maryland State Police (MSP) helicopter maintenance audit and to the September 2008 helicopter crash. The Workgroup further concluded that the helicopter fleet replacement procurement is proceeding in a manner consistent with the demands of the EMS System and in the best interests of the citizens.

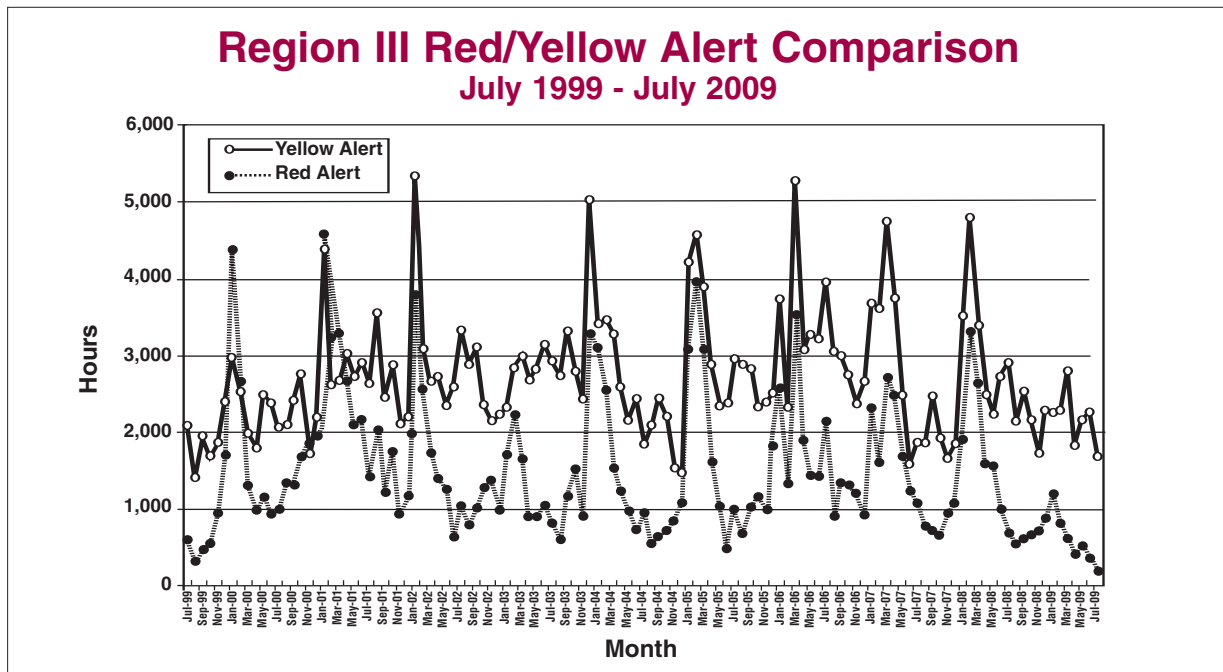
The Workgroup also made specific recommendations to expedite helicopter safety upgrades; improve field provider training; consider different service delivery options for the provision of State helicopter maintenance; collect data and formulate final recom-

mendations on the appropriate number of helicopters and helicopter bases necessary to provide statewide EMS coverage; and study the configuration of State trauma hospitals to ensure that the number and geographic coverage are optimal for the EMS System. The Workgroup indicated that the system must remain dynamic and respond to technological and scientific advancements in the field of emergency medical transport and care with evidence-based reforms and with the goal of maintaining Maryland's preeminence in the EMS field. The Workgroup concluded its work on March 9, 2009; the final report is available at:

<http://mlis.state.md.us/2009rs/misc/EMSWorkgroupReport.pdf>

The "Report on the State Operating Budget (HB 100) and the State Capital Budget (HB 102) and Related Recommendations" ("Joint Chairmen's Report") contained language that requires submission of several reports related to issues that were considered by the House EMS Workgroup. These include the following:

1. Submission of an Update Report on the February 2009 Base Assessment Study which requires that MIEMSS and the MSP submit formal recommendations to the budget committees regarding the number of bases and helicopters necessary to provide statewide EMS coverage. Due date: December 1, 2010.
2. Response to Independent Findings Regarding Triage Protocols, Helicopter Utilization and Helicopter Safety which requires MIEMSS and MSP to jointly prepare and submit a report on the status of implementation of each



of the findings and recommendations of the Expert Panel and certain recommendations of the National Transportation Safety Board. Due date: June 30, 2010.

3. Report Evaluating the Network of Trauma and Specialty Referral Centers which requires that the Maryland Health Care Commission, in coordination with MIEMSS and the EMS Board, evaluate the network of trauma and specialty centers in Maryland and report on how Maryland's health care system could be improved, including whether the State should consider adding and/or consolidating existing trauma centers. Due date: September 30, 2009.
4. Helicopter Maintenance Study requires MSP to conduct a review of all available helicopter maintenance options. Due date: October 1, 2009.

Also during the 2009 Legislative Session, the Maryland Trauma Physician Services Fund was changed to alter the maximum number of trauma on-call hours per year that a Level III trauma center is eligible for reimbursement (from 35,040 to 70,080) and to provide that the costs incurred by a Level III trauma center to maintain trauma physicians on call should include plastic surgery, major vascular surgery, oral or maxillo-facial surgery, and thoracic surgery. Changes to the law also require the Maryland Health Care Commission to determine on or before May 1 what levels of payment can be sustained by the Fund and restricts payment from the Fund if expected Fund revenues are insufficient to meet expected payment.

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 Primary Stroke Center Designation Project is a response to sobering State and national statistics. The project's goal is to coordinate the delivery of care for acute stroke, which is currently the third leading cause of death in Maryland behind heart disease and cancer and accounts for hundreds of millions of dollars in annual health care expenditures. It is part of a portfolio of approaches, referred to as Maryland's

Stroke Action Plan, coordinated by the Maryland State Advisory Council on Heart Disease and 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*.

The regulations include structural and functional requirements for hospitals wishing to be designated as Primary Stroke Centers. Examples are evidence of organizational commitment, an acute stroke team operating under validated protocols, medical and surgical resources, and a commitment to systematic quality management at the hospital and statewide levels. Like the efforts of the established Trauma Quality Improvement Committee (QIC), the results of the Primary Stroke Center network will feed back into the system and complement the findings of EMS operational program quality management to effect state-of-the-art interventions and treatment.

Ongoing activities supporting the designation project included verification surveys, establishing the Primary Stroke Center Quality Improvement Committee and educational offerings. The Office of Hospital Programs conducted three Primary Stroke Center designation visits during FY 2009. This brought the total number of designated centers statewide to 34. (See page 33 for a complete list of primary stroke centers.) The department supports the meetings of the Stroke QIC, 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 Stroke QIC has established bylaws, elected officers, and quickly organized to examine the role of interhospital transfer in the treatment of acute stroke.

MIEMSS and the Department of Health and Mental Hygiene Office of Chronic Disease Prevention (OCDP) are partnering on several heart and stroke initiatives. Through a grant the OCDP received from the Centers for Disease Control and Prevention, fifteen public safety answering points' (PSAPs) emergency medical dispatchers (EMDs) have received stroke education modules to be completed for continuing education units (CEUs) at no charge to the PSAPs. The module is designed to help increase EMD recognition of 9-1-1 callers suffering from a stroke. MIEMSS' and the OCDP's goal is to have all EMDs in Maryland complete the stroke CEU training within the next year.

EMS Base Stations

Office staff also continued to collaborate with the Office of the Medical Director on EMS Base Station verification during FY 2009. Management activities included issuing certifications to Emergency Department personnel completing the Base Station Communications course. Staff also collaborated on the development and distribution of a performance improvement survey tool for EMS providers to evaluate the effectiveness of Base Stations' performance improvement activities with EMS providers.

Trauma System

The Office of Hospital Programs staff completed the first verification/designation process for the Hand Trauma Center located in the Curtis Hand Center at Union Memorial Hospital following the promulgation of regulations and standards for Maryland Hand Trauma Centers in FY 2007. This process involves a call for applications, review of the applications, and an on-site review visit to the hand center with an out-of-state review team that includes a hand trauma surgeon, emergency medicine physician, and a nurse trauma manager/coordinator.

MIEMSS continues to work with the Maryland Health Care Commission to provide trauma registry data to validate trauma patients that are eligible for physician reimbursement under the Trauma Physician Fund.

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.

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/City 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. MIEMSS also updates graphs on a weekly basis that show the percentage of daily yellow alert utilization by region. The graphs can be viewed on the MIEMSS webpage. 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 moderate flu season compared to previous years. The seasonal influenza season ran from September 28, 2008 to May 23, 2009. Peak activity occurred between February 15, 2009 and March 7, 2009 (Source: Maryland Influenza Surveillance Report-2008-2009: Influenza Season Summary. Division of Communicable Disease Surveillance, Office of Epidemiology and Disease Control Programs, Maryland Department of Health and Mental Hygiene).

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 2008-2009 seasonal flu season. In April 2009, a non-seasonal H1N1 flu strain ("swine flu") was identified in Mexico and then in the U.S., as well as in many other countries. 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 2009, MIEMSS processed 138 new applications and 188 renewal applications for a total of 326 AED program approvals. Currently, there are over 1,100 approved programs in the state, totaling approximately 3,200 locations with AEDs onsite and thousands of individuals trained in CPR and AED use. A list of AED facilities and program information can be viewed in the public information section of the MIEMSS webpage.

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

At the 2009 EMS Star of Life Awards Ceremony, MIEMSS was proud to honor the staff of the AED Program at Loyola Blakefield for saving the life of a visitor at a football game who collapsed from sudden cardiac arrest. Staff from Loyola Blakefield 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. To that end, Maryland's public access defibrillation law was again amended by the Maryland General Assembly during the 2008 legislative session to no longer require a sponsoring physician in order to participate in the program. Additionally, the application fee is no longer required and physicians' and dentists' offices are no longer required to register with MIEMSS. The changes became effective October 1, 2008.

MIEMSS continues to partner with other agencies and organizations, such as the American Heart Association, to educate citizens about the benefits of learning CPR and AED use and the Maryland Public Access AED Program. MIEMSS is also represented on the State Advisory Council on Heart Disease and Stroke.

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, hospitals, and 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 Mid-Atlantic Affiliate of Mission Lifeline to identify best practices for statewide STEMI systems. Draft regulations are being reviewed and considered for promulgation. Upon final approval of the regulations, EMS providers will be able implement protocols to transport patients directly to hospitals that provide primary percutaneous coronary intervention (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.

INFORMATION TECHNOLOGY

Mission: To provide a high level of information technologies to jurisdictional EMS systems throughout the State of Maryland by coordinating and developing innovative Information Technology systems for the EMS community.

During FY 2009, the Office of Information Technology (IT) had three primary major responsibilities in meeting its mission. The first was focused around our internal customers and their needs and uses of information technology. IT responsibilities range from network maintenance and upgrades to workstation applications troubleshooting to equipment inventory. The most important objective in the provision of services was the continued maintenance of patient/provider confidentiality and the overall electronic information security.

The second major responsibility of IT was dedicated support to our web-based electronic Maryland Ambulance Information System (eMAIS®). This application was employed by 24 EMS operational programs (Allegany County; Annapolis City; Aberdeen Proving Ground; BWI Airport; Calvert, Caroline, Carroll, Cecil, Charles, Dorchester, Frederick, Garrett, Harford, and Kent counties; Martin State Airport; Maryland State Police Aviation Division; Prince George's, Queen Anne's, St. Mary's, Somerset, Talbot, Washington, and Wicomico counties; and Baltimore City) in full or part of FY 2009. 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.

The IT Office has continued to scan patient care reports during FY 2009 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 2009, MIEMSS has successfully scanned approximately 234,000 MAIS forms. As more jurisdictions move toward a paperless environment by utilizing eMAIS® or non-eMAIS® patient care record systems, scanning MAIS forms will decrease over the years.

The EMAIS® reporting system gives users the flexibility to access standard reports for multiple time periods, as well as various reporting levels, including jurisdictional, company, unit, and provider levels. The export of XML formatted data at the operational program level was achieved during the year. For historical, statewide, data comparison, the eMAIS® and MAIS (paper-based data) formats were again combined to permit an 11-year set of data for access and analysis.

The third area of major support by IT was in the form of data analysis and reporting. The following continue to support MIEMSS and the EMS community in their informational analysis needs:

County/City Hospital Alert Tracking System (CHATS)

The CHATS surveillance program continually monitors the status of each hospital's ability to receive patients in its emergency department and critical care unit. Currently, status changes are completed through a request for status change from the hospital to EMRC, which completes a series of phone calls to notify the EMS/Fire dispatch centers. The status is posted within CHATS on the MIEMSS website. Built within CHATS are a series of different types of reporting capabilities. On April 1, 2008, a new version of CHATS was released. The HC Standard/CHATS release version provides real-time reporting, one-screen navigation, and the ability to download reports in a Microsoft Office Excel format.

MIEMSS continues to use its web-based system called FRED (Facility Resource Emergency

Database). FRED 2.0, in use since 2004, alerts all health care response partners of an incident and allows them to indicate what resources they have to lend to the response. The number of users has nearly doubled with the addition of long-term care facilities.

System 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 to eventually 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 Study (M-CAPD)

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 (see below).

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 27,000 cardiac arrests documented in the system. The Automated External Defibrillator (AED) Task Force utilizes these data to review geographic locations of cardiac arrests. Additionally, information from this study will be updated for the Maryland General Assembly in 2010.

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 2009, 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 six fiscal years is shown on the tables below.

Throughout FY 2009, the Office of Licensure and Certification had a steady workload and issued 3,137 initial licenses and certificates, as well as renewed 6,007 prehospital provider licenses and certificates. The number of renewed certifications and licenses issued for FY 2009 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.

In collaboration with the BLS Committee of the State EMS Advisory Council (SEMSAC), the Office is near completion with the development and implementation of the 2009 EMT-Basic refresher curriculum. The curriculum took the committee more than 1.5 years to develop and focuses on medical emergencies and patient assessment. The curriculum empha-

sizes basic EMT-B assessment skills and within the 24-hour course, students are afforded more opportunity to practice and refine medical skills. The design and development of the curriculum was driven by data from the Maryland Ambulance Information System (MAIS) and EMT-B tests, as well as instructor input. After analyzing the data, the committee, comprised of educational and content experts, continually fine-tuned the document and brought the curriculum to fruition. Throughout the fall of 2009, the Office, in conjunction with staff of the Maryland Fire & Rescue Institute (MFRI), will roll-out the new curriculum across the state to all EMT-B instructors.

The Office of Licensure and Certification has been working closely with participating states in the Atlantic EMS Council (AEMSC) to expand the options and features of the test-generating and grading system used by all members. Following up on recommendations made by the Council's psychometrician, a web-based test generator application was developed (WebTG). This web-based system ensures that bank item data are real-time and ultimately more secure, residing in one centralized location. The Office is also working with the Council to finalize a practice analysis. The practice analysis allows for content validity of examination items so that certification and licensing exams are reflective of what is occurring in the prehospital environment. The implementation and continued enhancement of the WebTG, as well as completion of a practice analysis, will allow the Office of Licensure and Certification to maximize the protection of the public by ensuring the certification of competent entry-level providers.

The Office has also continued with initiatives to implement the components of the national document *EMS Education Agenda for the Future: A Systems Approach*. Specifically, the Office is working in conjunction with SEMSAC to undertake review and subsequent implementation of the education standards. The standards will be the primary document depicting

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

Level	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	As of 9/3/2009
EMD	873	731	732	832	794	995
FR	10,551	10,980	10,666	9,306	9,033	5,922

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

Level	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	As of 9/3/2009
EMT-B	15,323	15,609	15,285	15,993	16,917	16,778
CRT-99	252	342	505	619	825	889
EMT-P	2,192	2,180	2,200	2,364	2,437	2,529
TOTAL	17,767	18,131	17,990	18,976	20,179	20,196

the content and depth of content covered in future EMS education courses and programs. Adoption of the EMS education standards is one of the five components of the national document *EMS Education Agenda for the Future: A Systems Approach*. When implemented, Maryland will adopt the Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), and Paramedic levels of the education standards. Advanced EMT (AEMT) will not be adopted in Maryland. Rather, Maryland will continue to offer EMT-I99 as the provider for intermediate level of prehospital care.

MIEMSS has recently implemented a learning management system (LMS) within the MIEMSS website (www.miemss.org) to allow for the delivery of educational content to EMS providers statewide. The LMS and associated educational content are administered and developed by MIEMSS staff in response to documented provider educational needs. The educational content is accessible to EMS providers through the MIEMSS Online Learning Center portal on the agency's webpage and, once providers complete the content, certification and continuing education records will be updated. The LMS provides consistent content without inter-instructor variability and provides a means by which providers may acquire pertinent and timely information by live and taped methods.

This year, through its LMS, MIEMSS provided the mandatory training for the protocol regarding "Scene Medevac Requests for Trauma Patients, Trauma Decision Tree Category C and D," as well as required training for the BLS and ALS 2009 protocol updates. Additional content will be made available to providers throughout the fall of 2009.

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 2009, MCISM staff held 52 defusings, taught 2 basic training classes, and handled 85 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.

The 14th Annual Medical Director's Symposium was attended by Regional, Jurisdictional, and Commercial Ambulance Service Medical Directors, Base Station Physicians and Coordinators, the highest jurisdictional officials, and Shock Trauma Center and MIEMSS personnel. This year's guest speaker was Francis Guyette, MD, Research Director, University of Pittsburgh Affiliated Residency in Emergency Medicine and Assistant Professor, Department of Emergency Medicine, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania. Dr. Guyette presented "Post Arrest Return of Spontaneous Circulation: Hypothermic Intervention in the EMS Arena and in the Emergency Department Resuscitation." Other presentations included:

- "State of the State and Medevac Issues," by MIEMSS Executive Director, Robert Bass, MD
- "Effective Infection Control Plans for First Responder Organizations: Avoiding Critical Fail Points," presented by James Korn, Baltimore County Fire Department
- "EMS-C Performance Measure Update," jointly presented by Allen Walker, MD, MBA, Associate State EMS Medical Director for Pediatrics, and Cynthia Wright-Johnson, MSN, RNC, Program Director for Maryland EMS-C
- "Facilitated Local Challenges and Compliance with COMAR," a panel discussion

The 2009 updates and revisions for the Maryland Medical Protocols for EMS Providers were implemented statewide July 1, 2009. This year MIEMSS provided one copy of the pocket protocols to all EMT-Bs, CRT99s, and EMT-Ps currently certified or licensed in the State. An educational video was provided in both a DVD and online mode to update BLS and ALS providers.

The Office of the Medical Director (OMD) continued quality monitoring of the multiple Base

Stations. There are 18 hospitals in the process of re-verification for Base Station designation. The applications have been received and, in support of these applications, the OMD, in cooperation with the MIEMSS Regional Offices, have conducted hospital-specific surveys completed by the Jurisdictional QA Officers and EMS Medical Directors (Jurisdictional, Pediatric, and Regional) to assess hospitals for renewal of EMS Base Station designation. The OMD continues to expand the instructor pool in order to make the Base Station Course more available. There were 326 Base Station certificates issued to emergency department providers in FY 2009, and five new Base Station physician instructors were credentialed.

Several conference calls were conducted with the trauma center and hospital emergency department medical directors statewide to discuss the implementation of "Scene Medevac Requests for Trauma Patients, Trauma Decision Tree Category C and D." Since October 2008, the OMD has collaboratively monitored the medevac/trauma consults for any unintended consequences, as well as under- and over-triage.

An educational program with a comprehensive DVD was developed, implemented, and distributed to the regional offices and posted to the MIEMSS learning management system to address the change in protocol pertaining to the Trauma Decision Tree for Categories C & D and medevac utilization.

MIEMSS continues to collaborate with the Maryland Regional National Disaster Life Support (NDLS) Coalition, composed of Johns Hopkins' Critical Event Preparedness and Response (CEPAR), the Maryland Fire and Rescue Institute (MFRI), the R Adams Cowley Shock Trauma Center, and the University of Maryland Baltimore County's Center for Emergency Education & Disaster Research (CEEDR), which have conducted multiple Basic Disaster Life Support programs across the State of Maryland, training over 200 healthcare providers.

As Maryland's EMS System is viewed as an international model EMS system, the OMD has provided presentations, support documents, and a comprehensive overview of the Maryland EMS System to numerous visitors from foreign countries, such as Egypt, India, Korea, and the Philippines.

Maryland has a Tactical Emergency Medicine Services (TEMS) protocol that requires a TEMS-trained Medical Director to be able to support a County or State law enforcement agency Special Operations program/service. The national training program that met this requirement was discontinued just after approval of the TEMS protocol by the EMS

Board. To address this void, Maryland State Police Special Operations, in cooperation with the OMD, conducted a two-day in-depth course that received excellent reviews by all 18 physicians who completed the TEMS Medical Director Course.

Since April 2009, the OMD has been working closely with the Centers for Disease Control and the Maryland Department of Health and Mental Hygiene to address concerns and standards (such as Protective Provider Equipment or PPE, response, and treatment) for EMS providers and the citizens of Maryland in response to the identified novel H1N1 (swine flu) strain of Influenza. MIEMSS provided frequent EMS briefings and supported the preparations for implementing a modified Emergency Medical Dispatch protocol and strategies to reduce the burden on Public Safety Answering Points, EMS providers, and the healthcare system.

In response to a request by Somerset County Commissioners, the OMD and the MIEMSS Region IV Office have facilitated the Somerset SWOT Task Force since December 2008. The SWOT (Strengths, Weaknesses, Opportunities, and Threats) process has been inclusive and well attended by task force members as they attempt to address the three County Commissioner-defined goals that will improve EMS for Somerset County. A final report to the Commissioners is anticipated near the end of 2009 or early 2010.

The OMD and Office of Licensure and Certification developed a MIEMSS draft of minimum competencies and standards for 12-Lead Electrocardiography (ECG) and conducted surveys in an effort to evaluate the following: 1) transmissions and reception of 12-lead ECGs acquired in the field by EMS and hospitals; 2) interpretations of 12-lead ECGs by ALS providers; and 3) the MIEMSS draft of minimum competencies and standards for 12-lead ECGs in comparison to the current educational standards.

The OMD participated in numerous emergency response exercises and real-world events during FY 2009 in an effort to improve existing emergency response plans and configurations. These included:

- Statewide Pandemic Flu Exercise
- Novel H1N1 Planning and Event Response
- Peach Bottom Nuclear Power Plant
- Inauguration Preparations and Event Response

MIEMSS supports these exercises and others throughout the State because they play an important role in ensuring the quick, coordinated response of Maryland EMS (prehospital and hospital) to a sudden, unpredictable emergency. Such exercises also bring to light any imperfections or anomalies in the EMS and

statewide disaster plans and provide an opportunity to improve those plans. Only through planning with experts, as well as exercising, evaluating, and updating the EMS and statewide disaster plans can we hope to be prepared for man-made or naturally occurring disasters and healthcare crises.

PUBLIC INFORMATION AND MEDIA 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 Public Information and Media 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 sent out in an "electronic" version. It is emailed to hospital and prehospital EMS personnel. Registration to receive this emailed version is obtainable on the MIEMSS web page. 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 full document, "Maryland Medical Protocols for EMS Providers" was completed, including editing, layout, and design. All of these documents can be found on the MIEMSS web page. The 2009 pocket version of the "Maryland Medical Protocols for EMS Providers" was also designed, printed, and one copy was distributed to each EMS provider in the State.

This year the annual EMS Week Stars of Life Awards Ceremony was held in conjunction with the Statewide EMS Symposium at the Annapolis Sheraton 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. 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.

A major project this year was a newly designed version of the EMS protocol update video. "Meet the Protocols" was the title of the redesigned method of getting the information to the providers. It took on the look of an interactive dialogue with Medical Directors and an EMS provider host. A new Learning Management System was implemented 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. A major 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 Walker Mill Regional Park in Prince George's County on May 19 for a recognition of Maryland's EMS providers that gave the ultimate sacrifice. An additional remembrance service was held at the actual site of the Maryland State Police (MSP) Trooper 2 crash. The group continued their ride to Washington, DC to meet with their representatives at the Capitol and then to Roanoke, Virginia for the National Memorial Service. 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. These tours included the showing of the Maryland EMS System video, tours of EMRC and SYSCOM, as well as overviews of the statewide system 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, photographic, 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 Counties Convention.

Several training modules were produced during the past year. These included the "Trauma Decision Tree and Protocol Clarification Module," "Meet the Protocols: The 2009 Prehospital Protocol Update," and "2009 Protocol Update for Base Stations." 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, "Establishing Inter-Osseous (IO) Access Training for Prehospital Care Providers," "Infant Car Seat Challenge - Child Passenger Safety & Occupant Protection Education: Getting Healthcare Providers Involved," which was a production focused on safe transport of high-risk neonates (for use in NICUs and newborn nurseries in Maryland), "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 Maryland Committee on Trauma, and the R Adams Cowley Shock Trauma Center Prevention Committee 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.

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 twelve years, MIEMSS, like all State agencies, has been required to submit a Managing for Results (MFR) plan and updates along with its fiscal year budget requests to the Maryland Department of Budget and Management. Initiated in 1997, 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 five associated objectives. Two objectives are outcome oriented, while the remaining three are quality-based indicators. 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 percent 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 Throughout 2009, all jurisdictions will maintain at least 99% compliance with prehospital provider standards of care per the "Maryland Medical Protocols" annually.

Objective 2.2 Maintain a successful completion rate of 95% or better in incident location to hospital base station communication in 2009.

Objective 2.3 Transport at least 89% of seriously injured patients to a designated trauma center throughout 2009.

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 200 providers have attended workshops at Pyramid, EMS Care, and special jurisdictional-based training sessions 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 jurisdiction-based educational seminars.

Electronic Maryland Ambulance Information System Improvement

MIEMSS was awarded a grant from the Maryland Highway Safety Office for the review of electronic prehospital care data management solutions and the development of a request for proposal. This process was further supported this year by a second grant award for the next Federal Fiscal Year for the first year's cost in the acquisition of an off-the-shelf, Maryland EMS-specific solution. The Maryland EMS community has provided valuable input and will continue to help MIEMSS tailor this solution to benefit all users.

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/City 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 Councils. 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 58. Enhancements to local programs that were made as a result of those funds include the following:

Department of Transportation Highway Safety Funds

These funds are made available through the National Highway Transportation Safety Administration through the Maryland Office of Highway Safety. The Regional Councils and the Regional Affairs Committee of the Statewide EMS Advisory Council (SEMSAC) review requests for rescue equipment, personnel safety

equipment, mass casualty supplies, and rescue and safety training.

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 62.

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 Bystander Care Grant, funded through the Maryland Office of Highway Safety, is in its fifth year and expanded its target area from Region I to the entire state. Various businesses and government agencies across the state have sponsored Bystander Care training for their employees (often requesting a repeat class for new employees); to date, more than 1,000 people have been trained in bystander care. This past fiscal year, the Wor-Wic Community College in Salisbury and Hagerstown Community College joined Garrett Community College in including the Bystander Care course in every session of their truck-driver training program.

The Maryland Office of Highway Safety also funded a grant for the second year to continue the Roadway Safety for EMS Responder courses. In addition to five programs presented in the regions, two programs were presented at the Statewide EMS Symposium. These classes were earmarked for potential instructor candidates, and material was provided to those in attendance that will enable them to go back to their respective jurisdictions to continue the training for the safety of the EMS responders.

Urban Area Security Initiatives (UASI)

The Region III Health and Medical Task Force secured more than \$1 million in funding for patient-tracking hardware, the alternate care site project, and procurement of an ambulance bus. These funds have

enabled Region III to better prepare for major incidents involving multiple casualties or illnesses.

The UASI project that placed VoIP phones in all Region III hospitals was completed in June 2009. In Region V, a patient-tracking pilot program and the purchase of ambulance buses and mass casualty support units are ongoing.

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 accepted applications from hospitals for designation as Primary Stroke Centers. The regional offices assisted in the scheduling and coordination of site visits to all the applicant hospitals. Three hospitals were designated as Primary Stroke Centers during FY 2009, bringing the total to 34. (See page 33 for a list of Primary Stroke Centers.)

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.

Public Access AED Program

Changes in the regulations no longer require the Regional Medical Director to assume the responsibility to provide the required medical direction for Public Access AED (automated external defibrillator) programs. The AED Medical Direction Committees of the Regional EMS Advisory Councils are charged with the responsibility to review, evaluate, and provide oversight of the programs within each of their regional jurisdictions. The Regional Councils have accepted this responsibility and follow-up regarding the use and renewal process of programs in each region.

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 Region IV, as many of the EMS systems are expanding and maturing, Quality Assurance plans are being rewritten and updated. Also in Region IV, Quality Assurance Officer Training programs were held and additional ones planned. 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.

Strengths, Weaknesses, Opportunities, and Threats (SWOT) Assessments

Allegheny and Garrett counties continue to implement SWOT recommendations, including development of a formal QA/QI program.

At the request of the Somerset County Commissioners, a SWOT was begun in Somerset County. In conjunction with the State EMS Medical Director, the Region IV Office worked closely with Somerset County stakeholders in identifying potential program enhancements to assist in the delivery of EMS care to the citizens of the county. The SWOT process will continue into the next fiscal year with anticipated conclusion early in 2010.

VAIP

The regional offices continue to perform inspections of ambulances under the Voluntary Ambulance Inspection Program (VAIP). Revision of the Standards is once again underway, with Region II staffing this process with the support of all regional staff. These inspections ensure that each unit is stocked with specific equipment and meets the response criteria developed by the VAIP Committee. Statewide 296 units were inspected this year. The inspections are valid for a period of two years. The regional offices also cooperated with the EMS for Children program to assess the status of pediatric equipment on the units.

Conferences and Training

Conferences

The Regional Offices support various regional and statewide conferences.

Pyramid 2008, Southern Maryland's 20th annual EMS Conference, was held September 5-7, 2008, in Solomons. EMS and fire, rescue, and law enforcement

providers from across the State came to participate in this educational weekend that emphasized team work and cross training. Highlights included a Recruitment and Retention of EMS Personnel Workshop taught by John Buckman, Past President of the International Association of Fire Chiefs, discussions of the National Scope of Practice and Customer Services, and a wide variety of topics across the continuum of care.

The Peninsula Regional Medical Center (PRMC) hosted its 18th Annual Trauma Conference on September 19, 2008, in Ocean City. In addition, PRMC coordinated a Stroke Conference to provide prehospital providers with additional training to better recognize stroke patients. Atlantic General Hospital and 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 12th Annual Winterfest Conference in Tilghman Island. This is one of the most successful regional conferences held throughout the state. The efforts and talents of all EMS stakeholders came together in the rollout of the new protocol regarding "Scene Medevac Requests for Trauma Patients, Trauma Decision Tree Category C and D."

The 7th 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.

May 14-17, 2009, the Regional Programs hosted the Maryland EMS Symposium as part of the EMS Week activities. Supported by all five regional Councils, this program provided educational offerings in five areas or tracks: Generations (pediatrics and geriatrics), Advanced Practice, Street Medicine, Special Operations, and Outside the Box. The program culminated in the State EMS Star of Life and Right Care When It Counts awards.

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 addition, the regional offices 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 47 First Responder and 87 EMT-Basic exams for classes, as well as 396 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. The Facility Resources Emergency Database (FRED) was activated 42 times this year to alert hospitals, local health departments, long-term care facilities, and emergency responders regarding emergency incidents and to catalog resources available for response. FRED played a pivotal role in the tracking of bed availability regarding H1N1. This key resource will continue to play a critical role with the development of the new HC format and merging of the County/City Hospital Alert Tracking System (CHATS).

MIEMSS coordinated the deployment of an Ambulance Strike team to Louisiana for Hurricane Gustav. Barry Contee (Region V Associate Administrator) and Richard Meighen (Region II Administrator) acted as Strike Team Leaders. Medic crews from Charles, Howard, and Harford counties, Baltimore City, and LifeStar Response were in the area for over three weeks. During that time they acted as the Primary EMS for Allen Parish and completed several long-distance transports from closed hospitals to other facilities.

MIEMSS supported the National Capital Region during President Obama's Inauguration attended by nearly 2 million spectators. Eighteen ambulances from all over the state deployed in 3 strike teams to the District of Columbia to respond in support of the DC Fire and EMS Department. Two Disaster Medical Assistance Teams were hosted in Prince Georges and Montgomery counties. MIEMSS placed an EMRC operator in DC Fire Communications to coordinate Maryland hospital availability. Prior to his Inauguration, President Obama also

stopped in Harford County and Baltimore City during a whistle-stop tour down the east coast. MIEMSS personnel were available to assist at the state EOC throughout the pre-inaugural and inaugural events.

Health and Medical Committees

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

The Region II Office continues to support the Tri-State Healthcare Coalition in which health care and public health agencies collaborate to provide information related to the regional (Western Maryland) picture of emergency medical services and response. They have developed a process for sharing resources between agencies in the event of a disaster or a time of need.

The Region III Task Force is responsible for overseeing the UASI health and medical projects mentioned previously. The Region V Health & Medical Collaborative helps Suburban Maryland counties to stay coordinated as they work with their partners throughout the National Capital Region.

Emergency Response Exercises

MIEMSS regional offices supported more than 16 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. Some of the more notable exercises included:

- MIEMSS joined with many organizations (including Baltimore City, state, and federal agencies, as well as private sector businesses such as Medstar/LifestarResponse) to participate in “Operation Purple Haze,” at M&T Bank Stadium on August 2, 2008. This was a HazMat exercise in which a mock “dirty bomb” device was detonated to test the mutual response from neighboring jurisdictions.
- MIEMSS assisted the Maryland Transit Administration with an exercise that was a mass casualty incident dealing with an overturned bus and multiple cars on an expressway.
- MIEMSS assisted Frederick City Police with the planning and evaluation of an exercise involving an active shooter at Frederick Community College.

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

The installation of HC Standard is expected in September 2009. The functions of FRED and CHATS will be migrated to the new application. Several departments in MIEMSS have been cooperating with Global Emergency Resources, the developer, to ensure it meets the State's requirements. MIEMSS has also been cooperating with the Maryland Department of Health and Mental Hygiene to conceptualize a full health and medical preparedness dashboard. Many of the applications that monitor and manage the health care system will be brought into this central application.

In the National Capital Region, a Prehospital Situational Awareness application is being developed to merge all the hospital status boards and Computer-Aided Dispatch information to determine ambulance wait times at hospitals. A full Health and Medical Situational Awareness application was also funded to bring all three state “dashboards” into one.

Preparedness Planning

With the help of Jeff Huggins, a student intern from the Emergency Health Services Program at the University of Maryland Baltimore County, MIEMSS completed a total rewrite of its Emergency Operations Plan. This was closely aligned with the revision of the SYSCOM/EMRC standard operating procedures.

MIEMSS continues to cooperate with the Governor's Homeland Security Advisor to continue to achieve the Governor's 12 Homeland Security goals.

The regional offices completed a preparedness survey of all EMS programs around the state to determine what resources are in the state for treating and transport-

ing patients from disasters and comparing these resources to national standards. The results will assist in improving disaster preparedness.

The leadership for the Maryland Disaster Medical Assistance Team (DMAT) was chosen in February. Deputy Team Commander, Matthew Levy, DO, Administrative Officer Gai Cole, Training Specialist Kenneth Hughes, and Security Specialist Charles Eisele will begin recruitment of the membership and have a team ready to be deployed by summer of 2010.

MIEMSS is currently revising 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 is preparing the agency document as one of the integrated tasks and functions of Regional Programs.

Region-Specific Activities

Region I

The Region I Office, in March, introduced Dwayne Kitis as the replacement for long-time Region I Administrator, David Ramsey, who retired in December 2007. (During the interim period, Rick Meighen, Region II Administrator, and Diane Wood, Region I secretary, were responsible for the daily operations of the Region I Office.)

With the upcoming merging of the two campuses (Braddock and the Cumberland Memorial Campus) of the Western Maryland Health System in Allegany County, the regional council continues to assist in an advisory capacity, as well as finding resources necessary for the transition.

Region II

The Administrator for Region II supported Region I until April 2009 when an Administrator was hired for that position. The Region II Office is also assigned to maintain records and coordinate support services for exercises. The Region II Administrator was part of the Maryland Ambulance Strike Team sent to Alexandria, Louisiana during Hurricane Gustav (August 2008) to provide support to the local EMS agencies in central Louisiana.

Region III

Region III is continuing the work started with the UASI grant for VoIP phones on the Public Safety IntraNet (PSINet). Public Safety Interoperable Communication funding will place VoIP phones in all hospitals, Public Safety Answering Point (PSAPs), Emergency Operations Centers (EOCs), and health departments statewide, which will provide secure and redundant communication among these components of the system.



Region III is also developing, testing, and preparing to implement the Maryland Electronic Voluntary Ambulance Inspection Program to enhance the current VAIP.

The statewide hospital base station summit in October 2008 was hosted by EMS Region III.

Region IV

The Region IV EMS Advisory Council established a Quality Assurance/Quality Improvement subcommittee that meets quarterly and brings together the QA officers from the region's nine jurisdictions. To date, three jurisdictions (Dorchester, Wicomico, and Worcester counties) have updated their plans, and they have been approved by the State EMS Medical Director. Somerset, Queen Anne's, and Kent counties are currently revising and updating their plans.

At the request of the Somerset County Commissioners, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis was begun. The State EMS Medical Director and the Region IV staff are assisting the stakeholders in the county to review the current system and plan for the future. A final report and recommendations for the Commissioners may be completed by the end of 2009.

Union Hospital of Cecil County is one of the newly designated Stroke Centers. This is a valuable added resource for Region IV. Other stroke centers in the region include Memorial Hospital at Easton, Peninsula Regional Medical Center, and Atlantic General Hospital.

On September 19, 2008, the Cecil County Department of Emergency Services celebrated its 20th anniversary.

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.

The Region V Office coordinated the Maryland Strike Team request from DC Fire & EMS for assistance during the Presidential Inauguration and staffed one of several command posts during the event. In addition, the Associate Administrator was deployed as the team leader for the State Strike Team group to Louisiana during Hurricane Gustav.

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 2008-May 2009:

2 New Advanced Life Support Services Licenses Issued

2 New Advanced Life Support License Upgrades Issued

3 New Specialty Care Transport Licenses Issued

116 Intra-Cycle Vehicle Licenses Issued

- 38 Semi-Annual Vehicle Licenses
 - 28 BLS Vehicles
 - 10 ALS Vehicles
- 40 New Vehicles Added
 - 23 BLS Vehicles
 - 17 ALS Vehicles
- 38 Vehicle License Changes
 - 3 Licensing Downgrades
 - 33 License Transfers (BLS to BLS or ALS to ALS)
 - 2 Vehicle License Upgrades

Annual Inspection—June 2008:

39 Commercial Ambulance Service Licenses Issued

- 36 Ground Ambulance Services
 - 5 Basic Life Support Services
 - 28 Advanced Life Support Services
 - 8 Specialty Care Services
 - 3 Neonatal Services
- 3 Air Ambulance Service Licenses Issued

345 Vehicles Inspected

- 215 BLS vehicles
- 117 ALS/SCT vehicles
- 11 Neonatal vehicles

The State Office of Commercial Ambulance Licensing and Regulation (SOCALR) marked its sixteenth year of operation serving the burgeoning commercial ambulance industry. Annually, SOCALR continues to add new services, although this year marked a shift from increases in basic life support (BLS) service licenses to advanced life support (ALS) and specialty care transport (SCT) licenses. SOCALR issued four new ALS services licenses and three new SCT service licenses in FY 2009. Clearly, these numbers reinforce the agency's recognition of the evolving sophistication and need for advanced and critical life support to Maryland's citizens.

With these significant changes, we see a continued upward trend of a 6% increase in vehicle inspections primarily in the ALS and SCT categories. There was an 11% increase in ALS vehicles operating in the State, and a 60% increase in SCT-licensed services. All together, licensed commercial ambulances averaged a total of 15,000 transports a month.

SOCALR contributes on a broader scale to the EMS community through clinical care, education, healthcare policy, and system operations. SOCALR continued base inspections to ensure compliance with federal, state, and local laws regarding respiratory protection, health immunizations, and training. Ensuring compliance with OSHA respiratory protection standard CFR1910.134 was timely, given the swine flu epidemic and the office's involvement with management of the epidemic at the state level. SOCALR staff were also involved with emergency management of Hurricane Hanna, Hurricane Gustav, and the Inauguration of President Barack Obama.

SOCALR also maintained its focus on quality assurance and EMS transport safety. Two key programs that promote involvement with these initiatives include SECURE, in collaboration with the MIEMSS EMSC Office, and continued endorsement of the QA Officer course.

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 Health System, Memorial Campus

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 Health System Memorial Campus

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 6,171 trauma patients from June 2008 to May 2009, according to the Maryland State Trauma Registry. (See pages 63 to 68 for additional patient data in various categories.) Thomas M. Scalea, MD, FACS, FCCM, serves as the Physician-in-Chief for the Program in Trauma, and Robbi Hartsock, RN, MSN, CRNP, as the Trauma Nurse Coordinator.

The Shock Trauma Center staff were very active in prehospital EMS educational activities. Tours were given to 61 groups. Evening educational programs open to prehospital and hospital care providers were held 7 times and linked via live broadcasts to 10 remote sites across the state. Broadcast locations included the Western Maryland Health System in Cumberland, Washington County Health System in Hagerstown, Suburban Hospital in Bethesda, Prince George's County Fire Services Building, Calvert

County ALS Training Center, St. Mary's Hospital, the Peninsula Regional Medical Center in Salisbury, the Cecil County Department of Public Safety, Easton Memorial Hospital, and the Maryland Fire Rescue Institute - Upper Eastern Shore Training Center. There were 172 EMS providers who participated in 12 ALS Airway Skills Labs. In the Observation Program, 293 EMS providers observed in the Trauma Resuscitation Unit, and 182 EMS providers in Critical Care. In addition, 45 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." The Shock Trauma Center was honored this past year to have provided the keynote speaker at the national JEMS Conference "EMS Today."

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 a new Organized Research Center (ORC). With this designation, the new Shock, Trauma, and Anesthesiology Research – Organized Research Center (STAR-ORC) will become a world-class, multi-disciplinary research and educational center focusing on brain injuries, critical

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	

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. (See also page 76.)

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 conduct projects funded by the National Institutes of Health, the Department of Defense, and various industry sponsors.

In the area of clinical research, the R Adams Cowley Shock Trauma Center:

- Has been awarded funds for the third year in a row by the U. S. Army to continue a multi-million dollar effort aimed at building a comprehensive Traumatic Brain Injury (TBI) research program, to include data from a variety of sources, and both clinical and translational research projects. The associated Brain Resuscitation Registry (BRR) will link together hard-to-obtain clinical information such as pre-hospital vital signs and long-term functional outcomes with investigational data from a number of protocols, including early assay of inflammatory mediators, brain acoustic monitoring, brain tissue oximetry, and emerging MRI modalities. This infrastructure will enable a series of interventional trials on topics of interest to the care of TBI patients.
- Is conducting multiple projects pertaining to predictors of infection and outcome in critically injured trauma patients. These studies promise to have an immediate impact on the quality of care in the critical care setting.
- Continued their collaboration with the Department of Pathology to maintain the University of Maryland, Baltimore's designation as a Core Center in the Transfusion Medicine/Hemostasis Research Network by the National Heart Lung and Blood Institute (NHLBI). In collaboration with the Department of Pathology, the Shock Trauma Center is conducting research projects aimed at "Reducing Mortality from Acute Hemorrhage in Trauma," by studying methods designed to reduce blood transfusions, control hemorrhage, and reduce mortality in trauma 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 Violence Intervention Program (VIP) is designed to identify profiles of patients who are repeat victims of violence in an effort to intervene and disrupt the cycle of violence. The program includes a multi-disciplinary approach that combines parole and probation staff, surgeons, social workers, psychiatrists, nurses, epidemiologists, and physicians who plan care for these patients.

The Trauma Prevention Department had a busy year. The purpose of the department is to provide education and awareness of risky behaviors that lead to traumatic injuries. The focus is drunk and drugged driving consequences and prevention strategies. The program has existed for more than 20 years, working with various Maryland counties. It has been a partnership with various juvenile justice departments, schools, state attorneys offices, and the judicial system. The targeted population includes high-risk teenagers, adult DWI 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 provided to five counties: Carroll, Cecil, Anne Arundel, Frederick, and Howard; in addition, other jurisdictions such as Baltimore and Montgomery counties and Baltimore City sent teenagers. On-site programs were conducted for students who were members of Students Against Destructive Decisions (SADD) and Students Helping Other People (SHOP). Over 400 teens were 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 participated in these classes.

Thirty-four high-school assemblies were provided, reaching more than 15,000 students. The assemblies were very well received. In addition, STC 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 2009, over 345 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 during December 2008, which is Drinking, Drugging, and Driving Awareness Month. Over 1500 people attended and rated it as a huge success.

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. In addition, they are working with the University of Maryland Medical Center Foundation to provide the 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.

Positive Alternatives to Dangerous and Destructive Decisions (PADDD) is a 501c3, nonprofit prevention organization. Debbie Yohn and Laurel Stiff, co-founders, are recognized as Internationally Certified Prevention Specialists.

PADDD develops and implements educational programs for all ages that are designed to prevent impaired and reckless driving. The content is tailored to "at risk" audiences.

This year, PADDD's presentations to judges, high-school students, court-ordered classes, the U.S. Military, businesses, and health fair/convention participants have reached thousands of people. Specially tailored classes have been given for thousands in business/family programs, safety programs, and colleges and universities. In Spring 2009, Ms. Yohn and Ms. Stiff gave a presentation and provided a display at the Mid-Atlantic DUI Conference in Virginia for the second consecutive year.

PADDD has many working relationships within the state: R Adams Cowley Shock Trauma Center, the Maryland Association of Prevention Professionals and Advocates (MAPPA), the Carroll Crash Coalition, the Baltimore County Advocates for Community and Traffic Safety (BCACTS), Partnership for a Safer Maryland, the Young Driver Task Force, and other organizations. It is funded through educational fees and donations.

PADDD currently works with various groups in the State of Maryland. PADDD partners with Shock Trauma, the National Study Center for Trauma and EMS, MIEMSS, and state, county, and local law enforcement. Work is done with Juvenile Justice, lawyers, PTSAs, local middle and high schools, county health departments, sports drug conferences, and

various county CTSPs. PADDD continues to work with Safe and Drug Free Schools in Howard County. It is involved with the "Schools in the Court" Program that is taped and disseminated through the educational channel, making it available to all Anne Arundel County Schools and the public on Comcast Cable.

Presentations are routinely done for detention centers, work release programs, businesses, the U.S. Military, middle and high schools, and youth groups in counties throughout Maryland. PADDD's latest presentations have been for Baltimore Gas & Electric (BGE) health fairs in four locations throughout Baltimore. PADDD has also been requested to participate in a BGE Executive Health Fair to be held in September 2009.

Level I

The Johns Hopkins Hospital, Adult Trauma Center

Located in Baltimore City, the Johns Hopkins Hospital Adult Trauma Center reported receiving 2,404 trauma patients from June 2008 to May 2009, according to the Maryland State Trauma Registry. (See pages 63 to 68 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, and Kent A. Stevens, MD, MPH are the division's full-time trauma surgeons. Nicholas Jaszczak, MD, and George Koenig, MD, are the Adult Trauma Service Fellows. 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 19 consecutive years (1991-2009), 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).

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 sponsored a symposium for DVT Awareness in March 2009; hosting keynote speaker was acting U.S. Surgeon General Rear Admiral Steven Galson.

“Racial Disparities in Health Care” is a widely debated topic. Dr. Adil Haider recently received national attention in an article in *Newsweek* magazine and several other news outlets for his research into the recognition of racial and insurance disparities in health care. Race and insurance status were found to independently predict outcome disparities after trauma. This is the first large study that identifies differences in mortality rates based on race following trauma.

Injury Prevention in developing countries has been a focus of Dr. Kent Stevens on the Adult Trauma Service. In conjunction with the International Injury Research Unit at the Johns Hopkins Bloomberg School of Public Health, Dr. Stevens has been part of the group's efforts to teach proper techniques of resuscitation to care providers in Bangladesh in areas where childhood drowning is prevalent. Additional research focused on decreasing road traffic injuries 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 fifty 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. Future plans at Johns Hopkins include expanding referral opportunities for patient resources to moderate and minimize alcohol use on an outpatient basis.

The Johns Hopkins Hospital launched its Safe Streets Hospital Initiative on August 1, 2009. The Adult Trauma Service, in collaboration with the Baltimore City Health Department, and the departments of Social Work, Pastoral Care, and Emergency Medicine, 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 will have ongoing evaluation by the Johns Hopkins Bloomberg School of Public Health.



The Adult Trauma Service continues to work with the Fort Worthington Police Athletic League in developing a series of monthly programs that have included mentoring, role modeling, conflict resolution, and injury prevention for community youth. Interactive sessions have been utilized to influence youth to make positive educational and career choices.

The Johns Hopkins Hospital is preparing to provide an innovative service to patients. The Trauma Survivors Network, developed by the American Trauma Society in partnership with several organizations, is a virtual community of individuals and family members who have experienced a serious injury. In addition to the online network, peer visitation will be implemented in the hospital setting and peer support groups will encourage a self-management philosophy after patients return to their homes.

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 1,625 trauma patients, from June 2008 to May 2009. (See pages 63 to 68 for additional patient data in various categories.) Paul Freeswick, MD, FACS, served as the trauma center's director until May 2009. Bruce Gibson, MD, FACS, is the center's Interim Director, with Robert Dice, RN, MS, as Trauma Program Manager, and Zeina Khouri-Stevens, RN, PhD, as the Nursing Director of Trauma, Burn, and Surgical Care.

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 2009, the center registered 1,625 patients in the Maryland State Trauma Registry. Patient outcomes were as expected with a survival rate of 97%.

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.

The trauma service continues to show strength through its consolidation of resources under the direction of Dr. Bruce Gibson, with the assistance of Michael Cooley, CRNP. Admitting all trauma patients

to this clinical team, as well as providing follow-up care in the trauma outpatient clinic were viewed by the survey team as strengths to the trauma services at Bayview.

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

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 3,105 trauma patients from June 2008 through May 2009. (See pages 63 to 68 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 O'Brien, 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 strive to provide the highest quality of care for its trauma patients. To best accomplish this, we have added 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 Nurse to its team. This professional plays an important role while working along with the 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. We have had a record number of participants attend these case presentations over the last year.

The financial stability of the hospital continues to remain a topic of great concern. During the past year, the Governor assembled a PGHC Authority that consisted of a seven-member task force, charged by the Governor with implementing an open, transparent, and competitive bidding process to find an entity to buy and operate the Dimensions Healthcare System (DHS). Several entities have expressed an interest in the DHS facilities; however, at this time a new owner has not yet been found.

The hospital was able to secure capital grants that have allowed us to begin the transition from a film x-ray system to a new state-of-the-art digital x-ray system. Initially, it began with a CR for film / PACS Workstation in the Trauma area but has since expanded. The DHS Picture Archival Communication System (PACS) has made its debut recently, making digital radiology images available on computer screens throughout the Hospital. This system allows our physicians to view the radiographic images of their patients from many areas of the hospital - and in the near future, from the convenience of their offices/homes via the internet.

PGHC has been active in trauma/injury prevention legislative initiatives. During the 2009 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 partnered with Ross University in providing a trauma care rotation for medical students. This year, the trauma service sponsored nearly 20 Ross 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 one year later, emergency services has seen a 5% increase in ED and inpatient admission volume; along with a 60% decrease in ambulance diversion and 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, Office of Emergency Management, MIEMSS, Kaiser Permanente, and representatives from nursing homes. Mark Arsenault has been elected as the Chairperson of this important county group.

PGHC remains cutting-edge in providing top healthcare for our patients and community. Along with neighboring facilities, Dimensions Healthcare prepared and responded to the Presidential Inauguration and continues to address the challenges of H1N1.

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 1,603 trauma patients from June 2008 through May 2009, according to the Maryland State Trauma Registry. (See pages 63 to 68 for additional patient data in various categories.) Thomas Genuit, MD, MBA, FACS has continuously served as Trauma Director since 2003. The Trauma Program Coordinator is currently Karen Sweeney, RN, who serves in an interim capacity.

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

To meet the demand for the highest quality in trauma care, Sinai has undergone several initiatives and changes. The Center has hired a new full-time Trauma Coordinator, Elwood Conaway. Mr. Conaway is joining the Trauma Division at Sinai Hospital in September 2009. His experience includes: Trauma Critical Care nursing at the RA Cowley Shock Trauma Center; Nursing Educator/Manager at the Santa Rosa Memorial Hospital in California; regional/national speaking engagements on trauma and critical care; member of the Baltimore Violence Prevention Program; active duty in the United States Army, Clinical Head Nurse for Critical Care, Afghanistan. Mr. Conaway is also completing a Masters Program for ANCP/CNS.

Sinai Hospital has opened its new state-of-the-art 29-bed Critical Care Unit and hired a full-time Neuro-Intensivist, Dr. Jennifer Berkley. She joined Sinai from the Johns Hopkins Hospital, where she completed her fellowship training. In addition, after a prolonged hiatus, Sinai has opened its new helipad on the roof of the South Tower; all ED, security, and other involved staff have completed their training, and the hospital is actively receiving patient transports via helicopter at this time.

Currently the Trauma Center at Sinai is recruiting one additional full-time trauma- and critical- care-trained surgeon to complete the team. The expansion of trauma critical care faculty has allowed Sinai to provide 24/7 in-house attending coverage, a level of care not commonly available at Level II centers.

Sinai Hospital is currently beginning phase III of its plant expansion and renovation process. This work will add about 20% OR capacity and a brand new state-of-the-art pediatric care facility. Several critical changes have also been made to improve the Emergency Department throughput. All of these changes have led to a significant reduction in yellow/red alerts and trauma bypass times over the past year.

The ACGME-approved surgical residency program is currently in its fourth year and, with 12 residents (PGY I-V), completely filled. 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). Our current interim Trauma Coordinator, Karen Sweeney, will play an integral role in oversight of these tools and data analysis.

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

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 2008 through May 2009, the trauma center attended to 1,669 trauma patients, according to the Maryland State Trauma Registry. (See pages 63 to 68 for additional patient data in various categories.)

Dany Westerband, MD, FACS, is the Medical Director of Suburban Hospital's Trauma Services, while Melissa Meyers, RN, BSN, MBA is its full-time Trauma Program Director. The Trauma Program staff also includes Patricia Baker, RN, senior Trauma Case Reviewer, Taryn Giza, RN, a newly-hired Trauma Case Reviewer, and Tania Zaidi, full-time Trauma Registrar.

Thanks to an Emergency Department Collaborative Committee involving the hospital administration, the emergency department (ED) staff, and multiple other departments, the trauma center made great strides toward decreasing ED diversion times over the past year. In FY 2009, Suburban was successful in decreasing Red Alerts by 50%, Yellow Alerts by 41%, and Trauma Bypass hours by 30%. These dramatic reductions reflect the hospital staff's commitment and willingness to ensure that trauma and other vital healthcare services are available to the community at all times.

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. Recently Suburban offered its staff the "Second Trauma" program of the American Trauma Society. At least 100 trauma providers attended this course, which is intended to teach the skills necessary for delivering bad news to the family of trauma victims.

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 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. Last fall, Traumaroo made an appearance at the annual Halloween Parade to enforce pedestrian safety tips to local elementary school students. In late spring, Suburban sponsored a safety display at the Safety Fair of Lakeforest Mall in Gaithersburg, targeting preschool children active on playground equipment and on bicycles. In May 2009, Dr. Westerband, Medical Director of Trauma Services, participated with Montgomery County law enforcement officers, legislators, and representatives from many state injury prevention programs in a "Click It or Ticket" press conference held in the Rather Garden of Suburban Hospital. 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 (NIH), the National Library of Medicine (NLM), and the National Naval Medical Center (NNMC), continues to advance its mission of emergency preparedness and research for the Washington metropolitan area. 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 repre-



sents 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 Healthcare System 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 2008. Other ongoing improvements include the adaptation of the American College of Cardiology (ACC) recommendations with initiatives such as electronic real-time transmission of EKGs from prehospital providers and the activation of the cardiac catheterization team prior to the patient's arrival in the ED. 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.

The “MobileMed/NIH Heart Clinic” is a joint venture of Suburban Hospital and the NIH Heart, Lung and Blood Institute of the National Institutes of Health. It is staffed by clinical volunteers and delivers free health care to patients in the Montgomery County area. The MobileMed/NIH Heart Clinic will be celebrating its second anniversary in the fall of 2009, having provided free services to hundreds of patients.

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 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.

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 ATCN (Advanced Trauma Nursing Course).

The trauma program is also involved in site-specific EMS (Emergency Medical Services) 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 2008, 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 2008 conference was attended by over 165 trauma care providers, including physicians, RNs, physician assistants, and EMS providers.

On July 1, 2009 Suburban Hospital officially became a member of Johns Hopkins Medicine. Under that umbrella, the Suburban Hospital Trauma Program has already partnered with the Johns Hopkins Adult and Pediatric Trauma Programs to participate together in the American Trauma Society's Trauma Survivor's Network.

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 1,582 trauma patients from June 2008 to May 2009, according to the Maryland State Trauma Registry. (See pages 63 to 68 for additional patient data in various categories.) Un Y. Chin, MD serves as the Trauma Medical Director, and Lynn 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 Trauma Center (PRMC) continues to coordinate and participate in community-based injury prevention initiatives. During the pre-homecoming and pre-prom periods in the fall of 2008 and the spring of 2009, a group of trauma nurses participated in assisting with mock-crash scenarios at local area high schools. In addition, the nurses of PRMC continue to work together to participate in venues with the Maryland Division of the American Trauma Society, SAFE KIDS Lower Shore Coalition, and the Worcester, Wicomico, and Somerset Highway Advisory Committees, as well as local wellness community events. Again this year PRMC partnered with the Wicomico County Conventions and Visitors Association to sponsor the annual Health and Wellness Expo. A group of Emergency/Trauma Services nurses attended this expo, providing health and safety prevention education and materials.

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 nineteenth 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 second 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 is being utilized by our new orthopedic traumatologist Florian Huber, MD, who joined our staff in September 2008. Since his addition to our medical staff, our orthopedic transfers have decreased by 64%, allowing our residents to remain near their homes.

Level III

Washington County Health Systems Trauma Center

Located in Hagerstown, the Washington County Hospital Trauma Center received 779 trauma patients from June 2008 to May 2009, according to the Maryland State Trauma Registry. (See pages 63 to 68 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; Joan Fortney, RN, BSN, is the Director of Emergency and Trauma Services; and Beth Fields, NREMT-P, is the Trauma Registrar. The Trauma Center is actively recruiting for a Trauma Program Manager.

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 75% 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 continue 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.

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 on 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 Symposium. Dr. Kross also served as faculty for the Maryland Committee on Trauma Symposium and a national anesthesia meeting. 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. A Safety Essay Contest for middle-school students in Washington County was held during Trauma Awareness Month. The overall winner recorded a radio public safety announcement that was developed from the essays; in addition, prizes were presented to each school winner at a reception for all members of the Trauma Team and the local media. Displays were also set up in the hospital lobby highlighting the essays and their safety messages.

Level III

Western Maryland Health System—Memorial Campus

Nestled in the mountains in Cumberland, the Western Maryland Trauma Center received 780 patients from June 2008 through May 2009, according to the Maryland State Trauma Registry. (See pages 63 to 68 for additional patient data in various categories.) Juan Arrisueno, MD serves as the Trauma Director, and Chuck Barrick, RN is the Trauma Nurse Coordinator and also the Treasurer for the Maryland Trauma Network. The position of Trauma Registrar is held by Kathy Witt, who has over 25 years of experience at the Memorial Campus.

This is the last year that the Western Maryland Health System will have two acute care hospitals. In November 2009, the services offered on the Braddock Campus and the Memorial Campus will be combined into the newly constructed Western Maryland Regional Medical Center on Willowbrook Road in Cumberland. This move will benefit all patients, improving not only trauma care, but all patient care for the region.

This year started off with changes in the Emergency Department (ED) with a new physician group, MEP (Montgomery Emergency Physicians), staffing the ED. The group provides board-certified ED physician coverage, as well as increased education for the nursing and medical staffs.

In July 2009, the ED went to an electronic medical record with portable computer terminals for the nursing staff. This new technology facilitates documentation and enhances performance outcomes.



The future of trauma care is bright at the Memorial Campus with the addition of a Factor 7-A Protocol set to begin in September of this year. The new protocols introduced in 2008 had an immediate impact for trauma patients. The Mass Transfusion Protocol began in April and was credited with saving a life the first day it was put into effect. The implementation of the Trauma Brain Injury (TBI) White Room has decreased the overall length of stay and has helped to prepare patients and their families for the transition into a TBI Rehabilitation Program.

The WMHS Trauma Department was active in statewide issues, including providing testimony this past year on legislation being considered in Annapolis and helping to keep the Maryland State Police Aviation Division alive and able to continue serving patients in Maryland, West Virginia, and Pennsylvania.

“Trauma Nurses Talk Tough,” a program written by Elizabeth Wooster, RN, ED Clinical Coordinator, was taken into high schools in Garrett County, Maryland, and West Virginia. This program is dedicated to educating teens on safe driving and increasing awareness about other safety issues that affect teens. There are plans to adapt this talk for middle-school students in the upcoming school year. The Trauma Department sponsored blood drives in Cumberland and across the Potomac River in West Virginia. The Trauma Staff also provided emergency medical coverage for the Annual Rocky Gap Triathlon in June.

The Western Maryland Health System worked again with MIEMSS to sponsor the Miltenberger Emergency Services Seminar in March 2009 at the Rocky Gap Lodge and Resort. This event was started seven years ago in honor of the late Dr. Fred Miltenberger, who was Trauma Director for Memorial Hospital. This annual presentation was once again the highest attended education offering for EMS providers and nurses in the state. This year's event was headlined by Chief Buzz Melton, retired Baltimore City Fire Chief. The Seminar also included a case review of a Cumberland woman who was treated by area EMS and the ED, OR, and ICU staff on the Memorial Campus and was later transferred to the R Adams Cowley Shock Trauma Center. This presentation ended with a standing ovation for all of those involved, including the patient, an above-the-knee amputee who was able to walk to the podium to address the crowd.

The WMHS staff continues its long-standing relationship with the Maryland State Police Aviation Division, Trooper 5, the University of Maryland



Shock Trauma Center, Johns Hopkins Hospital, and the entire Maryland Trauma Network. The future of trauma care for this rural region is bright and poised for great things when the new doors open at the new Western Maryland Regional Medical Center this fall.

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. The Patient Care Manager is Lidia Garner, MS, RN, CWCN, COCN. Ms. Garner is the Mid-Atlantic Regional President of the Wound/Ostomy/Continence Nurses Association (MAR WOCN President).

The Johns Hopkins Burn Center (JHBC) managed more than 706 patient visits between June 2008 and May 2009. Of these, 433 (61%) required inpatient admission to the Burn Center, whereas 273 (39%) were successfully treated as outpatients.

During FY 2009, education staff from the Johns Hopkins Burn Center continued its burn education efforts to the hospitals within Maryland and surrounding states. Several of the burn staff lectured at emergency medical services (EMS) conferences throughout the state. The Johns Hopkins Burn Center continues to offer the Advanced Burn Life Support (ABLS) to area healthcare providers and EMS personnel.

Final Disposition Distribution (Inpatient)

Disposition	Count	Percent
Acute Care Hospital	6	0.9%
Against Medical Advice	6	0.9%
Death	21	3.0%
Home	569	80.6%
Home w/Services	53	7.5%
Not Available	6	0.8%
Other	1	0.1%
Other Burn Center	12	1.7%
Psychiatric Hospital	2	0.3%
Rehabilitation Center	21	3.0%
Skilled Nursing Facility	9	1.2%
Total	706	100.0%

Statistics for Inpatient and ED patients

Mode of Arrival at JHBC

Mode	Count	Percent
Advanced Life Support	260	36.8%
Basic Life Support	15	2.1%
Commercial Ambulance	112	15.9%
Commercial Helicopter	34	4.8%
Fixed Wing	1	0.1%
MD State Police Med-Evac	32	4.6%
Not Recorded	5	0.7%
Private Vehicle	2	0.3%
Walk	245	34.7%
Total	706	100.0%

Burn Wound Types

Type	Count	Percent
Chemical	39	5.5%
Contact	38	5.4%
Electrical	30	4.3%
Explosion	25	3.5%
Flame	279	39.5%
Frostbite/Extreme Cold	3	0.4%
Inhalation, Smoke	9	1.3%
Late Effect, Burn	1	0.1%
Not Recorded	2	0.3%
Other Burn	9	1.3%
Other Non-Burn	1	0.1%
Radiation	1	0.1%
Scald	241	34.1%
Skin Disease	18	2.6%
Sunburn	2	0.3%
Unknown	6	0.9%
Wound	2	0.3%
Total	706	100.0%

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 2008 to May 2009, the Pediatric Burn Service at the Johns Hopkins Children's Center admitted 202 children with severe burn injuries as inpatients. (See pages 73 to 75 for additional pediatric burn data in various categories.) Dr. Stephen Milner is the Director of the Johns Hopkins Burn Center. Dr. Richard Redett and Dr. Paul Colombani 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 2008 to May 2009, 202 children under the age of 15 were admitted with severe burn injuries. Critically injured burn patients are managed in the 26-bed Pediatric Intensive Care unit, while the rest of the children are managed on a 16-bed unit specifically designed for the care of burned children and their families. Additionally, more than 300 burned children were treated as outpatients 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.

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 2008 to May 2009, Children's National Medical Center, as a pediatric burn specialty referral center, treated as inpatients 135 children with burn injury who were residents of Maryland or who were injured in Maryland. (See pages 73 to 75 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; Geraldine Pratsch, RN, MPH is the Trauma & Burn Program Manager; Elaine Lamb, MSN, CPNP, Brandi Farrell, MSN, CPNP, and Elizabeth Murphy, MSN, CPNP are the Inpatient Trauma & Burn Nurse Practitioners; and Lisa Ring, MSN, CPNP is the Outpatient Burn Nurse Practitioner.

The Children's National Medical Center (CNMC) has served as a Pediatric Burn Center for the state of Maryland for over three decades. 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 new service line, Non-Operating Room Anesthesia (NORA) has reduced significant pain in children in 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, 135 children from Maryland have been admitted to the Burn Service, while 280 children have been treated on an outpatient basis for a total of 1,029 outpatient burn clinic visits, and 224 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 provides EMS and emergency department education at surrounding hospitals and at EMS conferences.

The Curtis National Hand Center At Union Memorial Hospital

The Curtis National Hand Center at Union Memorial Hospital serves as the state's referral center for specialized care of injuries to the hand, wrist, and elbow, including significant elbow trauma and injuries requiring microsurgical reconstruction. Thomas J. Graham, MD, is the Director.

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 Orthopaedic, Plastic, and General Surgeons in the field. Thomas J. Graham, MD is the Director of the Curtis National Hand Center and the Chief of the Union Memorial Hospital Division of Hand Surgery, as well as the Vice-Chairman of Orthopaedics at Union Memorial, and is an Associate Professor of both Orthopaedic and Plastic Surgery at Johns Hopkins University. Dr. Graham leads the largest group of Hand Surgeons in the nation with one of the world's greatest depth of experience and expertise in the care of the traumatically-injured hand, wrist, forearm, and elbow (see www.nationalhandspecialists.com).

The Curtis National Hand Center remains committed to handling acute injuries and providing reconstructive surgery for Maryland's trauma victims in need of their special capabilities. 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. Over the past year, the Hand Center was an active participant in the administrative and legislative affairs of TraumaNet. In addition, it met the criteria and standards for a Hand Trauma Center and was designated by MIEMSS.

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 (see www.unionmemorial.org).

The Curtis National Hand Center is one of the largest training centers for Hand Surgery. The Center's relationships with Johns Hopkins Hospital, Georgetown University, Walter Reed Army Medical Center, and Union Memorial Hospital continue to provide extraordinary training because of the volume and variety of the pathology. 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.

Continuing 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.

Among other upcoming projects is the physical reorganization of the trauma intake facility to introduce even better processes for the injured patient. The value of the association of The Curtis National Hand Center and MIEMSS is clear and strong. The cooperative effort underway to better define the Hand Center's role as one of the unique "Specialty Trauma Centers" will allow the entire system to function more effectively and better ensure top quality care for Maryland's injured. Forthcoming will be enhanced transfer criteria and instructions, as well as improved data collection compatible with TraumaNet's excellent recording system.

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. One of the country's most important resources in the care of hand and upper extremity trauma is proud to be one of the critical components in Maryland's strong network for care of her injured 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.

During FY 2009, hyperbaric medicine treatments were given to 430 patients. Among the types of cases treated were 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 continues to note the impact of portable carbon monoxide monitors carried by many of the EMS units throughout Maryland in the initial evaluation and triage of inhalation victims.

The Hyperbaric Medicine Center also 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

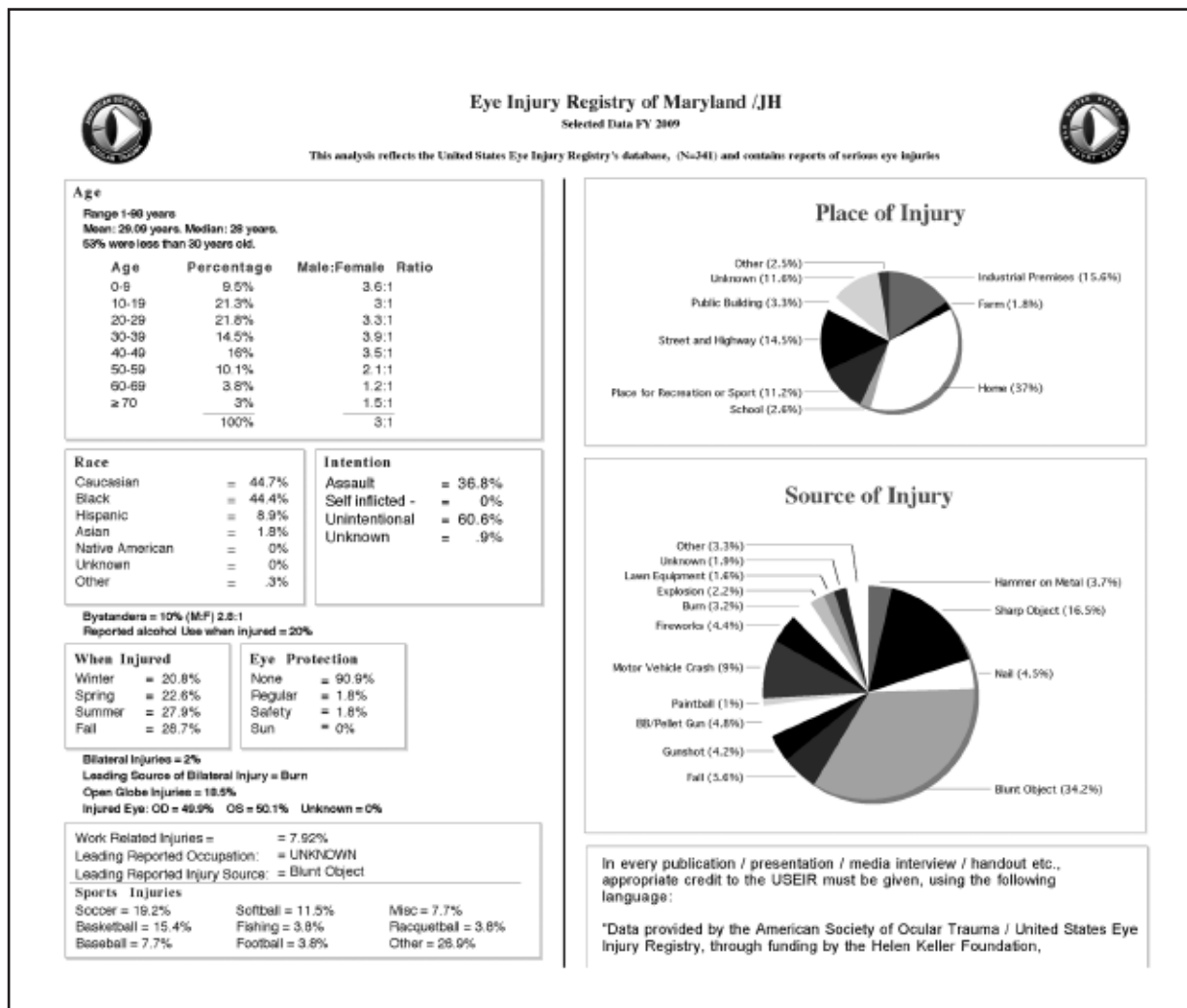
The Johns Hopkins Hospital in Baltimore is the location of the designated Eye Trauma Center of the Wilmer Eye Institute (WEI). It is the first statewide eye trauma center in the United States. The WEI is responsible for providing optimal management of severe eye injuries and conducting research of eye traumas. New treatment and procedures for eye trauma are also part of its goals.

In FY 2009, the total number of serious eye injuries was 341 (see Eye Injury Registry of Maryland/JH tables). Out of this number, the age range of 20-29 years recorded the most number of injuries, with the age range of 10-19 years coming in second. These two categories accounted for 43.1% of

total eye traumas. Thirty-seven percent (37%) of these traumas happened at home. The data for injury source indicated that blunt objects are by far the most common method of eye injury. Most of the injuries were unintentional (60.6%), followed by assault (36.8%). It is worth noting that 90.9% of all eye trauma patients did not wear any eye protection.

The MIEMSS Trauma Quality Improvement Indicators of Care for Ocular Trauma from July 2008 – April 2009 table, shows that 38% of the patients were inpatients of the Johns Hopkins Hospital, while 28% were referred from area community hospitals and physician offices.

Since the restructuring of the Wilmer Eye Institute in May 2009, including the opening of the new Maurice Bendann Surgical Pavilion, the Wilmer emergency room has relocated to Adult and Pediatric Emergency Departments of the Johns Hopkins Hospital.



**MIEMSS Trauma Quality Improvement
Indicators of Care for Ocular Trauma
July 2008 – April 2009**

Total number of eye trauma (structural or functional damage) patients seen in Wilmer Emergency Room (ER)	316	
Patients presented directly to Wilmer ER	37	12%
Patients referred from community hospitals/ physician offices	89	28%
Patients referred from Johns Hopkins Hospital (JHH) Adult and Pediatric ER (includes ambulance transports)	71	22%
JHH inpatients referred for consult	119	38%
Patients with systemic injuries referred to an adult/pediatric emergency room or appropriate specialty service such as neurology, neurosurgery, otolaryngology, general surgery, etc.	2/2	100%
Patients with ocular chemical burns have eye irrigation initiated by pre-hospital provider in the field and during transport to an eye emergency room (direct ambulance transport to the Wilmer ER)	1/1	100%
Eye(s) is protected from further injury or damage (i.e., application of appropriate eye protection device or shield during transport by prehospital provider to an eye emergency room) (direct ambulance transport to the Wilmer ER).	5/5	100%

**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 2009, 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 2008 to May 2009, the Pediatric Trauma Center (PTC) at the Johns Hopkins Children's Center admitted 815 children under the age of fifteen years with severe injuries. (See pages 69 to 72 for additional pediatric trauma data in various categories.) Paul Colombani, MD leads the Pediatric Trauma Service as Chief of Pediatric Surgery, as well as Director of Pediatric Trauma. Susan Ziegfeld, CRNP-pediatric, is the Program Manager. As program manager, she 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 19 years), the Pediatric Trauma Service at the Johns Hopkins Children's Center provides the highest level (Level 1) of care for pediatric trauma patients.

Members of the pediatric trauma team were 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. ATCN is taught concurrently with 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). Under the leadership of the JHH Children's Center, the ATCN program was taught at the Uniformed Services University of the Health Sciences (USUHS), in Bethesda, MD for the third consecutive year.

ATCN is managed under the Johns Hopkins Pediatric Outreach for Education (HOPE) Program. The HOPE office, managed by Rose Stinebert, also supports the Pediatric Advanced Life Support (PALS) courses. In the past year, the HOPE Program has offered twenty-one PALS Provider courses for a total of 309 providers, eight PALS renewal courses for an additional 175 providers, and three PALS instructor courses for a total of 19 new instructors. 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 will 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. The HOPE Program has offered two PEARS courses for a total of 42 providers. 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. Rosemary Nabaweesi, MPH, Trauma Program Coordinator, leads the research for the department and oversees the trauma and burn registries. The PTC participates in multi-center studies, including a pediatric traumatic bowel injury study coordinated by Dr. David Mooney from Harvard Children's Hospital, as well as a study of Dr. Richard Falcone from Cincinnati Children's Hospital Medical Center that analyzes socioeconomic disparities in infant mortality among non-accidental trauma patients.

Quality care is of utmost importance to the PTC. Katie Taylor, BSN is the Performance Improvement Nurse and EMS liaison. She organizes the monthly morbidity and mortality conference and also has an active role in educating the nurses and EMS providers, communicating directly with them to provide feedback. She and Susan Ziegfeld are active members of the Maryland State Trauma Registry Education and Prevention (MTREP) Committee as well as the Maryland Trauma Quality Improvement Committee (QIC).

In addition, during the past fiscal year Susan Ziegfeld served in other leadership positions as Development Chair to the American Pediatric Surgical Nurses Association from 2007-2009 and she is currently Secretary to the Maryland Trauma Network (TraumaNet). Appointed by the Governor, she represented TraumaNet on the All-Terrain Vehicle (ATV) Task Force charged with evaluating the safe use of ATVs.

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 smoking 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.

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.

Scheduled to open in 2011, a new state-of-the-art Children's Tower will increase the bed capacity of the pediatric hospital to 205 private rooms. This will alleviate the current problem of having more pediatric patients than available beds. The Children's Tower will include emergency, surgical, interventional, critical, and acute care for infants and children and will have sufficient capacity to maintain its designation as a Level 1 PTC for the state of Maryland. The new building will keep Hopkins Children's at the forefront of patient care and teaching and is designed to speed the transfer of research discoveries directly to children and their families, as well as provide more amenities for patients and their families.

Pediatric Trauma Center Children's National Medical Center

From June 2008 to May 2009, the Children's National Medical Center, as a pediatric specialty referral center, treated 849 Maryland children with multiple trauma. (See pages 69 to 72 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; Geraldine Pratsch, RN, MPH, Program Manager; Sarah Storing, RN, BSN, Trauma Coordinator; Elaine Lamb, MSN, CPNP, Brandi Farrell, MSN, CPNP, and Elizabeth Murphy, MSN, CPNP, Inpatient Trauma and Burn Nurse Practitioners; Lisa Ring, MSN, CPNP, Outpatient Burn Nurse Practitioner; Sally Wilson, RN, BSN, Injury Prevention, Education, and Outreach Coordinator; Yu Yan, RN, MSN, Trauma Registry Coordinator.

The Children's National Medical Center (CNMC) was re-verified by the American College of Surgeons October 2008 as a Level I Pediatric Trauma 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 Emergency Nursing Pediatric Course is offered four times a year and the Trauma Nurse Core Curriculum (TNCC) is offered three times a year. 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. In FY 2009, the Program provided funding to 48 states, territories, and health professionals 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 who call the nationwide number 800-222-1222. A division of the University of Maryland School of Pharmacy, 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 2008, the Maryland Poison Center (MPC) received 65,342 calls. While 36,128 of these calls involved a human exposure, 2,431 involved animal exposures, and the remaining 26,783 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 1,595 cases in 2008. In 394 of those cases, transportation by EMS to a health care facility was avoided based on poison center advice. Safely managing patients at the site of the exposure saves millions of dollars in unnecessary health care costs. It also allows more efficient and effective use of limited health care resources.

All of the 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.

Wendy Klein-Schwartz, PharmD, MPH, Coordinator of Research and Education, received the 2008 W. Arthur Purdum Award from the Maryland Society of Health-System Pharmacists. This is the society's highest award designed to recognize an individual who has made significant or sustained contributions in or for health system pharmacy or has pro-



vided influential leadership in the practice of health system pharmacy at the state level.

The Maryland Poison Center secured funding in 2008 to add a Geographic Information Systems Specialist to the staff to perform data modeling as well as geospatial development and analysis of MPC data. Geographical analysis of data enables visualization of trends and patterns in poisonings and other types of calls to the MPC that might not otherwise be noted. Funding was also allocated for an expansion of MPC space. When completed, this area will enable the MPC to continue to develop additional data analysis resources and other programs.

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 the 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 and index cases, evolving patterns, or emerging clusters of exposures.

The Maryland Poison Center's public education efforts are intended to help increase people's 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 2008, the MPC provided speakers and/or materials for 104 programs and health affairs in 16 Maryland counties and Baltimore City. Angel Bivens, BSPharm, MBA, CSPI, led classes and events that were attended by nearly 10,000 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 pro-

grams, CPR instructors, parish nurses, Red Cross, Head Start and Healthy Start programs. In all, 170,000 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. The Maryland Poison Center co-sponsored three train-the-trainer programs with the National Capital Poison Center in 2008. During these programs, 120 attendees with various health professional and injury prevention backgrounds were trained to provide poison prevention education programs to children, adults, and seniors. National Poison Prevention Week (March 16-22, 2008) activities included mailings to Emergency Departments and pharmacies throughout the state. A Poison Prevention Week poster contest for private schools in Frederick County was co-sponsored by the MPC and SafeKids Frederick County. The grand-prize winning poster also won third place in the National Poison Prevention Week poster contest. In an effort to provide additional poison prevention information to the public, a new e-newsletter was launched in 2008. "Poison Prevention Press" is a bi-monthly 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. The professional education program is coordinated by Lisa Booze, PharmD, CSPI. In 2008, 60 programs were conducted at hospitals, fire departments, colleges, and state, regional, and national conferences. These programs were attended by more than 1,400 EMS providers, physicians, nurses, pharmacists, and physician assistants throughout Maryland. Monthly podcasts were recorded for broadcast on two websites devoted to continuing education for health care providers: MedicCast.com and NursingShow.com. In all, there were 46,478 downloads of the podcasts worldwide. The MPC also provides professional education through publications. "ToxTidbits," a monthly toxicology update, is faxed to every Maryland emergency department and emailed to over 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 2008, 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 2008)

Circumstance	Number of Patients	Percentage
Unintentional	28,232	78.1
Intentional	6,243	17.3
Adverse Reaction	1,207	3.3
Other & Unknown	446	1.3
TOTAL	36,128	100.0

Medical Outcome of Poisoning (CY 2008)

Medical Outcome	Number of Patients	Percentage
No Effect/Minor Effect	32,742	90.6
Moderate Effect	1,721	4.8
Major Effect	188	0.5
Death	37	0.1
Other & Unknown	1,440	4.0
TOTAL	36,128	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 2008)

Region	Number of Exposures	Percentage
Region I (Garrett, Allegany)	854	2.4
Region II (Washington, Frederick)	3,116	8.6
Region III (Carroll, Howard, Harford, Anne Arundel, Baltimore County, Baltimore City)	22,792	63.1
Region IV (Cecil, Kent, Queen Anne's, Talbot, Caroline, Dorchester, Wicomico, Worcester, Somerset)	4,007	11.1
Region V (*Montgomery, *Prince George's, Charles, Calvert, St. Mary's)	3,782	10.5
Unknown County/ Other state	1,577	4.3
TOTAL	36,128	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 13,448 human exposures in Maryland were reported to the National Capital Poison Center in 2008.*

Top Ten Destinations of Patients 15 & Over Who Went to Inpatient Rehabilitation Facilities (June 2008 to May 2009)

Source: Maryland State Trauma Registry

Rehabilitation Center	Number
Adventist Health Care	55
Genesis Long-Term Care Facilities	70
Good Samaritan Hospital of Maryland	29
Johns Hopkins Hospital Comprehensive Inpatient Rehabilitation Unit	15
Kernan Hospital	396
Maryland General Hospital	70
National Rehabilitation Hospital Washington, DC	14
Sinai Rehabilitation Hospital	49
University Specialty Center	45
Washington County Health System Rehabilitation Services	60

Note: Total patients ages 15 and over who went to rehabilitation centers = 1,558

REHABILITATION

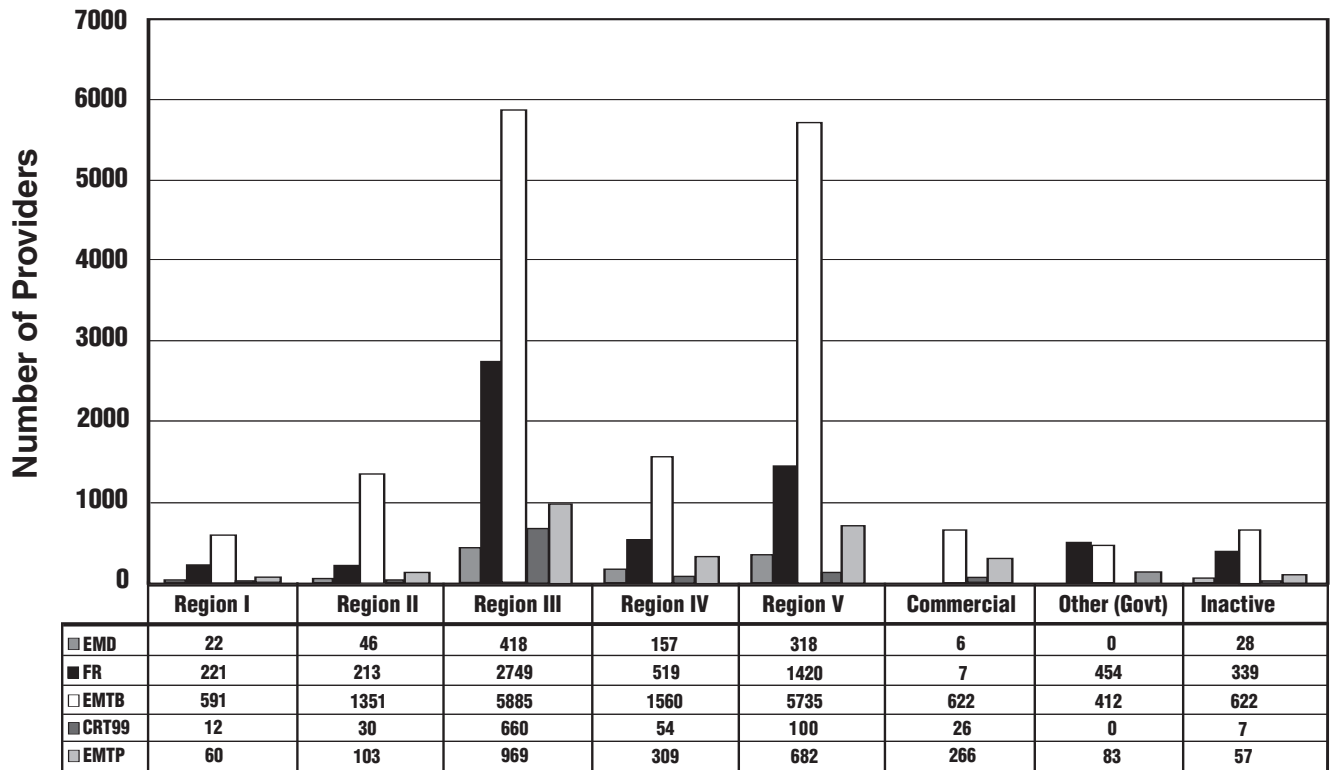
The vision of MIEMSS is the elimination of preventable deaths and disabilities due to sudden illness or injury through an integrated system of prevention, intervention, and rehabilitation. This integrated system is known as the trauma care continuum. Rehabilitation is the cornerstone of "post-trauma" 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 2009, trauma centers in Maryland referred 1,558 trauma patients ages 15 and over to inpatient rehabilitation services. There was an increase of 4 patients referred for rehabilitation from FY 2008. The ten rehabilitation facilities receiving the most patients are listed on this page.

MARYLAND EMS STATISTICS

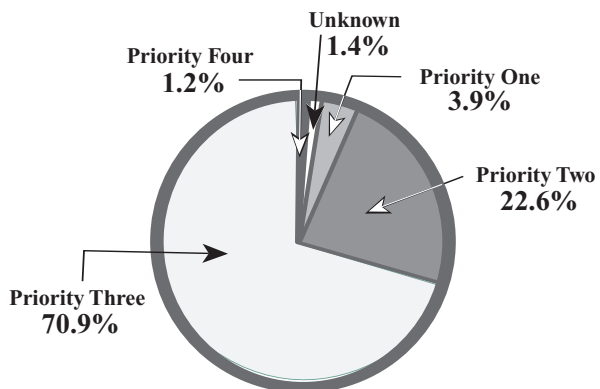
Number of EMS Providers (Primary Affiliation) by Region
(as of 9/3/2009)



Types of EMS Calls

Patient Priority For Injury Calls

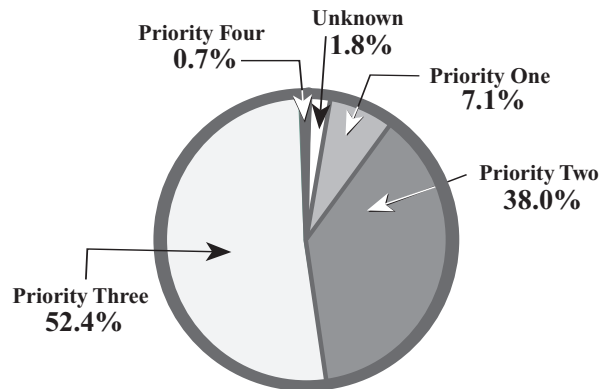
CY 2008



Note: Paper and Electronic Maryland Ambulance Information System (EMAIS®) Data

Patient Priority For Medical Calls

CY 2008



Note: Paper and Electronic Maryland Ambulance Information System (EMAIS®) 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	2	5	165	20	48	0	0	0
Region IV	35	2	0	109	15	0	0	0	0
Region V	145	6	26	42	6	5	3	0	0
STATEWIDE TOTAL	233	10	34	377	41	53	3	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	177	126	5	18	80	9	3	0
Region IV	37	10	22	11	0	0	0	6
Region V	51	40	16	12	24	4	2	3
STATEWIDE TOTAL	327	190	67	46	109	13	9	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.

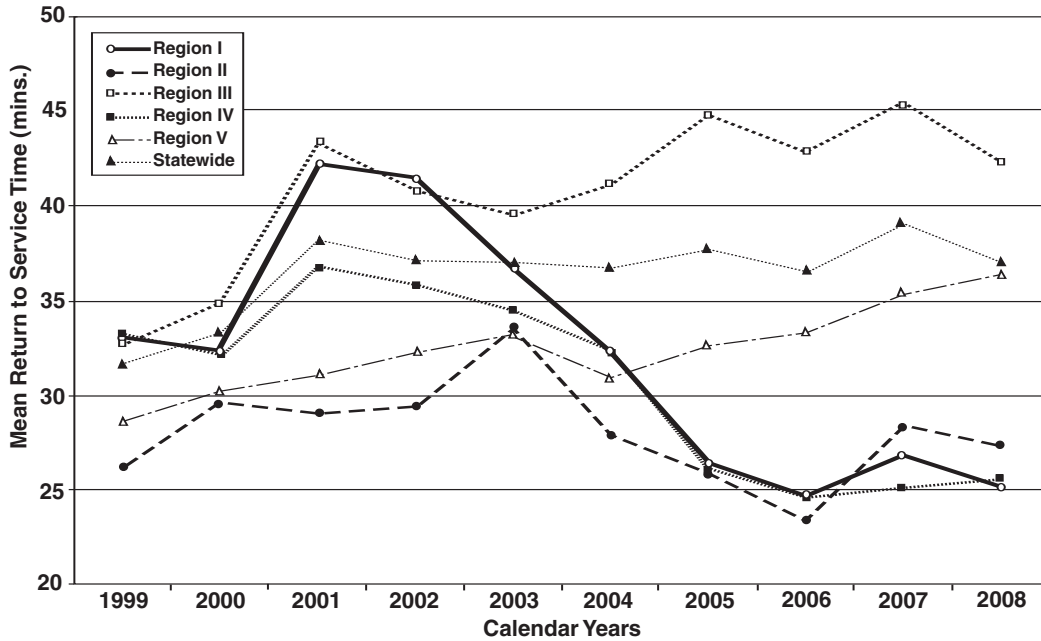
MIEMSS Grant Disbursements (FY 2009) by Region

	50/50 Matching Equipment Funds	ALS Training Funds	Emergency Dispatch Programs	HPP Bioterrorism Grants BTVI (FFY 2008)	DOT Highway Safety Grants (FFY 2008)	Total By Region
Region I	\$34,829.75	\$31,269.00	\$2,400.00	\$22,202.00	\$30,423.00	\$181,393.75
Region II	\$51,227.00	\$36,932.00	\$2,400.00	34,860.00	\$30,001.00	\$192,620.00
Region III	\$114,490.40	\$103,680.00	\$7,200.00	\$122,666.00	\$30,000.00	\$501,752.16
Region IV	\$81,020.00	\$70,758.00	\$10,800.00	\$100,359.00	\$30,000.00	\$401,277.00
Region V	\$102,283.50	\$88,800.00	\$7,200.00	\$87,418.00	\$30,855.00	\$371,478.50
Total	\$383,850.65	\$331,439.00	\$30,000.00	\$367,505.00	\$151,279.00	\$1,648,521.41

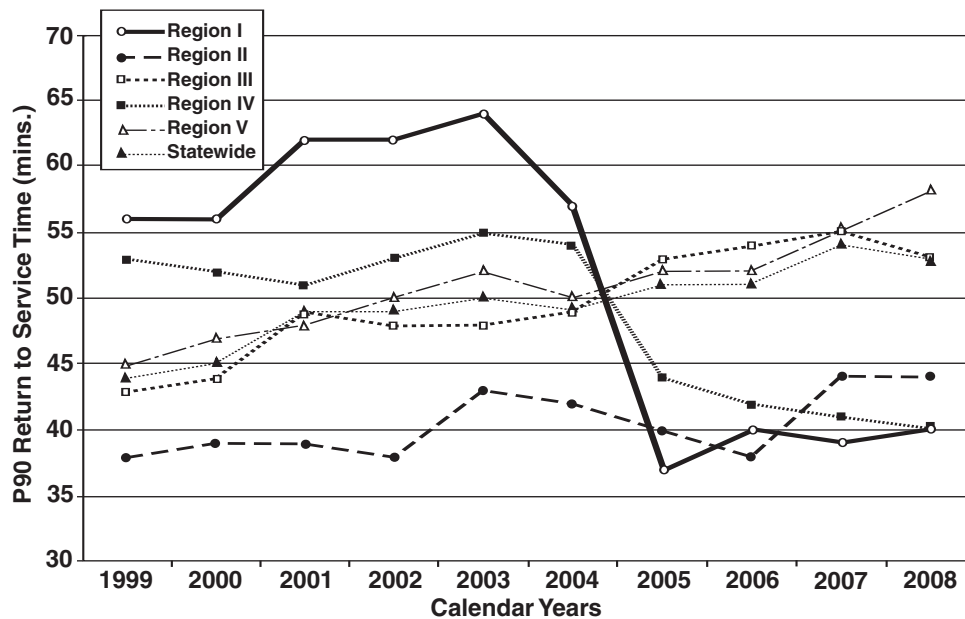
NOTE: Does not include Miscellaneous Grants described on page 27.

Public Safety EMS Units

Region/State EMS Units' Return To Service Mean Time Analysis Calendar Years 1999 - 2008

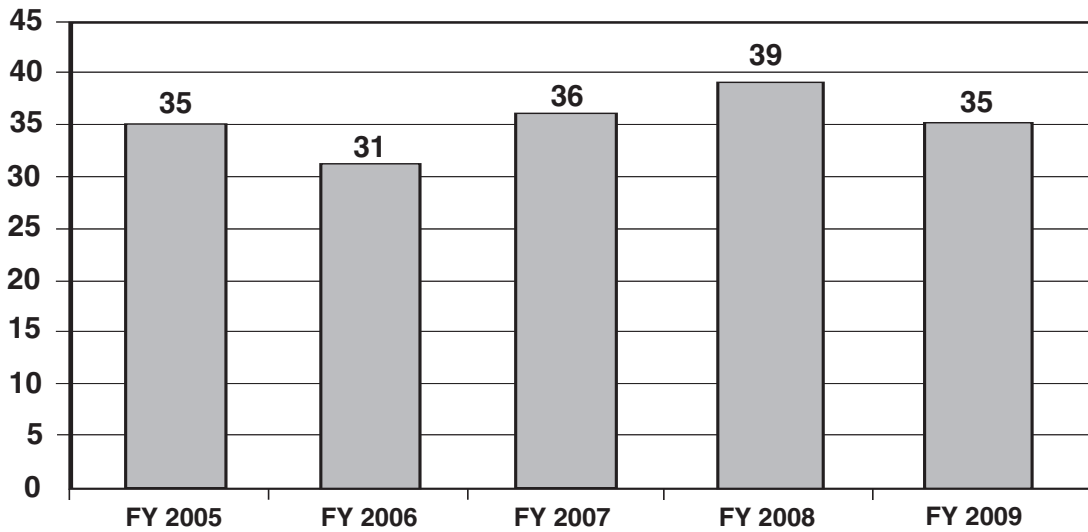


Region/State EMS Units' Return To Service P90 Time Analysis Calendar Years 1999 - 2008

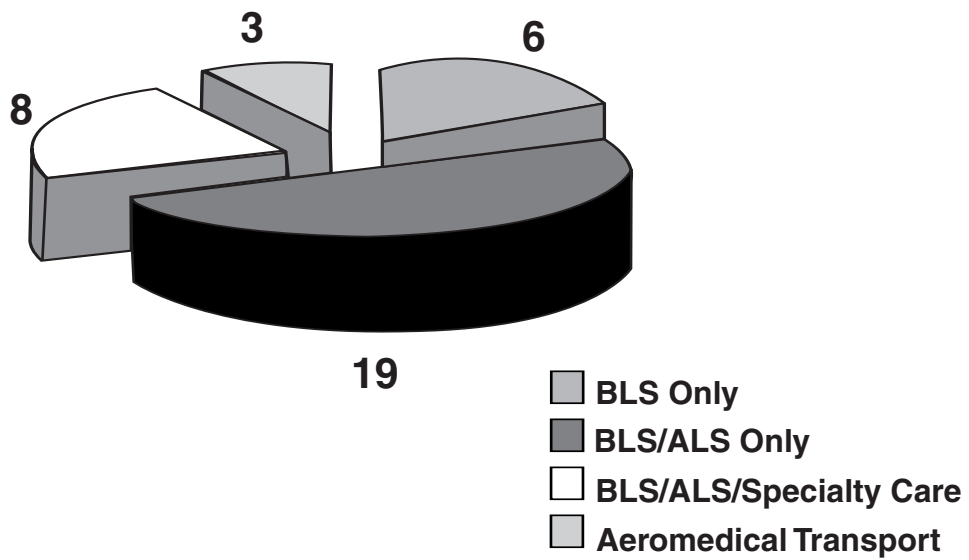


Commercial Ambulance Services

Commercial Ambulance Services (Ground & Air)
(FY 2005 - FY 2009)

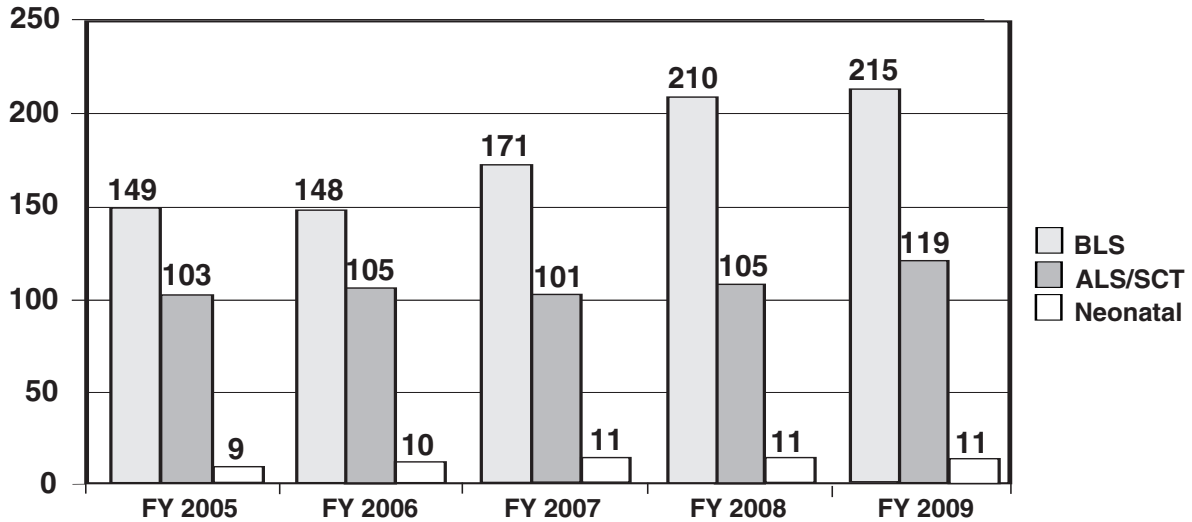


Commercial Services by License Level
(FY 2009)



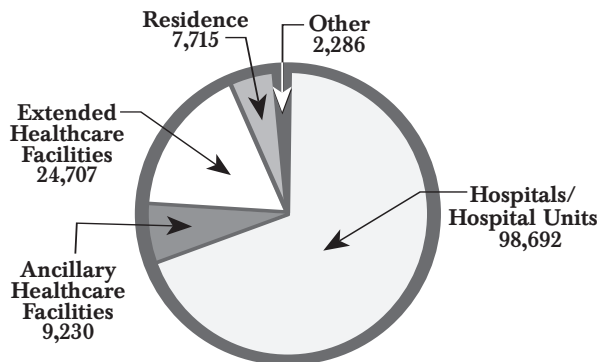
Commercial Ambulance Services

Commercial Ground Ambulance Vehicles by Type (FY 2005 - FY 2009)



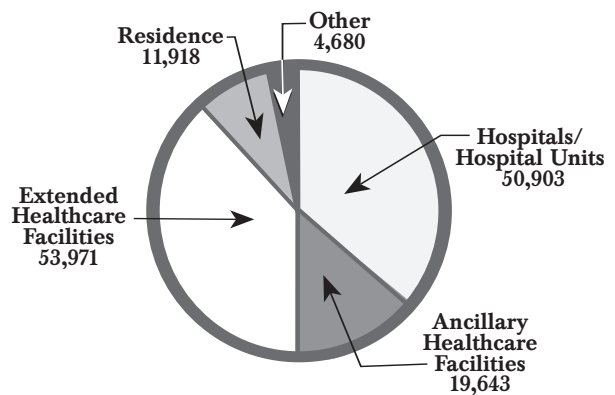
Commercial Origin Location Types

CY 2008



Commercial Destination Location Types

CY 2008



Source: Commercial Maryland Ambulance Information System (CMAIS)

Notes:

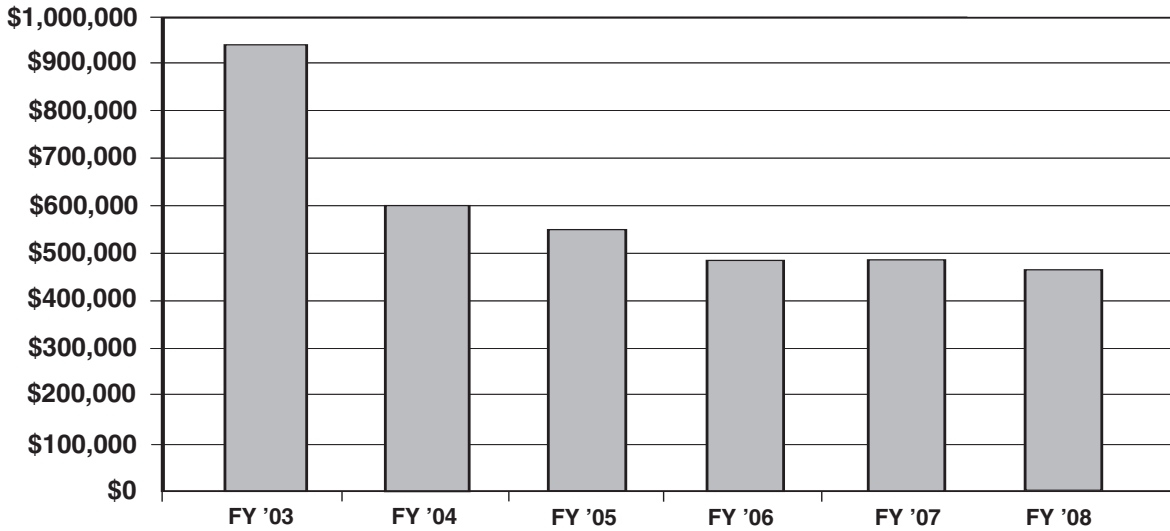
Hospitals = Hospitals & Hospital EDs, CCUs, & Perinatal Units

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

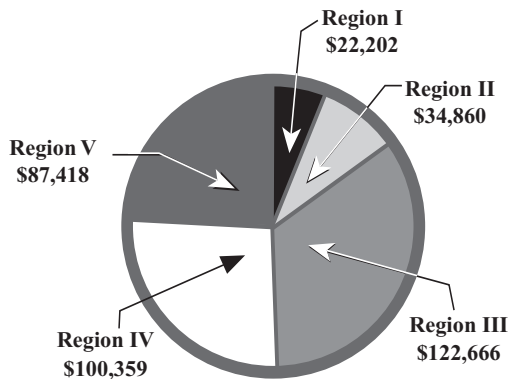
Extended Healthcare Facilities = Nursing Home, Adult Day Care, Rehab

**Health Preparedness Program (HPP)
Bioterrorism Funding for Maryland EMS
(Federal FY 2003 – FY 2008)**

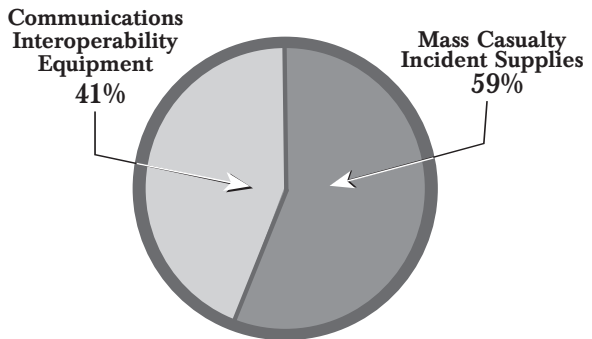
**HPP Bioterrorism Funding Totals
(Federal FY 2003 – FY 2008)**



**HPP Bioterrorism Funding Allocation
By Maryland EMS Region
(Federal FY 2008)**



**HPP Bioterrorism Funding Categories
(Federal FY 2008)**



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 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
Under 1 year	228	217	208
1 to 4 years	594	596	558
5 to 9 years	547	549	544
10 to 14 years	876	812	761
15 to 24 years	5,835	5,618	5,445
25 to 44 years	7,004	7,096	6,824
45 to 64 years	4,345	4,783	4,599
65 + years	1,920	2,223	2,428
Unknown	7	9	15
TOTAL	21,356	21,903	21,382

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	SUB
Peninsula Regional Medical Center	PEN	Washington County Hospital Association	WCH
Prince George's Hospital Center	PGH	Western Maryland Health System—	WMHS
R Adams Cowley Shock Trauma Center	STC	Memorial Campus	

Total Cases Reported by Trauma Centers

(3-Year Comparison)

Source: Maryland State Trauma Registry

Trauma Center	June 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
The Johns Hopkins Bayview Medical Center	1,372	1,815	1,625
Johns Hopkins Medical System	2,543	2,490	2,404
Peninsula Regional Medical Center	1,334	1,685	1,582
Prince George's Hospital Center	3,150	3,039	3,105
R Adams Cowley Shock Trauma Center	6,253	6,386	6,171
Sinai Hospital of Baltimore	1,673	1,774	1,603
Suburban Hospital	1,505	1,488	1,669
Washington County Hospital Association	998	853	779
Western Maryland Health System— Memorial Campus	709	644	780
TOTAL	19,537	20,174	19,718

Occurrence of Injury by County: Scene Origin Cases Only

(June 2008 to May 2009)

Source: Maryland State Trauma Registry

County of Injury	Number
Allegany County	438
Anne Arundel County	1,020
Baltimore County	2,396
Calvert County	118
Caroline County	62
Carroll County	314
Cecil County	78
Charles County	272
Dorchester County	101
Frederick County	316
Garrett County	51
Harford County	442
Howard County	454
Kent County	63
Montgomery County	1,568
Prince George's County	1,899
Queen Anne's County	145
St. Mary's County	141
Somerset County	112
Talbot County	75
Washington County	436
Wicomico County	447
Worcester County	228
Baltimore City	4,823
Virginia	76
West Virginia	185
Pennsylvania	98
Washington, DC	170
Delaware	155
Other	1
Not Indicated	813
TOTAL	17,497

Note: Scene origin cases represent 88.7 % of the total trauma cases treated statewide.

Residence of Patients by County: Scene Origin Cases Only

(June 2008 to May 2009)

Source: Maryland State Trauma Registry

County of Residence	Number
Allegany County	360
Anne Arundel County	943
Baltimore County	2,381
Calvert County	134
Caroline County	83
Carroll County	362
Cecil County	90
Charles County	294
Dorchester County	86
Frederick County	340
Garrett County	41
Harford County	532
Howard County	376
Kent County	50
Montgomery County	1,413
Prince George's County	1,992
Queen Anne's County	107
St. Mary's County	117
Somerset County	95
Talbot County	52
Washington County	396
Wicomico County	432
Worcester County	176
Baltimore City	4,485
Virginia	375
West Virginia	249
Pennsylvania	374
Washington, DC	455
Delaware	259
Other	402
Not Indicated	46
TOTAL	17,497

Note: Scene origin cases represent 88.7 % 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

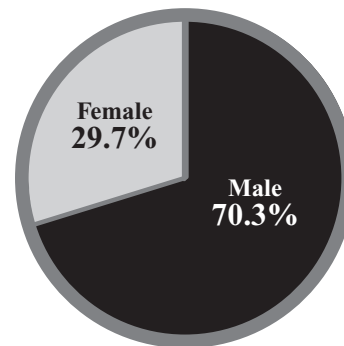
Protective Device	June 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
None	21.7%	21.4%	22.5%
Seatbelt	29.0%	29.5%	29.1%
Airbag & Seatbelt	16.9%	18.6%	20.6%
Airbag Only	3.4%	3.8%	4.2%
Infant/Child Seat	0.2%	0.2%	0.1%
Protective Helmet	11.1%	13.1%	13.9%
Padding/Protective Clothing	0.1%	0.1%	0.1%
Other Protective Device	0.0%	0.1%	0.1%
Unknown	17.6%	13.2%	9.4%
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 2008 to May 2009)

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 2008 to May 2009)

Source: Maryland State Trauma Registry

Modality Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMHS	TOTAL
Ground Ambulance	94.1%	77.4%	83.3%	78.3%	96.5%	72.6%	94.0%	86.6%	86.8%	82.2%
Helicopter	0.2%	0.6%	14.4%	17.4%	0.0%	26.8%	3.6%	4.0%	8.5%	12.3%
Other	5.7%	22.0%	2.3%	4.3%	3.5%	0.6%	2.4%	9.4%	4.7%	5.5%
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 2008 to May 2009)

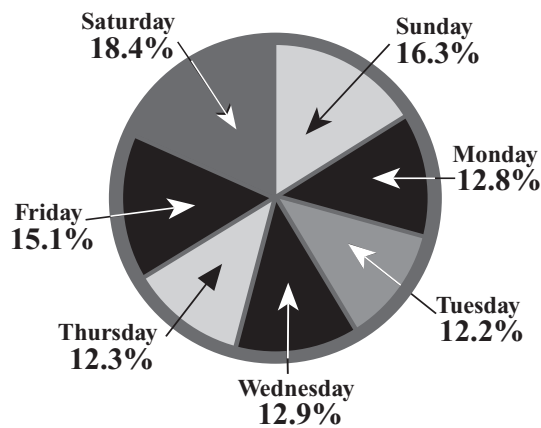
Source: Maryland State Trauma Registry

Origin Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMHS	TOTAL
Scene of Injury	98.4%	92.8%	84.2%	97.6%	95.9%	77.6%	95.4%	94.9%	93.1%	89.1%
Hospital Transfer	0.1%	5.5%	2.8%	1.8%	0.8%	22.4%	2.5%	1.3%	1.5%	8.6%
Other	1.5%	1.7%	13.0%	0.6%	3.3%	0.0%	2.1%	3.8%	5.4%	2.3%
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 2008 to May 2009)

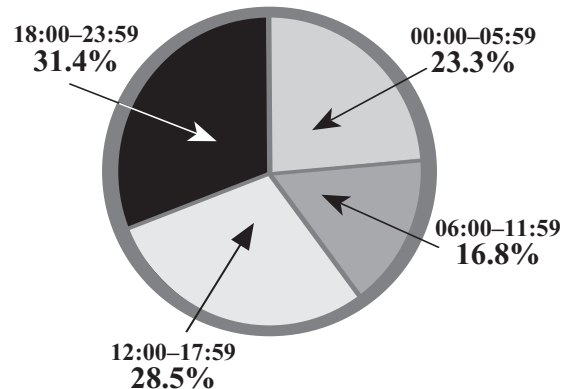
Source: Maryland State Trauma Registry



Emergency Department Arrivals by Time of Day: Primary Admissions Only

(June 2008 to May 2009)

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 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
Under 1 year	0	3	1
1 to 4 years	0	2	0
5 to 14 years	8	8	4
15 to 24 years	192	152	168
25 to 44 years	221	226	186
45 to 64 years	161	144	135
65+ years	161	198	189
Unknown	5	6	9
TOTAL	748	739	692
Deaths Overall as a Percentage of the Total Injuries Treated	3.8%	3.7%	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 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
Under 1 year	41	29	36
1 to 4 years	101	137	108
5 to 14 years	353	326	313
15 to 24 years	5,766	5,573	5,395
25 to 44 years	7,004	7,095	6,824
45 to 64 years	4,345	4,783	4,599
65+ years	1,920	2,223	2,428
Unknown	7	8	15
TOTAL	19,537	20,174	19,718

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 2008 to May 2009)

Source: Maryland State Trauma Registry

Age	Number of Injured Patients		Number of Deaths	
	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	36	31	1	1
1 to 4 years	108	83	0	0
5 to 14 years	313	270	4	3
15 to 24 years	5,395	4,775	168	150
25 to 44 years	6,824	5,907	186	162
45 to 64 years	4,599	4,006	135	121
65+ years	2,428	2,139	189	175
Unknown	15	15	9	9
TOTAL	19,718	17,226	692	621

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 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
Motor Vehicle Crash	36.7%	35.1%	34.2%
Motorcycle Crash	5.7%	5.8%	6.3%
Pedestrian Incident	5.6%	5.7%	4.9%
Fall	20.1%	22.7%	24.1%
Gunshot Wound	8.6%	7.1%	7.5%
Stab Wound	7.5%	7.2%	6.3%
Other	15.8%	16.4%	16.7%
TOTAL	100.0%	100.0%	100.0%

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

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

(June 2008 to May 2009)

Source: Maryland State Trauma Registry

Blood Alcohol Content	Motor Vehicle				Total
	Crash	Assault	Fall	Other	
Negative	60.7%	50.4%	56.3%	60.9%	57.4%
Positive	25.4%	29.1%	19.7%	15.3%	24.0%
Undetermined	13.9%	20.5%	24.0%	23.8%	18.6%
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 2008 to May 2009)

Source: Maryland State Trauma Registry

Age	Motor Vehicle		Pedestrian	Fall	Gunshot Wound	Stab Wound	Other	Total
	Crash	Motorcycle						
Under 1 year	0.1%	0.0%	0.2%	0.4%	0.0%	0.1%	0.1%	0.2%
1 to 4 years	0.2%	0.0%	0.5%	0.4%	0.1%	0.0%	0.5%	0.3%
5 to 14 years	0.8%	0.7%	2.7%	0.9%	0.7%	0.2%	2.0%	1.0%
15 to 24 years	29.9%	19.6%	26.4%	7.5%	47.7%	36.8%	24.8%	24.6%
25 to 44 years	35.3%	44.9%	27.4%	22.2%	40.3%	46.8%	39.8%	34.2%
45 to 64 years	22.2%	31.2%	31.6%	30.5%	8.8%	14.2%	28.0%	24.7%
65+ years	11.4%	3.6%	11.0%	38.0%	1.8%	1.8%	4.8%	14.9%
Unknown	0.1%	0.0%	0.2%	0.1%	0.6%	0.1%	0.0%	0.1%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

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

Etiology Distribution for Patients with Blunt Injuries: Primary Admissions Only

(June 2008 to May 2009)

Source: Maryland State Trauma Registry

Etiology	Percentage
Motor Vehicle Crash	40.5%
Motorcycle Crash	7.5%
Pedestrian Incident	5.9%
Fall	28.3%
Other	17.4%
Unknown	0.4%
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 2008 to May 2009)

Source: Maryland State Trauma Registry

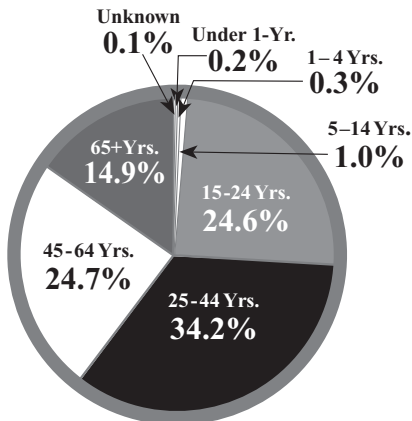
Etiology	Percentage
Motor Vehicle Crash	0.3%
Motorcycle Crash	0.1%
Pedestrian Incident	0.1%
Gunshot Wound	50.7%
Stabbing	42.5%
Fall	1.4%
Other	4.7%
Unknown	0.2%
TOTAL	100.0%

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

Age Distribution of Patients: Primary Admissions Only

(June 2008 to May 2009)

Source: Maryland State Trauma Registry

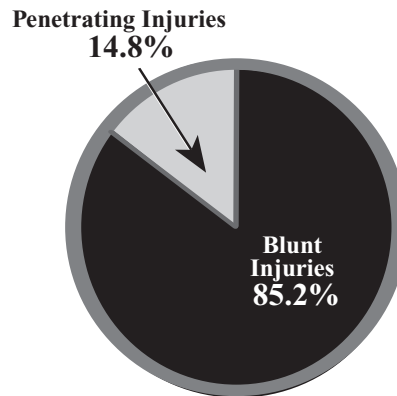


Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival. Only pediatric patients that were treated at adult trauma centers are included in this table. For patients treated at pediatric trauma centers,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

Injury Type Distribution of Patients: Primary Admissions Only

(June 2008 to May 2009)

Source: Maryland State Trauma Registry



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

**Final Disposition of Patients:
Primary Admissions Only**

(3-Year Comparison)

Source: Maryland State Trauma Registry

Final Disposition	June 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
Inpatient Rehab Facility	12.1%	11.2%	11.6%
Skilled Nursing Facility	1.2%	1.7%	2.1%
Residential Facility	1.2%	1.1%	1.3%
Specialty Referral Center	4.2%	4.2%	4.3%
Home with Services	2.2%	2.8%	2.5%
Home	69.2%	68.7%	67.9%
Acute Care Hospital	1.8%	2.1%	1.8%
Against Medical Advice	2.2%	2.2%	2.1%
Morgue/Died	5.4%	5.2%	5.1%
Left Without Treatment	0.0%	0.1%	0.4%
Other	0.5%	0.7%	0.9%
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
Penetrating Injuries: Primary Admissions Only**

(3-Year Comparison)

Source: Maryland State Trauma Registry

ISS	June 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
1 to 12	72.2%	73.5%	71.1%
13 to 19	10.5%	10.8%	11.9%
20 to 35	12.3%	10.8%	12.4%
36 to 75	5.0%	4.9%	4.6%
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 Score (ISS) by Injury Type:
Primary Admissions Only**

(June 2008 to May 2009)

Source: Maryland State Trauma Registry

ISS	Blunt	Penetrating	Total
1 to 12	69.6%	71.1%	69.9%
13 to 19	15.8%	11.9%	15.2%
20 to 35	11.8%	12.4%	11.9%
36 to 75	2.8%	4.6%	3.0%
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 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
1 to 12	68.2%	70.2%	69.6%
13 to 19	16.8%	16.0%	15.8%
20 to 35	12.4%	11.0%	11.8%
36 to 75	2.6%	2.8%	2.8%
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 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
1 to 12	68.9%	70.7%	69.9%
13 to 19	15.7%	15.2%	15.2%
20 to 35	12.4%	11.0%	11.9%
36 to 75	3.0%	3.1%	3.0%
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.

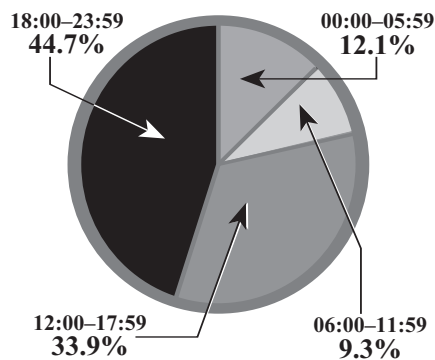
MARYLAND PEDIATRIC TRAUMA STATISTICS

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

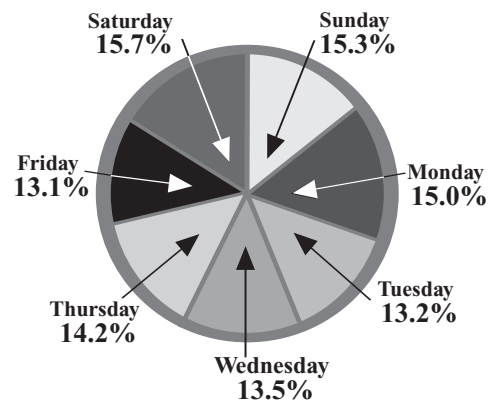
Total Cases Treated at Pediatric Trauma Centers (3-Year Comparison)			
Trauma Center	June 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
CNMC	895	889	849
JHP	924	840	815
TOTAL	1,819	1,729	1,664

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.

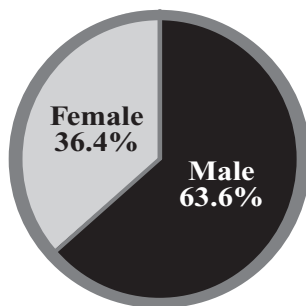
**Emergency Department Arrivals by Time of Day:
Children Treated at Pediatric Trauma Centers**
(June 2008 to May 2009)



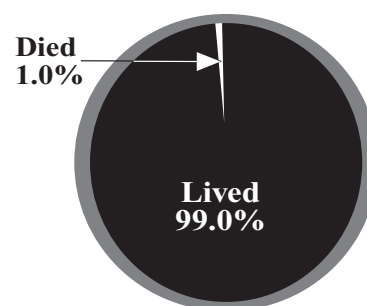
**Emergency Department Arrivals by Day of Week:
Children Treated at Pediatric Trauma Centers**
(June 2008 to May 2009)



**Gender Profile: Children Treated at
Pediatric Trauma Centers**
(June 2008 to May 2009)



**Outcome Profile: Children Treated at
Pediatric Trauma Centers**
(June 2008 to May 2009)



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 Statistics.

Mode of Patient Transport by Center: Scene Origin Cases Only

Children Treated at Pediatric Trauma Centers
(June 2008 to May 2009)

Modality Type	CNMC	JHP	Total
Ground Ambulance	63.0%	77.9%	71.9%
Helicopter	24.1%	19.9%	21.6%
Other	12.9%	2.2%	6.5%
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 2008 to May 2009)

Origin	CNMC	JHP	Total
Scene of Injury	48.6%	79.2%	63.6%
Hospital Transfer	42.3%	19.9%	31.3%
Other	9.1%	0.9%	5.1%
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.

Number of Injuries and Deaths by Age

Children Treated at Pediatric Trauma Centers
(June 2008 to May 2009)

Age	Number of Injured Patients		Number of Deaths	
	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	172	161	3	3
1 to 4 years	450	431	7	7
5 to 9 years	435	412	5	5
10 to 14 years	557	532	1	1
15+ years	50	48	0	0
TOTAL	1,664	1,584	16	16

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 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
Inpatient Rehab Facility	2.4%	3.0%	1.3%
Skilled Nursing Facility	0.0%	0.1%	0.0%
Residential Facility	0.9%	0.1%	0.3%
Specialty Referral Center	0.3%	0.3%	0.0%
Home with Services	1.0%	0.6%	0.8%
Home	92.6%	94.2%	95.6%
Acute Care Hospital	0.3%	0.1%	0.4%
Against Medical Advice	0.1%	0.1%	0.1%
Morgue/Died	0.9%	0.8%	1.0%
Foster Care	0.9%	0.3%	0.3%
Other	0.6%	0.4%	0.2%
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 2008 to May 2009)

Age	Motor Vehicle		Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
	Crash	Motorcycle						
Under 1 year	5.3%	0.0%	0.6%	15.5%	0.0%	0.0%	8.9%	10.3%
1 to 4 years	29.0%	0.0%	12.7%	33.7%	12.5%	16.7%	20.5%	27.0%
5 to 9 years	33.6%	30.8%	35.4%	24.2%	18.8%	16.7%	22.2%	26.3%
10 to 14 years	30.2%	61.5%	49.4%	24.5%	68.7%	66.6%	42.7%	33.5%
15+ years	1.9%	7.7%	1.9%	2.1%	0.0%	0.0%	5.7%	2.9%
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 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
Blunt	88.6%	94.9%	94.6%
Penetrating	3.7%	2.9%	3.6%
Near Drowning	0.9%	0.5%	0.7%
Hanging	0.0%	0.2%	0.2%
Ingestion	5.4%	0.0%	0.2%
Snake Bite/Spider Bite	0.1%	0.1%	0.1%
Animal Bite/Human Bite	1.2%	1.3%	0.3%
Other	0.1%	0.1%	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.

Number of Injuries by Age

3-Year Comparison

Children Treated at Pediatric Trauma Centers

Age	June 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
Under 1 year	187	188	172
1 to 4 years	493	459	450
5 to 9 years	447	441	435
10 to 14 years	623	594	557
15+ years	69	46	50
Not Valued	0	1	0
TOTAL	1,819	1,729	1,664

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 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
Motor Vehicle Crash	19.9%	20.9%	16.2%
Motorcycle Crash	1.6%	1.4%	0.8%
Pedestrian Incident	9.7%	9.8%	9.7%
Gunshot Wound	1.4%	1.2%	1.0%
Stabbing*	2.1%	1.2%	1.1%
Fall	36.3%	42.0%	46.4%
Other	29.0%	23.5%	24.8%
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 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
Under 1 year	3	4	3
1 to 4 years	8	2	7
5 to 9 years	3	4	5
10 to 14 years	3	3	1
15+ years	0	0	0
TOTAL	17	13	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 2008 to May 2009)

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
Under 1 year	6.2%	0.0%	1.0%	15.8%	0.0%	4.6%	7.9%	10.0%
1 to 4 years	26.8%	3.7%	11.8%	35.3%	15.4%	13.6%	20.7%	26.9%
5 to 9 years	30.8%	33.3%	38.2%	23.8%	11.5%	13.6%	23.1%	26.3%
10 to 14 years	36.2%	63.0%	49.0%	25.1%	73.1%	68.2%	48.3%	36.8%
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 2008 to May 2009)*

County of Residence	Number
Anne Arundel County	62
Baltimore County	103
Calvert County	19
Caroline County	8
Carroll County	37
Cecil County	5
Charles County	29
Dorchester County	3
Frederick County	24
Harford County	46
Howard County	28
Kent County	4
Montgomery County	91
Prince George's County	208
Queen Anne's County	11
St. Mary's County	23
Talbot County	1
Washington County	4
Wicomico County	1
Worcester County	1
Baltimore City	297
Virginia	15
Pennsylvania	6
Washington, DC	18
Delaware	1
Other	10
Not Indicated	2
TOTAL	1,057

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 63.5% 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 2008 to May 2009)*

County of Injury	Number
Anne Arundel County	73
Baltimore County	96
Calvert County	19
Caroline County	7
Carroll County	42
Cecil County	7
Charles County	32
Dorchester County	6
Frederick County	26
Harford County	46
Howard County	41
Kent County	5
Montgomery County	105
Prince George's County	205
Queen Anne's County	14
St. Mary's County	22
Talbot County	2
Washington County	2
Wicomico County	1
Worcester County	3
Baltimore City	238
Virginia	3
West Virginia	1
Pennsylvania	5
Washington, DC	17
Not Indicated	39
TOTAL	1,057

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 63.5% 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 2006 to May 2007	June 2007 to May 2008	June 2008 to May 2009
None	30.0%	34.8%	49.7%
Seatbelt	18.6%	20.2%	14.7%
Airbag & Seatbelt	2.8%	2.4%	0.5%
Airbag Only	0.0%	0.6%	0.5%
Infant/Child Seat	14.0%	14.0%	11.2%
Protective Helmet	8.9%	8.9%	7.4%
Padding/Protective Clothing	0.8%	1.4%	1.3%
Other Protective Device	0.8%	0.0%	0.0%
Unknown	24.1%	17.7%	14.7%
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.

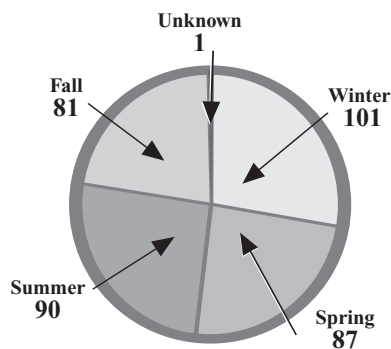
MARYLAND PEDIATRIC BURN STATISTICS

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

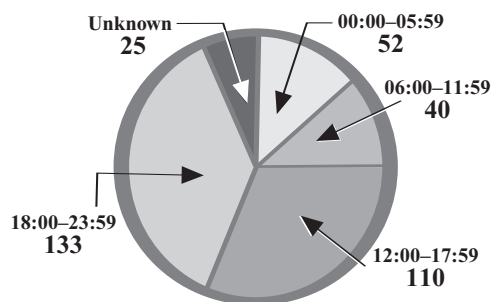
Total Number of Pediatric Burn Cases	
<i>Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (June 2008 to May 2009)</i>	
<i>Source: Maryland State Trauma Registry</i>	
Burn Center	Number
Children's National Medical Center Pediatric Burn Center	135
Johns Hopkins Pediatric Burn Center	202
Johns Hopkins Burn Center (at Bayview)	23
TOTAL	360

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 2008 to May 2009)</i>	
<i>Source: Maryland State Trauma Registry</i>	
Place of Injury	Number
Home	317
Industrial Place	1
Place for Recreation or Sport	3
Street/Highway	9
Public Building	1
Other Specified Place	16
Unspecified Place	13
TOTAL	360

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 2008 to May 2009)
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 2008 to May 2009)

Source: Maryland State Trauma Registry

County of Injury	Number
Allegany County	1
Anne Arundel County	11
Baltimore County	48
Calvert County	5
Caroline County	3
Carroll County	4
Cecil County	3
Charles County	9
Dorchester County	1
Frederick County	5
Harford County	11
Howard County	7
Kent County	1
Montgomery County	38
Prince George's County	58
Queen Anne's County	2
Somerset County	1
St. Mary's County	9
Talbot County	3
Washington County	5
Wicomico County	2
Worcester County	2
Baltimore City	96
Virginia	2
West Virginia	3
Pennsylvania	12
Washington, DC	3
Other	1
Not Indicated	14
TOTAL	360

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 2008 to May 2009)

Source: Maryland State Trauma Registry

County of Residence	Number
Anne Arundel County	12
Baltimore County	50
Calvert County	5
Caroline County	3
Carroll County	7
Cecil County	3
Charles County	9
Dorchester County	1
Frederick County	5
Harford County	10
Howard County	6
Kent County	1
Montgomery County	40
Prince George's County	65
Queen Anne's County	2
Somerset County	1
St. Mary's County	8
Talbot County	3
Washington County	5
Wicomico County	2
Worcester County	2
Baltimore City	101
Virginia	1
West Virginia	3
Pennsylvania	14
Washington, DC	1
TOTAL	360

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 2008 to May 2009)

Source: Maryland State Trauma Registry

Modality Type	CNMCBC	JHPBC	JHBC	Total
Ground Ambulance	27	101	3	131
Helicopter	7	8	0	15
Other	88	68	20	176
Not Valued	13	25	0	38
TOTAL	135	202	23	360

Origin 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 2008 to May 2009)

Source: Maryland State Trauma Registry

Origin Type	CNMCBC	JHPBC	JHBC	Total
Scene of Injury	43	107	21	171
Hospital Transfer	57	74	1	132
Other	35	21	1	57
TOTAL	135	202	23	360

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 2008 to May 2009)

Source: Maryland State Trauma Registry

Age Range	Electrical	Chemical	Thermal			Inhalation	Other	Unknown	Total
			Flame	Contact	Scald				
Under 1 year	0	1	1	19	31	1	0	1	54
1 to 4 years	2	3	7	56	109	3	0	3	183
5 to 9 years	2	0	12	13	41	2	0	1	71
10 to 14 years	0	1	12	7	21	0	1	1	43
15+ years	0	0	1	2	4	0	0	0	7
Not Valued	1	0	0	1	0	0	0	0	2
TOTAL	5	5	33	98	206	6	1	6	360

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 2008 to May 2009)

Source: Maryland State Trauma Registry

Final Disposition	Number
Inpatient Rehab Facility	12
Residential Facility	1
Specialty Referral Center	13
Home with Services	10
Home	309
Acute Care Hospital	2
Against Medical Advice	1
Medical Examiner/Morgue	1
Other	1
Not Indicated	10
TOTAL	360

Total Body Surface Area Burned by Length of Stay in Days

Patients Treated at Pediatric Burn Centers Only (June 2008 to May 2009)*

Source: Maryland State Trauma Registry

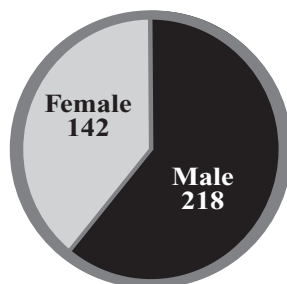
Length of Stay	Less Than 10% TBSA	10 - 19% TBSA	20% or Greater TBSA	Not Valued	Total
1 Day	179	4	1	34	218
2 - 3 Days	41	6	0	9	56
4 - 7 Days	15	7	1	5	28
8 - 14 Days	6	4	2	5	17
15 - 21 Days	1	3	0	2	6
22 - 28 Days	0	1	1	0	2
Over 28 Days	0	0	2	0	2
Unknown	0	1	1	6	8
TOTAL	242	26	8	61	337

* Only patients treated at the two pediatric burn centers are included in this table. Data were not available for pediatric patients treated at the Johns Hopkins Burn Center at Bayview.

Gender Distribution

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at Johns Hopkins Burn Center at Bayview June 2008 to May 2009

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 a new 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 initially 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 2009. A total of 55 cases were enrolled into CIREN during the 2007-2008 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.

Patricia Dischinger, PhD presented "The Anatomy of a Car Crash: The CIREN Project" at the April 2009 Injury Prevention and Trauma Response Seminar Series. This presentation included historical information about the CIREN project and Dr. Dischinger's crash reconstruction and injury mechanism research projects before CIREN was created in 1996. It also included analytical findings based on this biomechanical research. The presentation was open to the medical community on campus, as well as the public, and attracted a large audience.

The CIREN team also worked closely with Dr. Peter Martin, from the National Highway Traffic Safety Administration, on a project entitled "Characteristics of Fatalities in the CIREN database." This project aimed to identify injuries that contributed to mortality in motor vehicle crashes. The findings were presented at the 21st International Technical Conference on the Enhanced Safety of Vehicles (ESV) Conference in June 2009, in Stuttgart, Germany. This is a prestigious biomechanical engineering conference and this presentation was well received.

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 (MHSO). 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 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 prod-

ucts, 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.

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.

Department of Veterans Affairs: The NSC also has collaborated with the War-Related Illness and Injury Study Center of the VA Medical Center in Washington, DC. A current project is a pilot study of risky driving behavior among veterans deployed to Iraq and Afghanistan compared with non-deployed veterans and other licensed drivers. Plans are for this study to be expanded to include crashes, first Gulf War veterans, and veterans in other states.

Clinical Research: See page 35 for Research at R Adams Cowley Shock Trauma Center.

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 three additional fellows began during the 2008-2009 academic year.



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 knowl-

edge and understanding of injury-related research. Four additional Egyptian physicians were hosted during June and July of 2008. 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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Maryland Institute for Emergency Medical Services Systems

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September 28, 2008 Remembering Our Heroes



Pilot Stephen H. Bunker



*Trooper First Class/Flight
Paramedic Mickey C. Lippy*



*Emergency Medical
Technician Tonya M. Mallard*

The MIEMSS 2008-2009 Annual Report is dedicated to the memory of MSP Pilot Stephen H. Bunker, MSP Trooper First Class/Flight Paramedic Mickey C. Lippy, and Waldorf Volunteer Fire Department Emergency Medical Technician Tonya M. Mallard. They were killed in a helicopter crash while performing a medical evacuation of two critically injured teenagers from Charles County, Maryland.

Pilot Bunker was 59 years of age and was appointed to the Maryland State Police as Trooper on November 30, 1972. He retired as a Corporal in July 1998 and returned to the MSP Aviation Command as a civilian pilot. Trooper First Class Lippy was 34 years of age and was appointed to the Maryland State Police on October 1, 2004. He served the Aviation Command as a Flight Paramedic since April 25, 2007. Emergency Medical Technician Mallard was 39 years of age and joined the Waldorf Volunteer Fire Department in 2004.

The tragedy of their loss is remembered as EMS providers continue to respond to life-threatening medical emergencies.



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