Maryland Institute for Emergency Medical Services Systems

2007-2008 Annual Report

MARYLAND

MIEMSS

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

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

2007–2008 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.

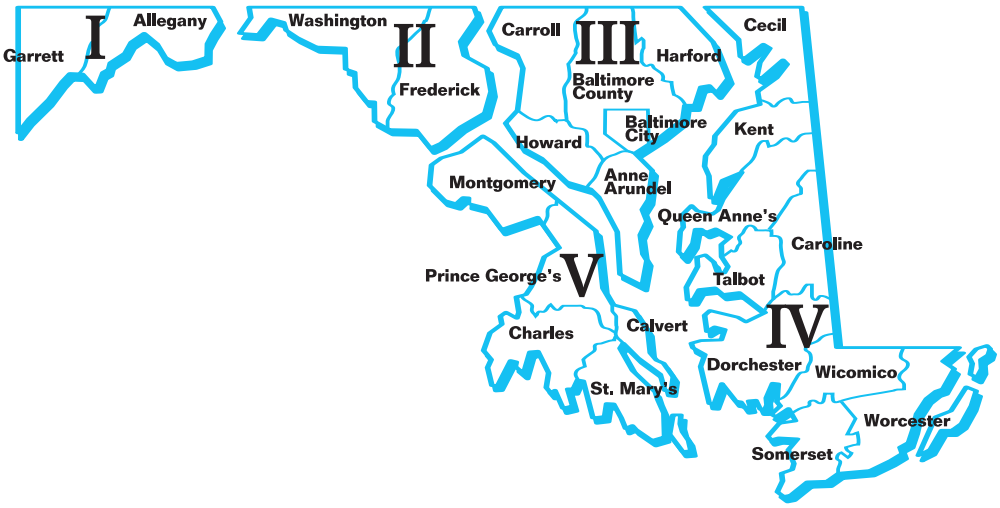
VISION

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 2007-2008 Annual Report marks the 15th anniversary of the passage of the EMS Law that created a new system of governance, oversight, and coordination for Maryland's statewide EMS system. This revised structure resulted from the 1992 Governor's EMS Commission that was charged with preparing the EMS system for "entry into the 21st century." That recommendation was translated into law in 1993 and, since that time, has served as the guiding principle for the development and operation of our statewide EMS system which functions as a unique community of volunteer and career organizations and personnel; police, fire department, fire/EMS, and "third service" providers; trauma and specialty centers; health care providers; 9-1-1 services and operators; and state, county, and local governments and jurisdictions.

Our state EMS structure has three components: (1) the State EMS Board, with 11 Governor-appointed members, that oversees the system; (2) a 29-member Statewide EMS Advisory Council (SEMSAC) that advises the Board; and (3) MIEMSS, an independent state agency that reports to the Board and coordinates all aspects of the statewide system. The multi-disciplinary State EMS Board includes representation of volunteer and career firefighters, emergency and trauma physicians, emergency nurses, hospital administration, the Department of Health & Mental Hygiene, and members of the general public. SEMSAC's 29 members represent the broad spectrum of statewide organizations and entities that are involved in providing emergency care and treatment in Maryland. MIEMSS is responsible for carrying out the directives that are considered by SEMSAC and approved by the State EMS Board.

At the fifteen-year mark, we should reflect on the some of the highlights and accomplishments over the past decade-and-a-half that have resulted from this structure and through the hard work and dedication of our EMS community.

- Ongoing licensing and certification of over 30,000 EMS providers, many of whom are volunteers, as well as a peer-reviewed credentialing process with appeal rights for disciplinary issues; establishment of web-based services for EMS providers, including tracking of licensure/certification status and continuing education; increased numbers of EMS providers in Maryland; and licensing of commercial ambulances services.
- Implementation of statewide medical protocols for EMS providers, standards for EMS educational programs at all levels, and regulations for the operation of EMS jurisdictional programs.
- Development of standards for trauma and specialty care referral centers, and designation of trauma and specialty centers, including burn, eye trauma, perinatal, and primary stroke centers; ongoing monitoring of trauma and specialty care patient outcome with remedial action where necessary.
- Installation, operation, and maintenance of the largest medical communications system in the state–including communications towers, microwave radios, EMS and helicopter radios, and hospital consoles–for prehospital to hospital communications; operation of a 24/7/365 statewide medical communications center to coordinate day-to-day EMS responses throughout the state; and statewide helicopter dispatch from SYSCOM.

- Increased focused on emergency patients who are at special risk, including pediatric and geriatric emergency patients, as well as cardiac arrest patients; increased public information and outreach to increase citizen response to and involvement in emergency health care issues, such as impaired driving and sudden cardiac arrest.
- Development and operation of innovative information technology initiatives, including an internet-based EMS patient data gathering system (EMAIS®), an intra-state hospital disaster alert program, and a hospital emergency department overcrowding status program that is available in real-time on the web.
- Partnerships with state, county, and local government on communication and technology initiatives to ensure cost-effective mechanisms to address public safety needs and seamless integration of capabilities.

These are but a few of the accomplishments that have grown out of the restructuring of our statewide EMS system that was created 15 years ago and successfully realized through the hard work and dedication of our many partners. The system's accomplishments have been the result of the spirit of cooperative excellence that characterizes the manner in which all of the components work together to achieve the best results for the citizens of Maryland.

As a result, the Maryland EMS system today is one that is responsive to the special needs of the public safety community and fully integrated with the health and public-health communities, and continues to provide timely and effective emergency care to the ill and injured throughout our state. Our EMS system is well-positioned to meet the challenges of the next 15 years, and we look forward to continued success.

MIEMSS
FROM THE EXECUTIVE DIRECTOR

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

Maryland's statewide EMS system has long been a leader in the successful integration of EMS providers and jurisdictions, physicians, nurses, hospitals, and other health care providers who all strive for a single goal–to save the life of the critically ill or injured patient. Nowhere is that integration more apparent–or necessary–as in efforts to ensure a seamless statewide emergency communication system and to develop an effective system of specialty emergency care and treatment.

Maryland specialty care systems (which function as unique "systems" within the statewide EMS system) currently include trauma care, acute stroke care, burn care, and perinatal care. Among key elements of these systems are uniform statewide protocols, including destination triage criteria for EMS providers, formal designation of trauma and specialty care hospitals, data collection, and a statewide approach to performance improvement.

In 2003, a Maryland Health Care Commission task force recommended that MIEMSS develop a system to address the care of patients with acute ST segment elevation myocardial infarction (STEMI) and to transport those patients to hospitals capable of providing primary percutaneous coronary intervention (PCI). This recommendation was subsequently incorporated into Maryland's State Health Plan. Since then, on a national level, the American Heart Association and others have made similar recommendations that communities should develop STEMI systems that are capable of field identification of patients with acute STEMI and rapid transport to facilities that can provide primary PCI to relieve coronary vessel narrowing within defined time limits after patient arrival.

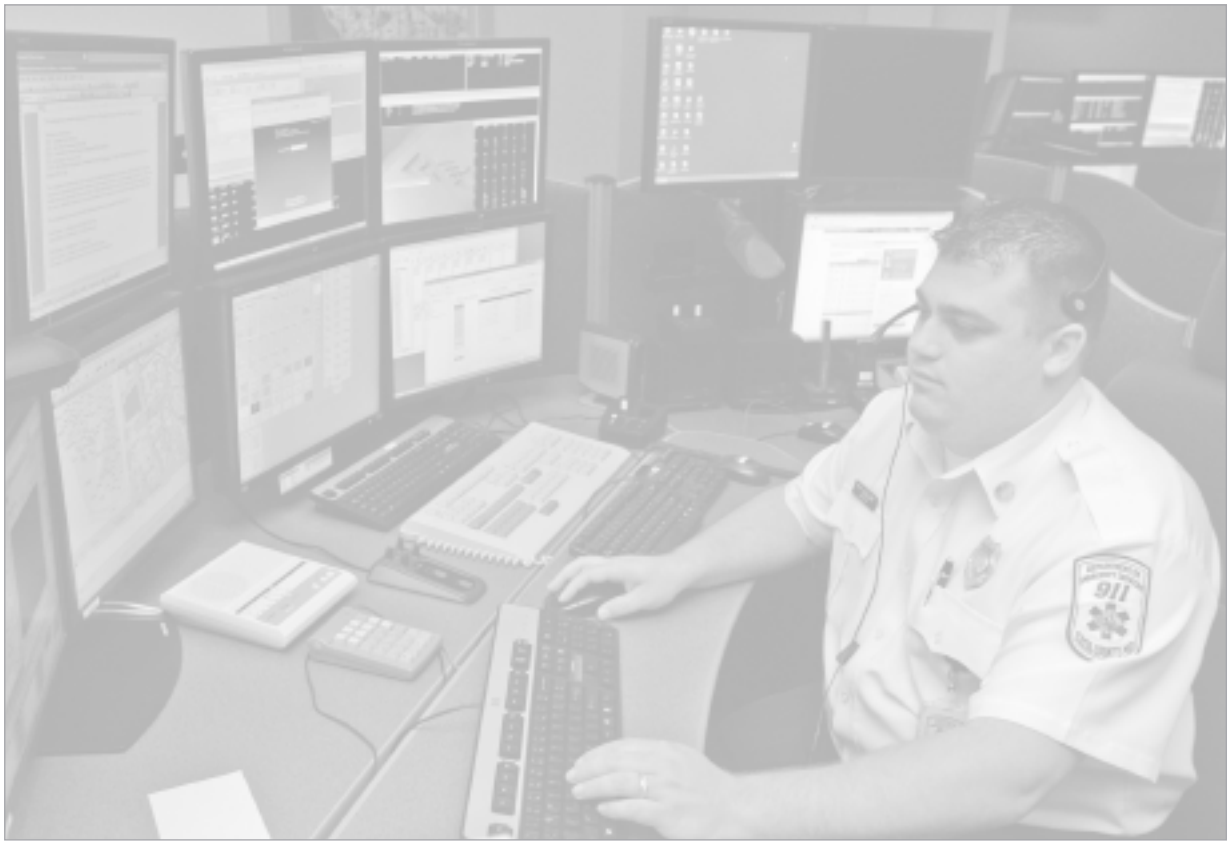
MIEMSS is now nearing the completion of draft regulations that will be used to designate Maryland hospitals as STEMI Centers. Other components of the STEMI system would include inter-hospital transfer guidelines for patients who are initially transported to hospitals without primary PCI capability, public education regarding the benefits of calling 9-1-1 for acute coronary problems, and establishment of a STEMI Advisory Council to monitor and guide the operation of Maryland's STEMI system.

In order to prepare Maryland's EMS system for the implementation of the STEMI system, MIEMSS has worked to increase the availability of 12-lead electrocardiography (ECG) in EMS jurisdictions throughout the state for the past several years. These devices permit EMS providers to rapidly identify STEMI patients in the field and to transmit the ECG information electronically to the hospital that will receive and treat the patient so that hospital personnel and resources can be mobilized and ready. As a result, EMS jurisdictions in Maryland have in place the capability to identify STEMI patients, and several jurisdictions have already begun to triage STEMI patients to hospitals with the ability to perform primary PCI. MIEMSS also continues efforts to expand placement of automated external defibrillators (AED) and to encourage the lay public to be trained in cardiopulmonary resuscitation and use of AEDs.

Also during the year, MIEMSS has participated as a key contributor to the State's initiative to develop a statewide communications interoperability plan. This plan will permit seamless communications among emergency first responders, public safety offices, and all law enforcement agencies. A new statewide 700MHz communications system is incorporated into the plan, as is a statewide computer-aided dispatch/records management system for statewide law enforcement and public safety usage, connectivity for all jurisdictional 9-1-1 centers and hospitals, and other features.

The need for interoperable communications in Maryland was highlighted by Governor Martin O'Malley as a core capacity homeland security need. Maryland's Homeland Security Goal #1 provided that "[f]irst responders in every region in Maryland should have access to a fully digital, trunked radio system which all response partners can access in order to transmit and receive voice and data." Over the past year, MIEMSS has participated in efforts to help create the inter-agency components and framework needed for effective collaboration on this multi-year, statewide effort. Governor O'Malley created the Maryland Statewide Communications Interoperability Program by Executive Order in July 2008. Efforts to implement and complete this initiative will continue over the next several years and will involve a multitude of agencies and organizations throughout Maryland.

On behalf of MIEMSS, I want to thank Maryland's EMS providers for their commitment and unselfish dedication in meeting the needs of our citizens. Maryland's statewide EMS system continues to be a "model" for the entire country. MIEMSS looks forward to continuing to work with all its partners as we further develop Maryland's exemplary emergency medical care system.



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 2008 budget information is displayed by state object code and department in the charts on pages 5-6.

AEROMEDICAL OPERATIONS

Mission: 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 med-evac requests and medical direction and is actively involved in the development of new patient care protocols and the oversight of ongoing care.

In FY 2008 there were 4,199 patients transported by the Maryland State Police (MSP) Aviation Command. Of these patients, 4,114 (98%) were transported from the scene of injury at the request of the local fire services, and 85 (2%) were transported between hospitals to a higher level of care.

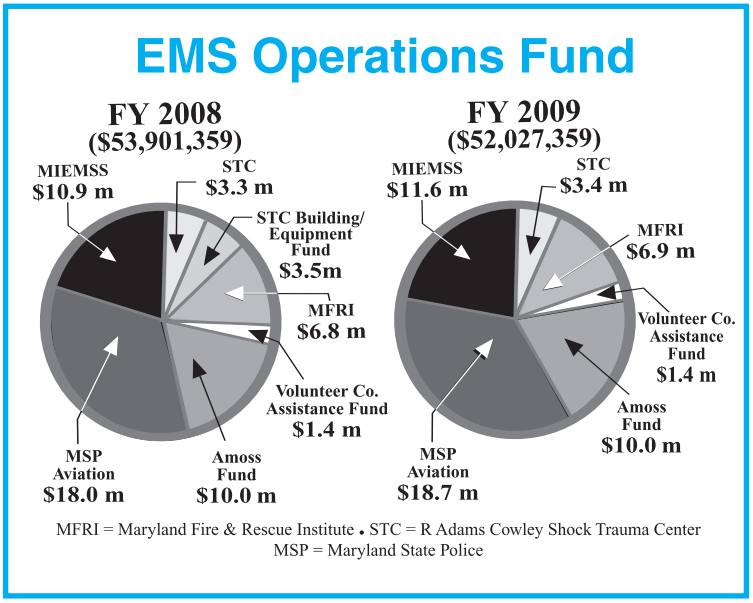
Types of calls included the following:

• Motor vehicle crashes	1,897
• Falls	677
• Pedestrians	217
• Assaults	100
• Burns	90
• Gunshot wounds	75
• Stabbings	58
• Hand injuries	43
• Industrial accidents	21
• Electrocutions	10
• Eye injuries	9
• Drownings	7
• Hyperbaric patients	6

In March 2008, the Maryland State Police Aviation Command celebrated 38 years of providing med-evac service to the citizens of Maryland. In addition to having the oldest med-evac program in the country, Maryland is unique among the 50 states in ensuring that its med-evac, search and rescue, and law enforcement services are available to all of its residents in a timely fashion, and are provided as a matter of public safety.

In FY 2008 the Aviation Command continued its participation in the Adult and Pediatric Rapid Sequence Intubation (RSI) pilot programs. Designed to address the needs of patients with severe head injuries, these RSI pilot protocols allow MSP flight paramedics to use neuromuscular blocking agents in the field to provide endotracheal intubation for patients who are not breathing adequately.

Scenario-based simulations were again utilized for MSP flight paramedics as part of their



MIEMSS FY 2008 EMS OPERATIONS FUND APPROPRIATION BY DEPARTMENT

Administrative Offices	
Executive Director, Legal Office	$653,492
Financial & Human Resources Administration	1,107,497
Planning/Program Development/Total Quality Management	219,664
Communications	
Equipment	1,108,517
Maintenance	1,626,599
EMRC/SYSCOM	1,058,341
Education/Public Information	
Education, Licensure, & Certification/Compliance	1,294,605
Public Information & Media Services	531,331
Information Technology	1,319,469
Medical Services	
Office of Medical Director	585,119
Office of Hospital Programs	320,379
EMS-Children	170,642
Regional Administration	940,622
TOTAL	$10,936,277

MIEMSS FY 2008 EXPENDITURE BY OBJECT CODE (INCLUDES ALL FUNDS)

FY 2008	Actual
Number of Positions	94.1
Salaries and Wages	$7,409,883
Technical/Special Fees	337,614
Communication	1,200,972
Travel	107,474
Fuel and Utilities	123,467
Motor Vehicle Operation and Maintenance	232,119
Contractual Services	1,588,831
Supplies and Materials	142,529
Equipment—Replacement	54,690
Equipment—Additional	5,846
Fixed Charges	85,633
Grants	1,264,047
Total Expenditure	$12,553,105

International Trauma Life Support (ITLS) training, in verification of advanced skill proficiency. These exercises, conducted at the United States Secret Service Training Facility, allowed life-like simulation of patient care situations as would be faced by flight paramedics in the course of their normal duties.

Two life-like Human Patient Simulator manikins were obtained by the Aviation Command during 2008. These manikins, which can breathe, blink, and bleed, can be used to simulate the type of acute medical emergencies that flight paramedics are called upon to immediately recognize and treat. One of these manikins is an adult simulator, and the other a pediatric, thereby giving our Training Section a great advance in providing realistic education and our Safety Section a significant tool for verifying maintenance of critical patient care skills.

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.

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) (see page 19 for additional information), the stroke system, the trauma systems, and aeromedical operations. In addition, AIR staff presented at EMS meetings (for example, EMS Care).

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).

ATTORNEY GENERAL'S OFFICE

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

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

The Attorney General's Office reviewed and prosecuted 28 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 EMS Care and Pyramid. 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, 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.

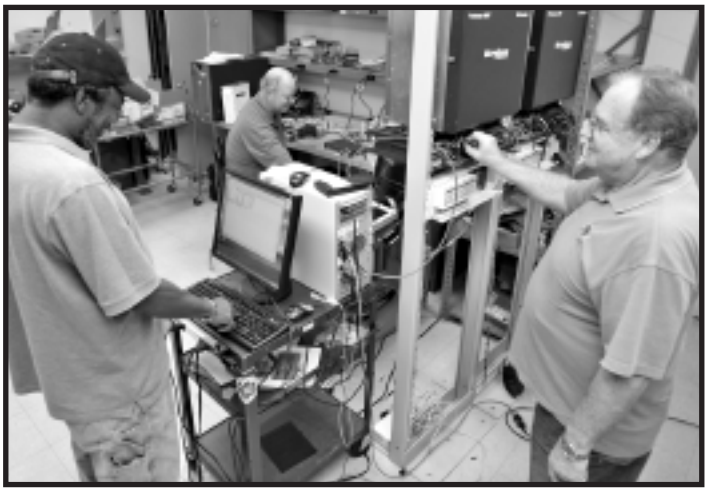
The Attorney's General's Office assisted in the administration of several state and federal grant programs and assisted in drafting and implementing several significant technology contracts.

COMMUNICATIONS ENGINEERING SERVICES

Mission: To provide the equipment, support, and expertise necessary to operate the statewide emergency medical services communications system.

Highlights for FY 2008 include the following:

- Deployed 17 microwave systems across the state and are currently in the process of deploying 24 additional hops of microwave.
- Evaluated and purchased the next generation microwave monitoring system which will deploy in August 2008.
- Completed a project with the Federal Aviation Administration in the deployment of two ADSB tracking stations. These stations are part of a Next Generation Air Traffic monitoring system.



- Worked closely with our partner agencies in the development of the RFP for the statewide 700 MHz radio system. MIEMSS Communications continues to be an active partner in the SIEC Executive Technical committees to build out the needed tower and microwave infrastructure to support the 700 MHz radio system.
- Relocated Frederick County into the Region V EMRC radio system to enhance our response time by load-balancing the EMRC Communication Systems.
- Relocated Region I EMRC into the new Allegany County Communications Center.
- Acquired and deploy narrowband-capable base stations in preparation for the 2013 narrow banding mandate. To date, Regions I, III, and V are narrowband-ready. MIEMSS Communications is currently targeting the lower eastern shore with new stations.
- Completed site surveys to all the hospitals in Region III in preparation for the deployment of DEMSTEL phones as part of an Urban Area Security Initiative (UASI) grant. Equipment is now being purchased based upon those surveys and deployments will begin shortly.
- Continued to expand the DEMSTEL phones as part of a grant from the Maryland Department of Health and Mental Hygiene (DHMH). The following sites have been added: Howard County Health Department, Talbot County Health Department, Montgomery County Health Department, and Kent County Health Department.
- Continued 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.

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 2008

• Incidents Reported to IRC	326
• IRC Investigations Initiated	372
• IRC Investigations Conducted	275
• IRC Investigations (FY 2007) Continued	47
• IRC Complaints Forwarded to PRP	29
• Complaints Dismissed by PRP	1
• Complaints Forwarded to EMS Board	28

EMS Board Action

• Reprimands	9
• Probation	7
• Suspensions	6
• Revocations	4
• Remedial training	4
• Surrenders	0
• Evaluations	0
• Applications Denied	2
• Case Resolution Conferences	6
• Dismissed	2
• Counseling	4

Hearings conducted by OAH	6
OAH Hearings defaulted	2

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 2008, the EMS/DNR program provided 110 in-service trainings to health-care providers about the use of the forms. Additionally, the EMS/DNR program responded to 208 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.

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 department's Critical Care Transport program continues to grow, now having served over 7000 students through 480 courses offered nationwide and internationally. The program has grown to 42 educational sites across the country and continues to grow with 4 additional sites being negotiated. 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.

Additionally, the program continues to expand its paramedic training with refreshers, 12-lead, and

capnography workshops, as well as the traditional ABC level courses. The most recent addition to the course offerings is the second 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.

EMERGENCY MEDICAL SERVICES FOR CHILDREN

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

The Emergency Medical Services for Children (EMSC) Program is responsible for the development of statewide guidelines 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 Maryland RISK WATCH® Champion Management Team with 12 local communities, the Child Passenger Safety Hospital grant project, and the federal EMSC Partnership grant and research activities. In Fall 2007, the EMSC program of MIEMSS agreed to take a leadership role in the transition of Safe Kids Maryland and has become the lead organization for Safe Kids Maryland.

MIEMSS Associate State EMS Pediatric Medical Director Joseph L. Wright, MD, MPH, was among 25 individuals appointed by the National Highway Traffic Safety Administration (NHTSA) to serve on the newly established National Emergency Medical Services Advisory Council (NEMSAC). The purpose of NEMSAC is to provide advice and counsel to the Department of Transportation on national Emergency Medical Services (EMS) initiatives, while offering a forum for the non-federal deliberation of national EMS issues.

EMSC Program Activities

The state PEMAC Committee continued to meet on a bimonthly basis throughout FY 2008 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).

The EMSC Program staff and medical directors from PEMAC continue to support the Maryland Enhanced Pediatric Education for Prehospital Providers (PEPP) courses and coordinate the statewide PEPP Steering Committee to facilitate sharing of faculty resources, plan for recertification, and identify material that correlates with the Maryland EMS Medical Protocols. The focus for this past year has been to enhance the teaching resources available for BLS instructors and BLS providers through three projects: completion of the Spinal Immobilization DVD resource with the MIEMSS BLS subcommittee and regional pediatric spinal immobilization evening trainings; filming of the Lower Extremity DVD resource with the BLS subcommittee; and expanding BLS PEPP Courses in Southern Maryland. Updates and information for coordinators and faculty can be found at www.miemss.org/EMSCwww/PEPPEnhanced2.htm.

Through the Maryland Medical Protocol review process, establishment of 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. During each of the educational seminars and conferences in

Month and Location	Conference Title	Pediatric Components
September 2007 Columbia	Mid-Atlantic Life Safety Conference	**Display** on RISK WATCH® injury prevention and disaster preparedness
September 2007 Ocean City	Peninsula Regional Medical Center Trauma Conference	**Displays** on Child Passenger Safety Hospital Project; SECURE Ambulance Safety
October 2007 Solomons Island	PYRAMID Conference Tri -County EMS Conference	**Preconference**: PECARN Safety Study for QI Officers and Pediatric Research Update for EMS One course **Workshops**: Pediatric Transports: Assessing Children in the Back of an Ambulance; Beyond Broselow: Advanced Pediatric Pharmacology; Pediatric Belly Pain - Emergent or Urgent; Pediatric Puzzlers, Pediatric Jeopardy **Displays**: EMSC Performance Measures; Child Passenger Safety; and SECURE Ambulance Safety
October 2007 Laurel	ENA Barbara Proctor Conference	Child Passenger Safety Display
January 2008 Tilghman Island	WINTERFEST 2008	**Workshops**: Pediatric Respiratory Illness; Pediatric Head Injury: Assessment, Triage, & Consequences **Displays**: EMSC Performance Measures; Child Passenger Safety; and SECURE Ambulance Safety
March 2008 Rocky Gap	Miltenberger Conference	**Workshops**: START & JUMP START; Pediatric Trauma Care; Child Victimization: The Hidden & the Obvious **Displays**: Child Passenger Safety & SECURE Ambulance Safety
April 2008 Annapolis	EMS CARE 2008	**Preconference**: Pediatric Resuscitation: Educators' Workshop **Workshops**: Pediatric Burns; Neonatal Emergencies; Assessing Pediatric Fever; Pediatric Strokes; Inhalants: Cheap, Easy, Deadly; Pediatric Cases; Commotio Cordis – Sudden Death in the Young Athlete **Displays**: EMSC Performance Measures; CPS Hospital Project; SECURE Ambulance Safety
June 2008 Ocean City	Maryland State Firemen's Convention	**Workshops**: RISK WATCH® 101 in the Fire Ambassadors Workshop; Pediatric Spinal Immobilization in the MIEMSS Instructor Workshop **Displays**: RISK WATCH® – Home Safety Display and Natural Disasters modules

Maryland during 2007-2008, pediatric topics were presented to highlight both protocol changes and findings from the ongoing EMSC Pediatric Emergency Care Applied Research Network (PECARN). Prehospital continuing education programs involving topics on pediatric emergency, pediatric trauma and burn care, injury prevention, and family-centered care were offered at EMS and emergency nursing conferences throughout the state.

During May 2008, EMS for Children's Day was celebrated across Maryland through the recognitions of children and youth who have 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 21, 2008, five young Marylanders received awards for their actions that ensured anther person would receive "The Right Care When It Counts." Public service announcements and a Maryland EMSC Day poster are available in English and Spanish to continue the public education message promoting injury prevention, family preparedness, and appropriate emergency actions. More information and a downloadable calendar with safety observances for 2008 can be found at www.miemss.org/EMSCwww/RightCare.html.

The Pediatric QIC ongoing training for the Pediatric Base Stations and the Pediatric Transport

Teams at the Johns Hopkins Pediatric Emergency Department and the Children's National Medical Center Emergency Medicine and Trauma Center has expanded to the duPont Hospital for Children's Pediatric Transport Team. The two Pediatric Base Stations 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, a new report has been complied to describe the incidence of burns in children across Maryland. This report can be found on pages 73 to 75 and will be modified into a Pediatric Fact Sheet for public education and prevention activities in Fall 2008.

Injury Prevention and Life Safety

The EMSC Program staff actively 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 newly formed 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 on poisoning, with a focus on inhalants.

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 ATS, and the Maryland Department of Natural Resources. During the fifth 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 EOC is leading the program.
- **Frederick County** has resources for after-school programs and for two new private schools for Fall 2008.
- **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, including one new school in 2008.
- **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 will be focusing on disaster preparedness in Fall 2008.
- **Rock Hall VRF** is interested in restarting RISK WATCH® activities this school year.
- **Calvert County** has an after-school program and is looking into incorporating RISK WATCH® with St. Leonard VFD to expand in Fall 2008.
- **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 RISK WATCH® Preparing for Disasters were at the MSFA Convention in Ocean City with educational materials for families and children. Onsite, 30 different families/companies were electronically signed up for the Home Safety Council "Expert Network" while visiting the display area, and materials were provided to over 350 individuals. The specific displays were:

- **Home Safety Display** focusing on fire and injury risk areas with Home Safety Council (HSC) materials and demonstrations of Risk Watch & HSC DVDs

- **Disaster Preparedness Display** including Family Escape Plans and Disaster Back Packs for children along with demonstration of training DVDs
- **Fire Prevention Display** that included four types of smoke alarms and information on home sprinklers
- **Partnership for a Safer Maryland Display**

MIEMSS continues to expand the website page for RISK WATCH®; information can be found at www.miemss.org/EMSCwww/RISKWATCH2.htm. The Maryland State Firemen's Association provided the funding for schools to receive "RISKY BUSINESS" boxes that include training equipment and videos on life-safety skills. Many schools and programs are exploring the Natural Disasters curricula and modules from both RISK WATCH® and the American Red Cross.

In Fall 2007, the EMSC Program of MIEMSS agreed to coordinate the Safe Kids Maryland Coalition through a transitional period, and in 2008 established an agreement with Safe Kids USA to be the lead organization. Cyndy Wright Johnson will serve as the Safe Kids Maryland state coalition coordinator with support throughout MIEMSS and the state coalition to develop an online set of resources and establish an electronic mailing list for more than 600 members. 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, the coalition requested a series of expert lectures as part of the coalition meeting. The series is listed below and online resource will be linked:

Injuries in Children: Prevalence, Play, and Prevention Series

Part I - Kids Do and Say the Darnedest Things – Cyndy Wright Johnson, MIEMSS
Part II - Poison Risks Seen in Children & Youth – Angel Bivens, Maryland Poison Center
Part III - Water Safety with Children & Youth – Julie Brown, Department of Natural Resources
Part IV- Child Passenger Safety Update – Tracy Whitman, Kids in Safety Seats, DHMH
Fire & Burn Safety – Jane Edwards, Office of State Fire Marshal, and Teresa Anne Crisman, Maryland State Firemen's Association and Ladies Auxiliary
Part V - (December 2008) Toy Safety & Gun Safety

MIEMSS participated with a coalition of injury prevention and public health advocates in two press events in June 2008 to announce the revised Maryland Child Passenger Safety Law. Effective June 30, 2008, every child under 8 years old must ride in a booster seat or other appropriate federally approved child safety seat until the child exceeds 4 feet, 9 inches or 65 pounds. The focus of the law is to educate parents, family members, and healthcare providers about the importance of booster seats and to protect children from injury.

Child Passenger Safety Project

The EMSC Program continues to provide leadership for the seventh 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. MIEMSS collaborated with the Maryland Highway Safety Office, the Kids in Safety Seats (KISS) program, and the Maryland chapter of AAP to distribute the 2008 Booster Seat Law materials. An updated version of the "Prescription for CPS" was printed and is being distributed to both hospitals and primary care practices. The 2007-2008 grant year focused on both education for hospital staff and on Safe Transport of Children in Ambulances. The SECURE interactive display was developed for prehospital conferences and meetings. The CPS and OP project also included the following ongoing projects:

1. Updating resources on the CPS website www.miemss.org/EMSCwww/CPSHome.htm.
2. Maintaining a network of hospital contacts and CPS technicians in both the Maternal Child Health and the Emergency Departments of hospitals in Maryland;
3. Providing educational resources for hospitals on both CPS Best Practices and promoting policy development with a focus on NICU and Nursery safe discharge of high-risk infants;
4. Participating in the Child Passenger Safety Board's development of statewide guidelines and resources; and
5. CPS hospital information displays and demonstrations of the project products at EMS, nursing, and pediatric conferences across the state.

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 ten 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 EMSC coordinators met in March to share resources as all states work on the federal EMSC Performance Measures and again in June at the annual EMSC Grantee meeting.

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 expanded projects, working with the Chesapeake-Atlantic Research Network (CARN) on the development of prehospital and EMS research capacity in the network. This is a high priority for the PECARN, and the EMSC Program at MIEMSS looks forward to reporting and disseminating progress reports emerging from this relationship in the coming years.

MIEMSS received a third-year EMSC State Partnership Grant from the Maternal Child Health Bureau/Heath Resources Services Administration of the U.S. Department of Health and Human Services. The 2006-2009 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. Monitor the impact of the EMSC initiatives within the state, based upon the 10 federal EMSC performance measures. In February 2008, surveys were conducted on pediatric equipment and pediatric transport policies that will assist in further enhancement of the infrastructure that cares for children across Maryland.

2. Enhance the current EMSC data initiatives and activities in both the EMS and hospital data sets to include provision of state, regional, and jurisdictional information on children and participate in the National EMS Information System (NEMSIS) data work groups.

3. Expand the current EMSC pediatric education activities available to both out-of-hospital and hospital providers through regional and state conferences, with a continued annual EMSC "Right Care When It Counts" recognition process.

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 2008, the Emergency Medical Resource Center (EMRC) handled 207,083 telephone calls and 155,377 radio calls. Of these 362,460 calls, 135,442 were communications involving a patient or incidents with multiple patients, while 26,947 of these calls involved on-line medical direction.

In FY 2008, the System Communications Center (SYSCOM) handled 42,338 telephone calls and 3,522 radio calls. Of these 45,860 calls, 6,253 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 530 calls for the Maryland Department of Health and Mental Hygiene (DHMH) 24-hour Duty Officer.

GOVERNMENT AFFAIRS

Each year, the MIEMSS Office of Government Affairs works to assist the Executive and Legislative branches of State government in developing effective statutory approaches and solutions to a variety of emergency care needs. Partnering with EMS providers, physicians, nurses, hospitals, and other health care providers, MIEMSS works on proposed legislation that affects all the various components of the statewide EMS System, as well as Maryland's health care system in general.

During the 2008 Legislative Session, EMS-related legislative initiatives included the following bills that were passed by the General Assembly and signed into law by the Governor:

- The Maryland Trauma Physician Services Fund was modified to expand the eligibility for reimbursement to permit reimbursement for on-call physicians in certain situations and to include physicians who provide care in a rehabilitation hospital to trauma patients in the Maryland State Trauma Registry. As revised, the statute also now contains a limit on annual expenditures from the Fund, while a previously existing limit for reimbursement from the Fund to emergency physicians was repealed. The legislation also established and formalized a grant process to be used for equipment for Maryland's Level II and Level III trauma centers.
- An All Terrain Vehicle (ATV) Safety Task Force was created to identify and study major issues related to ATV safety and to make recommendations regarding: (1) accurate methods of tracking ATV ownership in the State; (2) appropriate safety equipment; (3) effective methods of educating consumers; (4) appropriate locations for ATV use; (5) training for ATV owners; (6) public awareness of ATV safety-related topics; and (7) any other topic related to ATV safety that is deemed appropriate by the Task Force. The Task Force is to report its findings to the Governor and the General Assembly in an interim report on or before December 15, 2008, and in a final report on or before May 31, 2009.
- The statutory Maryland Medicaid cap of $100 for emergency services transporters was repealed in favor of the Department of Health & Mental Hygiene (DHMH) determining by regulation the amount to be paid under Medicaid for such transports.
- As of October 1, 2008, Maryland's Automated External Defibrillator (AED) Program will be altered in several important ways. Restrictions on individual use of an AED will be removed, as will the requirement for AED programs to obtain a sponsoring physician and to pay a $25 registration fee.
- Also, as of October 1, 2008, Maryland's immunity protections will change for laypersons who use an AED. The "prudent layperson" standard will be modified to incorporate elements of the "gross negligence" standard.

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 six Primary Stroke Center designation visits during FY 2008. This brought the total number of designated centers statewide to 31. (See page 33 for a complete list of primary stroke centers.) The Office hosted the inaugural meeting 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 established bylaws, elected officers, and quickly organized to examine the role of interhospital transfer in the treatment of acute stroke. The Office also secured grant funding and deployed an online education module for prehospital acute stroke care. By year's end, 46 EMS providers completed the self-paced learning module.

Staff from the Office of Hospital Programs presented an abstract at the American Heart Association's Quality of Care and Outcomes Research Conference demonstrating increased use of recombinant tissue plasminogen activator (t-PA) in acute stroke accompanying the Primary Stroke Center designation project.

Freestanding Emergency Facilities

The EMS Board promulgated regulations designating Freestanding Emergency Facilities. The regulations took effect in May 2008. Freestanding Emergency Facilities provide medical treatment but are physically separate from the sponsoring hospital and its grounds. These facilities function under a pilot program approved by the General Assembly in 2005 to explore alternative models for increasing access to emergency care. Under an approved protocol, EMS providers may transport patients meeting select criteria to these designated facilities.

Staff from the Office of Hospital Programs participated in a Freestanding Medical Facilities Data Work Group organized by the Maryland Health Care Commission. The Work Group provided advice to the Commission on the data elements that should be collected in the patient-level data set required under the law. These data were included in an interim report on the operations and utilization of Freestanding Medical Facilities submitted to the General Assembly in January 2008.

EMS Base Stations

Office staff also continued to collaborate with the Office of the Medical Director on EMS Base Station verification during FY 2008. Management activities included issuing certifications to 417 Emergency Department personnel completing the Base Station Communications course. Staff also collaborated on the development and distribution of a DVD updating EMS Base Stations' staff on protocol changes for 2008.

Trauma System

The revised Maryland protocol for Trauma Triage became effective July 1, 2008. This protocol was revised during FY 2007 and 2008 following a review of current literature and stakeholder consensus to make triage protocol changes that were based on information from an expert panel that was convened by the Centers for Disease Control and Prevention (CDC) with the support of the National Highway Traffic Safety Administration (NHTSA).

The Office of Hospital Programs staff completed the third cycle of five-year trauma center re-verification/designation process for the nine adult Maryland trauma centers. This process involves a call for applications, review of the applications, an on-site review visit to each trauma center with an out-of-state review team that includes a trauma surgeon, emergency medicine physician, and a nurse trauma manager/coordinator. The Office compiles a confidential summary report of the findings for each trauma center and submits the information to the MIEMSS Executive Director who notifies the centers of the findings and the designation decision.

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 Hand and Upper Extremity Trauma Center regulations became effective in late August 2007. The Office staff prepared a call for applications that was published in the *Maryland Register*. Applications were accepted in May. The designation process should be completed in the fall of 2008.

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 developed some research questions related to prehospital trauma triage that will be further developed during FY 2008. Another activity of the Council during FY 2007 was to compare the Maryland State Trauma Registry data elements with the National Trauma Data Bank (NTDB) data elements and definition requirements. Recommendations for changes to the Maryland State Trauma Registry data set were made to improve compatibility with the NTDB.

Perinatal Referral Centers

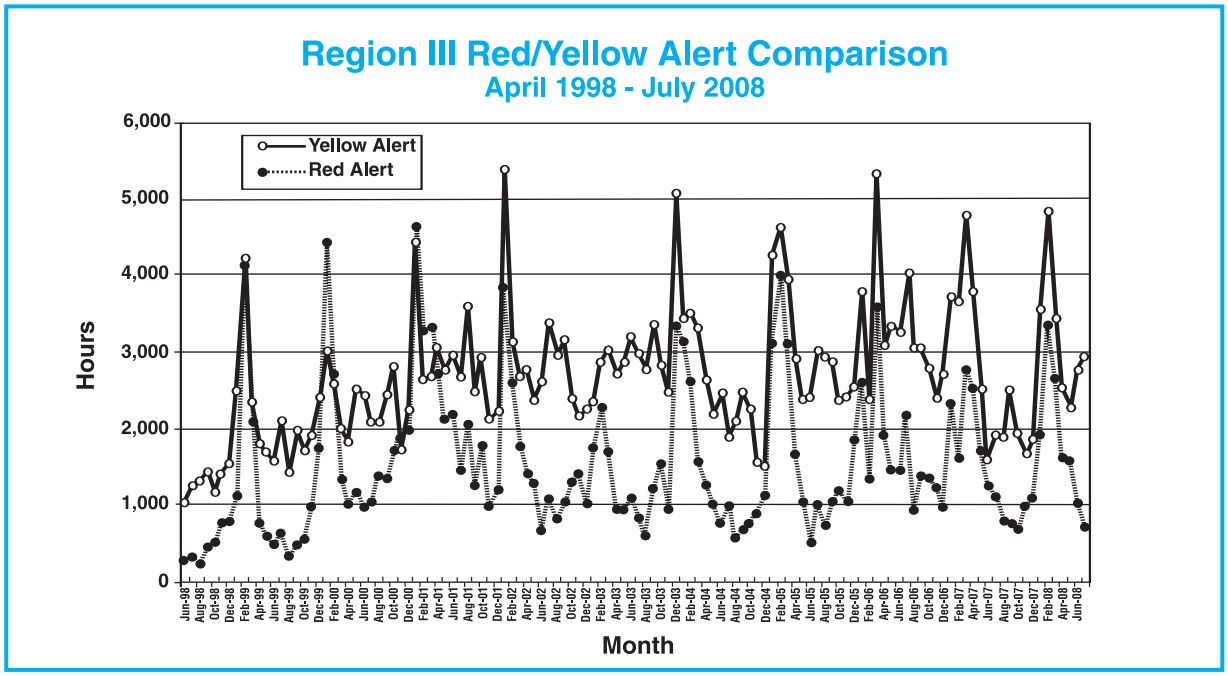
MIEMSS has worked closely with the Department of Health and Mental Hygiene (DHMH) regarding the designation of perinatal centers in Maryland. DHMH provides grant funds to support a full-time staff to coordinate the perinatal programs in the MIEMSS' Division of Health Care Facilities and Special Programs.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

Yellow Alerts/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; however, a better indicator is the "Transfer of Care" time or amount of time the EMS provider is with the patient before moving the patient



to an ED stretcher and transferring care to the ED staff. EMAIS® jurisdictions began recording Transfer of Care time in October 1, 2007. MIEMSS plans to begin monitoring this additional measure from EMAIS® jurisdictions as well.

Statewide yellow alert utilization and return to service times showed moderate improvement during 2007-2008, especially in Region III, even as the Maryland Department of Health and Mental Hygiene (DHMH) reported the number of confirmed influenza cases in Maryland was significantly increased for the 2007-2008 flu season compared to the last several seasons. (Source: Maryland Influenza Surveillance Report-Final. May 26, 2008. Division of Communicable Disease Surveillance, Office of Epidemiology and Disease Control Programs, Maryland Department of Health and Mental Hygiene.) 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 2007-2008 flu season.

The Baltimore City Health Department reported that 2007 alert activity for Baltimore City hospitals declined and EMS return to service times improved since the Baltimore City Task Force on Emergency Department Crowding was formed in 2005. The Task Force issued a report in June 2006 with recommendations for implementation by hospitals and EMS to decrease alert utilization which many of the hospitals and EMS employed with success. MIEMSS provided "essential coordination" to facilitate implementation of several of the recommended measures.

National studies, including the 2006 Institute of Medicine's report on the Future of Emergency Care, have indicated that inpatient capacity and prolonged throughput times are the largest reason for ED delays. Additionally, the Maryland Health Care Commission (MHCC) issued a report on ED utilization that discusses several aspects of ED overcrowding, as well as several recommended strategies to address the crisis (Source: Maryland Health Care Commission. Use of Maryland Hospital Emergency Departments: An Update and Recommended Strategies to Address Crowding. January 1, 2007.) Since that time, in response to several recommendations in the 2007 ED Overcrowding report, the MHCC has convened an Emergency Department Performance Measures Technical Advisory Committee which met several times during the last year and is scheduled to meet again before the end of the year. The focus of the group is to discuss two of the recommendations from the 2007 MHCC report. The first is related to working with the Health Services Cost Review Commission to incorporate time data into existing data sets maintained on ED visits and inpatient utilization. The second relates to partnering with the Maryland Patient Safety Center, the American College of Emergency Physicians, and others to develop a standard data set on ED patient flow. MIEMSS actively participates on the Technical Advisory Committee.

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 on site to be used by trained laypersons in the event of a sudden cardiac arrest until EMS arrives. Currently, there are nearly 1,000 approved programs in the state, totaling approximately 2,400 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 at www.miemss.org.

The Maryland Facility AED Program has had 47 successful AED uses out of 252 reported incidents (19%). Success is measured by the patient having a return of pulse at EMS arrival or during EMS transport. Of the overall arrests, 148 were witnessed, and 39 of those witnessed arrests regained a pulse at the time of EMS arrival for a 26% save rate for witnessed cardiac arrests.

During the 2007 legislative session, a bill was introduced to require AEDs at community swimming pools. The bill did not pass as originally proposed but was amended to require MIEMSS to conduct a study and report to the General Assembly on whether AEDs should be placed at swimming pools or other types of public locations. MIEMSS worked with the AED Task Force to develop the report which was completed in December 2007 and may be viewed on the MIEMSS webpage.

The AED Task Force continues 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 become 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 Facility AED Program. MIEMSS is also represented on the State Advisory Council on Heart Disease and Stroke.

At the 2008 EMS Star of Life Awards Ceremony, MIEMSS was proud to honor the staff of the AED Program at the Clifton Park Golf Course for saving the life of one of its employees suffering sudden cardiac arrest. The survivor and staff from Clifton Park were both in attendance at the ceremony and received the MIEMSS Director's Award for Excellence in EMS.

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 2008, the Office of Information Technology (IT) focused on the development and enhancement of web-based systems.

The Electronic Maryland Ambulance Information System (EMAIS®) is operational in 24 jurisdictions (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). 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 Department has continued to scan patient care reports during FY 2008 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 2008, MIEMSS has successfully scanned approximately 238,850 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.

A program to download EMAIS® data to the paper-based MAIS database format was developed to allow uniform statewide data reporting. Users of the web-based EMAIS® system have the ability to access standard reports based on their activity. 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.

To better serve the EMS community, MIEMSS IT constructed a new website which allows easy navigation throughout the agency.

With MIEMSS expanding its web-based applications, the existing Universal Login System (ULS) also required enhancements. ULS2 is designed to allow users to log into a single portal to access all available applications and online services offered by MIEMSS. Plans are underway to use ULS2 as a portal to an online EMS continuing education system. This new feature would allow a provider to log on to the MIEMSS website, select a continuing education program, complete the online program, and receive state-approved continuing education credits.

MIEMSS enhancements were made to the existing web-based Continuing Education (ConEd) reports. Information available to EMS providers and jurisdictions via the web now includes provider certification status, tracking of continuing education credits, and jurisdictional provider reports, as well as an EMS instructor corner promoting the sharing of EMS education information. Prior to this, jurisdictions had to request all reports from MIEMSS, with the reports being run by MIEMSS staff. Now authorized jurisdictional representatives, with proper access credentials through ULS, can run their jurisdictional reports via the web.

The County/City Hospital Alert Tracking System (CHATS) surveillance program continually monitors the status of each hospital's ability to receive patients in the 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.

The Information Technology Office has been supporting the maintenance and expansion of CHATS and FRED. Both systems now operate independently, but Information Technology has been cooperating with MIEMSS Emergency Operations staff and the Communications/Information Technology Technical Advisory Group to identify the requirements for a combined system and to plan for expansion of the current capabilities to include accessing Computer-Aided Dispatch Center databases and internal hospital bed tracking systems. System needs have been identified, as well as enhancements needed for the infrastructure to support the proposed system.

There are three registries currently included under the Maryland State Trauma Registry reporting process. The Maryland Trauma Registry, which includes nine adult and two pediatric designated trauma centers; the Maryland Eye Registry for our single designated center and to eventually include hand injuries requiring specialty care; the National TRACS (Trauma Registry American College of Surgeons) American Burn Association Registry 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.

Our goal is to continue to upgrade and enhance our network environment by utilizing the proper security practices and safety measures for safeguarding patient care reporting data received from the jurisdictions.

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 that contact 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 23,000 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 was provided to the Maryland General Assembly in 2007.

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 2008, the total number of Maryland EMS providers continued to rise and is the highest it has been over the last five fiscal years. The number of EMT-Basics, CRT99s, as well as EMT-Paramedics is the highest number for those respective levels in a decade. The breakdown of Maryland providers for the last five fiscal years is as shown on the table on page 20.

Level	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
EMD	873	731	732	832	794
FR	10,551	10,980	10,666	9,306	9,033
EMT-B	15,323	15,609	15,285	15,993	16,917
CRT-99	252	342	505	619	825
EMT-P	2,192	2,180	2,200	2,364	2,437
TOTAL	29,191	29,842	29,388	29,114	30,006

Note: CRTs are not included since this program was discontinued when the update process to CRT-99 was completed as of July 1, 2008.

Throughout FY 2008, the Office had a steady workload and issued 3,172 initial licenses and certificates, as well as renewed 5,812 prehospital provider licenses and certificates. The number of initial licenses issued for FY 2008 increased this past fiscal year, compared to last fiscal year. 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 support of the BLS Committee of the Statewide EMS Advisory Council (SEMSAC), the Office worked to develop skills resources for EMS instructors. The EMS instructor resources help to ensure accuracy and promote consistency in skills instruction. The resources in 2008 focused on lower extremity injuries. The BLS Committee and the Licensure and Certification Office developed spinal immobilization resources for instructors in FY 2007 and improved upon the process by adding video clips of the skills being performed. In addition to the skills being digitally taped, the resource kit for lower extremity injuries will include commentary and advice from notable physicians and surgeons around the state. Furthermore, the instructor resource kit includes digital pictures associated with lower extremity injuries. These will be placed into dynamic PowerPoint presentations and given to instructors on CDs. The skills resource CDs/DVDs and workshops are to be rolled out in all regions of the State in September 2008. In the fall months of 2008 and into 2009, the BLS Committee will focus on updating the EMT refresher course.

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. This web-based system will ensure that bank item data are real-time and ultimately more secure, residing in one centralized location. The new web-based test-generating and grading program (WebTG) is slated to be fully functional within the Atlantic Council by October 2008. The Office is also working with the Council to develop 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.

Throughout 2007 and 2008, the Office worked with the law enforcement community to develop an emergency medical care course that has content with specificity and applicability to the law enforcement community. The course is competency-based and offers core content for the law enforcement community to acquire during initial training in academies. The course has the flexibility to also add content, in addition to the core, to better meet the needs of the law enforcement agency instructing it. The course was pilot tested in May by the Maryland State Police and was well received by the students, as well as faculty. In July, the Maryland Police and Corrections Training Commission approved the new course as an acceptable course for instructing entry-level law enforcement officers. The Office is in the process of developing instructor resources, as well as composing a request for proposal to develop a textbook for the course.

The Office worked with the SEMSAC ALS Committee to explore ways in which simulation technology can be incorporated within classrooms. Given the growing clinical access challenges, education programs are seeking ways in which they can augment clinical experiences to ensure that students gain entry-level competency. The committee surveyed education programs throughout the state and determined what simulation resources are currently available to programs and ascertained that they are underutilized and

what is needed for programs to use the technology more frequently and effectively. The survey discovered that education programs have adequate access to the simulators; however, they are in need of additional training to use the simulators, as well as additional human resources to adequately staff the simulators. The ALS Committee and the Licensure and Certification Office will continue to work collaboratively to ensure that simulation technology is implemented and efficiently and effectively used throughout Maryland.

The Office has also continued with initiatives to increase the quality of educational services provided to EMS providers. In January, the fourth annual EMS Educators' Symposium took place at College Park. MIEMSS brought in Deb Cason from the National Association of EMS Educators (NAEMSE), to overview the education standards, which are currently under development. The education standards will be the primary document depicting 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 *EMS Education Agenda for the Future: A Systems Approach*. Ms. Cason overviewed the standards and offered advice as to how education programs can prepare to implement the standards in the coming years.

Additionally, the Office continues with the education program approval process with the second round of site visits. The approval process and its associated annual reports help to ensure that educational programs have adequate physical, financial, and human resources to ensure course completion and adequate student outcome. Furthermore, the Office continues to coordinate grants offered to EMS educational programs and jurisdictions which supplement courses and training offered to EMS providers and candidates. This year, over $320,000 were offered to ALS educational and jurisdictional programs and over $50,000 were offered to Emergency Medical Dispatcher programs to help offset the costs of delivering quality educational programs.

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 coordinators are responsible for specific geographic areas of the state and serve as the points of contact, through local 9-1-1 centers and SYSCOM, for critical incident stress management. During FY 2008, MCISM staff held 52 defusings and 3 basic training classes.

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 13th Annual Medical Director's Symposium was attended by Regional, Jurisdictional, and Commercial Ambulance Service Medical Directors, as well as Base Station Physicians and Coordinators. This year's guest speaker was Assistant Chief Paul LeSage of Tualatin Valley Fire and Rescue, Aloha, Oregon, who lectures nationally on Resource Deployment, Critical Decision-Making, and Cultural Drift. His Symposium lecture was entitled, "Critical Decision Making and High Reliability Organizations." Other presentations included:

- New Education Standards and Scopes of Practice Recredentialing: Your Signature Counts
- Factor VIIa Update
- Political Change Impacting EMS and EM: The Good, the Bad, and the Ugly
- Bumps in the Road of Implementing Change and the Clinical Effects: Continuous Positive Airway Pressure (CPAP) Ventilation
- Germantown Emergency Center (GEC): The Montgomery County Experience with a Free-Standing Emergency Department
- EMS-C: State Performance Measures, Emergency Department Pediatric-Specific Equipment and Capability Requirements
- Tactical EMS: What a Medical Director Needs to Know Before Signing the Optional Supplemental Application

- Emergency Medical Dispatch: Call Processing and Medical Direction Decision-Making
- Human Patient Simulators: Are They the Educational Replacement for Actual Patient Encounters?

MIEMSS, in collaboration with 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), have established the Maryland Regional National Disaster Life Support (NDLS) Coalition. The Coalition's two-year goal is to train 2500 providers in the one-day didactic Basic Disaster Life Support (BDLS) program and an additional 200 physicians and high-level medical personnel in the two-day Advanced Disaster Life Support (ADLS) program. This establishes an organized method for the disaster preparedness training of healthcare professionals. Hospitals, local response teams, Citizen Emergency Response Teams, National Medical Response Teams, and multiple organizations are interested in this training to support minimal credentialing of their staff as part of their disaster preparedness.

The Office of the Medical Director (OMD) provided an overview of the Maryland EMS System to numerous visitors from foreign countries; MIEMSS is viewed by many countries as the Model EMS System for the United States. Medical leadership from Tokyo, Japan, serving 12.5 million people with 23 critical care hospitals and over 300 local hospitals, were interested in the designation process of specialty centers and the advantages associated with implementing standardized requirements. Physician leadership from the Emergency Medicine Learning Center in India were interested in the Maryland Medical Protocols for EMS Providers and Emergency Medical Dispatch policies within Maryland to improve and expand their system. Dr. Richard Alcorta, Sate EMS Medical Director, participated in an international teleconference as the guest speaker providing a comprehensive overview of the Maryland EMS System. Mayoral delegations from many islands of the Philippines sponsored by the Hopkins Humphrey Fellows program found Maryland's regionalization and designation of specialty centers very exciting and hope to integrate this concept into their healthcare infrastructure on their return home. Representatives from London's ambulance service participated in shared discussions of the challenges associated with multiple simultaneous terrorist explosions and mutual strategies to reduce morbidity and mortality of the victims of such horrific events.

The 2008 updates and revisions for the *Maryland Medical Protocols for EMS Providers* manual were implemented statewide July 1, 2008. Dr. Alcorta facilitated a train-the-trainer session at the R Adams Cowley Shock Trauma Center for the protocol rollout that was broadcast at multiple distance-learning sites throughout the State. In collaboration with the offices of Licensure and Certification and Public Information and Media Services, Dr. Alcorta appeared in two DVDs covering the updates in the Trauma Decision Tree and the 2008 Update for the *Maryland Medical Protocols for EMS Providers*. Both of these video-based presentations hope to improve the reliability and consistency of provider education. All EMS providers were required to review both presentations prior to July 1, 2008.

The Office of the Medical Director continued quality monitoring of the multiple Base Stations and continued expanding the instructor pool in order to make the Base Station Course more available. This expands the opportunities for hospitals to provide courses for new staff and provide the annual EMS protocol updates to its staff in a timely fashion. There were 417 Base Station Certificates issued to emergency department providers in FY 2008.

The OMD accepted 33 expiration date exchange Chempack containers filled with antidotes for organophosphate or nerve agents casualties. The containers were placed strategically around the State to allow for rapid deployment in the event of a significant nerve agent or organophosphate exposure. This is an extension of the Strategic National Stockpile (SNS) Program.

The OMD participated in numerous significant emergency response exercises during FY 2008 in an effort to improve existing emergency response plans and configurations. These included:

- An EPLEX Drill at BWI Airport with the Office of Chief Medical Examiner and several commercial and local EMS Operational Programs involved the simulated crash of a large commercial passenger aircraft with multiple moulaged victims who had to be triaged, medically stabilized, and transported to a simulated hospital. Simultaneously, psychiatric crisis teams from the Red Cross and Maryland's Critical Incident Stress Management Team supported the families of the victims.
- The EMS Pandemic Flu Exercise took place in June 2008 with two phases: (1) Modified Emergency Medical Dispatch (EMD) Protocol and (2) Draft EMS Pandemic Flu On-Scene Protocol. Phase one had the participation of

the 911/ Emergency Medical Dispatch Centers from Caroline, Frederick, Harford, Montgomery, Prince George's, Queen Anne's, and Washington counties. Each of these 911/EMD Centers implemented the modified EMD Protocol which would systematically reduce resource commitment and manage the 50 diverse patient complaint scenarios while attempting to maintain integrity of the stressed systems. In phase two of the Pandemic Flu Exercise, MIEMSS had multiple EMS providers of all levels of certification and licensure participate in a trial of a draft EMS Pandemic Flu On-Scene Triage Protocol that directed the providers to determine if the patient was to be left at the scene, transported to a pandemic-flu-capable alternate care facility (non-hospital based), or transported to an overcrowded hospital-based emergency department. This was the first such trial in the nation for both protocols.

MIEMSS supports these exercises and others throughout the State because they play an important role in ensuring our EMS' (prehospital and hospital) quick, coordinated response to a sudden, unpredictable emergency. Such exercises also indicate any flaws and need for improvement in EMS response plans. Only through planning with experts, exercising the plan, evaluating the plan, and updating that plan 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 continues to be 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. 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 medical issues. A complete re-design of the MIEMSS web page was completed in order to provide easier access to its information. Work groups made up of our customers assisted with the final look of the web page. This year, MIEMSS began a column in the "Maryland Fire Dispatch," which also allows for dissemination of information to the Maryland emergency services community. An update of the "Maryland Medical Protocols for EMS Providers" was completed, including editing, layout, and design. All of these documents can be found on the MIEMSS web page. The 2008 pocket version of the "Maryland Medical Protocols for EMS Providers" was also designed and printed.

This year the annual EMS Week Stars of Life Awards Ceremony was held at the BWI Marriott. 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.

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 project this year was a result of the awarding of a second-year Maryland Highway Safety Grant, "Impaired Driver Prevention Media Campaign," which included posters, statewide television public service announcements (PSAs), public awareness events, and press conferences. As part of the campaign, in conjunction with the Baltimore Ravens and 98 Rock radio station, safety messages from Ravens fans were taped and aired on the web site www.stopdrunkdriving.net. Another large event occurred in May when the National EMS Memorial Bike Ride came to Maryland to begin EMS Week. Through the assistance of multiple jurisdictions, the EMS riders from around the country pedaled from Cecil County to Annapolis on May 19 where a memorial service was held at the Maryland Fire Rescue Memorial. The next day they rode to Washington, DC for a press event at the Capitol and then to Roanoke, Virginia for the National Memorial service. Involvement in the Washington Metropolitan Media Relations Council

and 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 Tokyo, the Philippines, 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, which this year included information on the Statewide Communications Interoperability Plan as outlined by Governor Martin O'Malley.

Several training modules were produced during the past year. These included an update to the "Bystander Care Program," "Trauma Decision Tree and Protocol Clarification Module," "The 2008 Prehospital Protocol Update," "2008 Protocol Update for Base Stations," and "Long Bone Fractures for Adult and Pediatric Patients." These modules were produced on compact discs and DVDs and include printed materials. The office provided satellite downlinking and taping of many informational programs, including topics such as infection control and WMD/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, "ALTE Training for Prehospital Care Providers," "MSP Helicopter Load and Off-Load Procedures," and the video portions of the protocol updates. The documentary, "In the Eyes of Glory," which documented the sculpture process and erection of the Fallen Firefighter Memorial in Annapolis and included information on the line-of-duty deaths and the extreme dedication our emergency services providers give on a daily basis, was aired on Maryland Public Television. 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 PSAs were produced on various prevention topics. In conjunction with the Anne Arundel County Fire Department's Public Information Office, PSAs on impaired driving and the importance of AEDs were completed. A PSA with Lieutenant Governor Anthony Brown, the honorary chair of the Impaired Driving Task Force, was done regarding Impaired Driving and the tragic losses that occur statewide. 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 these teams to work collaboratively on multiple projects. Membership on the State Highway's Diversity in Traffic Safety Program raised 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 Throughout 2007, reduce the overall inpatient complication rate by 10% or greater each year for Maryland trauma centers.

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

Objective 2.1 Throughout 2008, 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 2008.

Objective 2.3 Transport at least 89% of seriously injured patients to a designated trauma center throughout 2008.

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 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 150 providers have attended workshops at Pyramid, EMS Care, and special jurisdictional-based training meetings 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. This two-day core curriculum was modified and presented at EMS Care ’08 and two other jurisdictional programs. Additionally, this same course was incorporated within the JEMS ’08 conference as a model program and had over 100 attendees from across the nation in attendance. A one-day “focused” program was developed and presented at Pyramid ’07 as a pre-conference workshop.

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 on-line County/City Hospital Alert Tracking System (CHATS) to keep all entities updated on system response capabilities and historical trends. This monitoring (especially in the winter months) and individual hospital resolution to high emergency department

(ED) service demand helped keep this vital service available system-wide. Joint work under several MIEMSS-sponsored committees has continued to address both immediate resolution and long-term strategies in the mitigation of ED overcrowding and the effects on EMS services. This vital service was upgraded in April 2008 under a multiple phase, web-based application which will assist hospitals and EMS in better identifying demand situations and resolution.

Special Needs

Both the National Highway Traffic Safety Administration (NHTSA), through Maryland's Crash Outcomes Data Evaluation System (CODES) funding and the Maryland Highway Safety Office grants resources, have continued to support efforts in EMS data linkage to multiple crash-related data sets. This year's third funding request for eMAIS® assessment for National EMS Information System (NEMSIS) compliance was granted for FY 2009. In accordance with both the State EMS Plan's and the State Highway Safety Plan's prioritized objectives, EMS data are essential in the improvement of prevention and ultimate patient outcomes of victims of motor vehicle crashes. Incorporation of prehospital data requirements from the NEMSIS effort has been a key to our data standardization effort this year.

Data Confidentiality

MIEMSS maintains or has access to eight confidential databases used in ensuring quality EMS care delivery. The Data Access and Research Committee (DARC) was formed to ensure that all data and information requests were expedited efficiently and accurately, while ensuring patient and provider confidentiality at all times. Since January 2000, over 1400 requests have been tracked and facilitated. Standardized web-based request for data was established for timely review, approval, and accurate facilitation.

REGIONAL PROGRAMS & EMERGENCY OPERATIONS

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

Regional Programs/Emergency Operations consists of five offices located throughout the state. Each office consists of at least one regional administrator and a secretary. They are responsible for monitoring the operation of the EMS system in their area and acting as an advocate for the services in their region in the development of state policies and as the MIEMSS representative 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 administrative 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 Highway Safety Administration. The Regional Councils and the Regional Affairs Committee of the Statewide EMS Advisory Council (SEMSAC) review these 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 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 for $39,200, is in its fourth year and expanded its target area from Region I to the entire state. This fiscal year, 80 students completed the Bystander Care course, and three Instructor Trainer courses were presented. The curriculum was revised to coincide with EMS protocols, and many partnerships with trucking associations were formed. The grant was amended to provide additional funding for Roadway Safety for EMS Responder courses; five programs were presented in conjunction with the State Highway Administration, the Maryland Emergency Management (MEMA), and the Maryland Fire and Rescue Institute (MFRI). The program was well received. All classes were full and additional programs were requested.

Urban Area Security Initiatives (UASI)

Both Regions III and V receive funding under the Department of Homeland Security (DHS) Urban Area Security Initiative. The Region III Health and Medical Task Force, organized by the Region III Office, also reports to the Baltimore Urban Area Working Group. This year the Task Force made great strides by successfully obtaining $287,000 from UASI funds to provide each hospital emergency department in Region III with two voice-over-internet-protocol (VoIP) phones. These phones will be placed in emergency departments and hospital emergency operations centers and will serve as a redundant communication system among hospitals, health departments, and state and local emergency operations centers in the event of an emergency. The Region III Office continues to work closely with the MIEMSS Communications Department, as well as hospital emergency planning officials, during the installation phase of the project. 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

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. Six hospitals were designated as Primary Stroke Centers during FY 2008, bringing the current total to 31. (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 also assisted 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 those hospitals prior to and to maintain base station designation. All the hospitals in Region IV have been recognized through the site evaluation process as Base Station Consultation facilities.

AED Medical Direction

The Regional Medical Directors agreed to assume the responsibility to provide the required medical direction for Public Access AED programs. The Regional EMS Advisory Councils have established AED Medical Direction Committees to assist in the evaluation and oversight of the programs that do not have adequate resources to provide their own medical direction.

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 is in the process of forming a QA/QI subcommittee of the Council to better assist the jurisdictions in meeting the needs for quality assurance.

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

Although no new local programmatic assessments were completed this year, Allegany and Garrett Counties' Commissioners continued implementation of the recommendations from the SWOTs conducted by MIEMSS. In Allegany County, the new EMS Chief tracks all the recommendations closely, and response times have improved dramatically. The Region I Office worked closely with the Garrett County EMS squads and the County Office of Emergency Services to implement the SWOT and facilitate agreements that allow county-paid EMS providers to operate the squad's ambulance and improve response times.

VAIP

The regional offices continue to perform inspections of ambulances under the Voluntary Ambulance Inspection Program (VAIP). The Region I Office led the team that revised the VAIP standards and published them in January 2008. In Spring 2008, the newly revised Voluntary Ambulance Inspection Program (VAIP) guidelines were used during the inspection of more than 30 emergency response units from Carroll County in Region III. These inspections ensure that each unit is stocked with specific equipment and meets the response criteria developed by the VAIP Committee. Statewide 234 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 2007, Southern Maryland's 19th annual EMS Conference, was held October 12-14, 2007 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 an overview of the USAF Aeromedical Evacuation System, Regionalization of Care for STEMI (ST segment Elevation Myocardial Infarction) Patients, and Mentoring and EMS.

The Peninsula Regional Medical Center hosted its 17th Annual Trauma Conference and coordinated a Stroke Conference to provide prehospital providers with additional training to better recognize stroke patients.

Talbot County EMS hosted the 11th Annual Winterfest Conference in Tilghman Island. This is one of the very successful regional conferences held throughout the state. The efforts and talents of all EMS stakeholders came together in the rollout of the new Statewide Protocols and the Trauma Decision Tree.

Planning efforts for EMS Care, an annual educational conference offered each spring to EMS providers, began in Fall 2007. This year the conference moved to the state capital, Annapolis, Maryland,

and offered an array of topics, including presentations on medical, trauma, pediatric, and mass casualty response practices. EMS Care was also pleased to welcome as its keynote speaker, Chief James Clack, the newly appointed Chief of the Baltimore City Fire Department, who spoke on his experience during the Minnesota bridge collapse incident.

The EMS One Course, coordinated by the Region V Office and intended to prepare senior providers to "step into" the county supervisor level, was presented at many of the regional and statewide conferences.

Support for Education Programs

In addition to the conferences described above, the regional offices support many other educational programs. Many 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. On behalf of Regional Programs, the Region IV Administrator serves on the ALS Committee of SEMSAC to communicate those needs and direct ALS training funds to the programs in need.

The regional offices are also responsible for conducting the written certification and licensure examinations. This year they conducted 62 First Responder and 95 EMT- Basic exams for classes, as well as 446 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 33 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. Regional offices responded to 16 incidents. Some were planned events that EMS supported.

Health and Medical Committees

Each region has continued to support and strengthen regional interdisciplinary health and medical emergency preparedness committees. In Region I, the Regional EMS Advisory Council was expanded to include local health departments and has supported an exercise in Garrett County, a shelter-in-place drill, and encouraged more Web EOC (Emergency Operations Center) training.

The Region II Office continues to support the Tri-State Emergency Preparedness Committee. The Region III Task Force is responsible for overseeing the UASI health and medical projects mentioned previously. They submitted three projects totaling $6.5 million for consideration by the Urban Area Working Group.

The Region V Health and Medical Task Force developed a template to test regional communications during the Statewide Pan Flu exercise. While an actual public health emergency prevented full activation of the communication template, other templates were developed for future testing.

Statewide Health and Medical Committee

The Statewide Health and Medical Committee continues its work in the various Focus Groups and Technical Advisory Groups (TAGS).

The Communication and Information Technology TAG continued to provide advice on the implementation of the new Health and Medical application that will support the functions of the current FRED and CHATS applications. They also began to merge efforts with Communications and Technology groups, such as the Emergency Support Function for Communications Group and the Baltimore Metropolitan Council Technology Committee.

The EMS Focus Group designated a small group chaired by the Region V Associate Administrator.

The Hospital Focus Group, staffed by the Maryland Hospital Association, conducted a Hospital Incident Command Instructor Training program and have been involved in providing direction regarding the use of Hospital Preparedness funds.

Mutual Aid Agreements

SEMSAC approved the Mass Casualty/ Catastrophic Incident Plan, which details the implementation of mutual aid between jurisdictions and methods to request more global assistance in a catastrophic incident. The implementation plan recommends National Incident Management System (NIMS) training levels and the implementation of for-

mal Ambulance Strike Teams to support the plan. Agreements between hospitals continue to flourish and are being exercised. This year the hospitals in the tri-county area of Southern Maryland entered into a Memorandum of Understanding (MOU) to share resources, information, and personnel. Plans are being completed for regional and statewide MOUs.

Emergency Response Exercises

MIEMSS regional offices supported more than 18 exercises during the 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:

- Assisting Ft. Meade EMS with an exercise to assist the new administration to prepare emergency preparedness plans as the base expands due to BRAC (Base Realignment and Closure).
- Assisted Johns Hopkins Bayview Medical Center with communications via FRED during an internal emergency exercise.

Hospitals, 9-1-1 centers, providers, and other organizations in Region IV were involved in the July 2007 Statewide Pan-Flu Drill. This involved, but was not limited to, training, planning, implementation and completion of after-action reports. This process continued with a follow-up statewide drill in June 2008. Many of the same institutions and organizations were involved, and tested and evaluated additional aspects of preparation for a statewide pandemic event.

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 (MSP), and MEMA. There have been 10 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.

Chempack

Annual sustainment visits were coordinated by the Region V Administrator and staffed in each region by the Regional Administrators. Additionally, hospital and field training programs have been distributed, and a training container was received by CDC and will be used in an exercise in the fall.

Health and Medical Monitoring Application

The County and Hospital Alert Tracking System (CHATS) was migrated from the legacy system to one being hosted by HC Standard. This is the first phase of upgrading CHATS, merging the application with the Facility Resource Emergency Database (FRED), and building an entire system-monitoring system. MIEMSS also participated in the review of the Department of Health & Human Services' (DHHS) plans to implement the "Hospital Available Beds for Emergencies and Disasters" (HAvBED) standards by reviewing their central application to receive data at their emergency operations center. HC Standard will collect the required availability from hospitals in the state and exchange the information with the DHHS system. The new system will also include a patient-tracking system which is expected to be piloted in early 2009.

Long-Term Care Emergency Plans

Because of the concern over the need to evacuate health care facilities, MIEMSS worked closely with the Office of Health Care Quality of the Department of Health & Mental Hygiene (DHMH), the Maryland Emergency Management Agency (MEMA), and long-term care associations to implement regulations requiring nursing homes and assisted-living facilities to have emergency plans and supporting physical plant capabilities. LifeSpan, a long-term care association, partnered with MIEMSS to incorporate management personnel from these facilities into Incident Management Teams to assist other facilities in crisis.

Preparedness Planning

MIEMSS has been cooperating with MEMA, DHMH, and the Governor's Office of Homeland Security in emergency preparedness planning efforts. MEMA began an effort to update all their Emergency Support Function (ESF) plans. MIEMSS is a supporting agency for ESF 2 (Communication), ESF 6 (Mass Care and Sheltering,) ESF 8 (Public Health and Medical), and ESF 10 (Hazardous Materials). All of those plans are being reviewed and updated. MEMA is also coordinating a focus on Evacuation and Sheltering plans since they cross into the areas of many other ESFs.

Through the Maryland Executive Public Health and Medical Emergency Preparedness Committee, MIEMSS has been working with DHMH, MEMA, and the Maryland Hospital Association to identify goals and priorities to be addressed over the upcoming years. These are being closely aligned with the 12 Core Goals for Homeland Security identified by Governor Martin O'Malley. An intense effort is underway to measure and improve progress toward attaining these goals

Region-Specific Activities

Region I

Initiatives begun in the Western Maryland Communications Summit in 2006 continue to be completed. The cooperative efforts of all stakeholders working together have facilitated changes, such as moving to a Western Maryland EMRC.

The Region I Office and Administrator Dave Ramsey participated in the Garrett County Health Assessment Task Force. Many of the key initiatives in Region I may be attributed to the tireless efforts of Dave Ramsey, the longtime Region I Administrator. Mr. Ramsey retired in December 2007 after 33 years of dedicated service. In addition to being the Region I Administrator, Mr. Ramsey was also the Director of Regional Programs for MIEMSS. His dedicated service to EMS and his commitment to excellence will be missed.

Region II

The Administrator for Region II is now covering both Regions I and II with support from the Director of Regional Programs until Mr. Ramsey can be replaced. The Region II Administrator is also assigned to maintain records and coordinate support services for exercises.

Region III

The Associate Administrator for Region III resigned to enter the Police Academy in Howard County. The Region III Office is coordinating Voice-over-Internet-Protocols and PSINet Connections to Hospitals and 9-1-1 centers. This effort is funded by a $1.1 million grant from DHS's Public Safety Interoperable Communication (PSIC) program.

Region IV

The Peninsula Regional Medical Center dedicated a new Emergency Department in the Virginia Layfield Critical Care Tower. This state-of-the-art Emergency Department is part of Peninsula Regional Medical Center's expanding Trauma, Cardiac, and Critical Care facilities. The Shore Health System's Memorial Hospital at Easton also opened a new and expanded Emergency Department with state-of-the-art equipment and capabilities. In addition, three facilities, Atlantic General Hospital in Berlin, Peninsula Regional Medical Center in Salisbury, and Shore Health System's Memorial Hospital at Easton, received Stroke Center Designation this fiscal year.

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 Regional Administrator provides staff support to the Regional Jurisdictional Quality Improvement Committee and coordinates quality improvement training across the state. 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.

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 2007-May 2008:

39 Base Inspections/Operation Policy Reviews

2 New Service Licenses Issued
- 2 Basic Life Support Services

2 New Specialty Care 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
  - 11 Basic Life Support Services
  - 25 Advanced Life Support Services
    - 5 Specialty Care Services
    - 3 Neonatal Services
- 3 Air Ambulance Service Licenses Issued

326 Vehicles Inspected
- 210 BLS vehicles
- 105 ALS/SCT vehicles
- 11 Neonatal vehicles

The State Office of Commercial Ambulance Licensing and Regulation (SOCALR) marked its fifteenth year of operation with significant changes that illustrate the distinctive shift of private ambulance services toward an enduring, stable segment of the statewide healthcare system. As the demands of Maryland's citizens have expanded due to our aging society, commercial ambulance operators answered with growth, advanced licensure, and larger fleets to meet the state's needs for the routine transport of patients to and from medical appointments, dialysis, and among the network of healthcare and skilled nursing facilities. SOCALR responded with its continued mission of ensuring patient and provider health, safety, and welfare while maintaining alignment with the MIEMSS vision.

Two key indicators of the commercial ambulance industry's establishment of a permanent foothold within the EMS system are the addition of two new service licensures and the staggering increase of newly licensed vehicles in FY 2008. The greatest growth sector of commercial ambulance services is basic life support (BLS) transport with a 23% increase in licensed vehicles. Coupled with a 5% growth in total licensed commercial ambulance operators in Maryland, the upward trending of the private ambulance business is noteworthy given the current downturn in the U.S. economy.

In addition to the general growth of the commercial ambulance industry, we are also seeing an increase in the sophistication of the business, given the rise in specialty care transport licenses and the transition to computer-based reporting systems. In FY 2008, SOCALR licensed two services to provide Specialty Care Transports (SCT). This movement toward licensing more specialty care services clearly indicates the need for care of the critically ill and the ability of commercial ambulance operators to fill the void. Additionally, SOCALR helped a number of services to change over from the paper-based C-MAIS ambulance reporting to the MIEMSS EMAIS® web-based electronic ambulance reporting. By doing so, these commercial ambulance services aligned themselves with the state and its goal of an all-electronic reporting system by FY 2010.

SOCALR continues to expand its commitment to provide leadership in the areas of clinical care, education, healthcare policy, and system operations. A focus on the health and safety of commercial ambulance operators and its staff led to a well-attended OSHA (Occupational Safety and Health Administration) training day hosted by SOCALR and a thorough audit of all the services' written policies and procedure in compliance with state and federal regulations. SOCALR and the MIEMSS Emergency Medical Services for Children (EMSC) Program also advanced the joint effort to promote a Safe Transport in Ambulances initiative. Lastly, the office initiated its minority business owner outreach program, resulting in the development of tools focused on helping owners gain commercial ambulance licensure in the state. These tools include a Frequently Asked Questions (FAQ) section on the department web site and the publishing of the "Guide to Become a Licensed Commercial Ambulance Service in Maryland."

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

Washington County Hospital, Hagerstown
Western Maryland Health System, Memorial Campus
Peninsula Regional Medical Center, Salisbury

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
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
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
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 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 6,381 trauma patients from June 2007 to May 2008, 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 42 groups. Evening educational programs open to prehospital care providers were held bi-monthly and linked via live broadcasts to the Western Maryland Health System in Cumberland, Washington County Health System in Hagerstown, the Peninsula Regional Medical Center in Salisbury, the Cecil County Department of Public Safety, the Maryland Fire Rescue Institute-Upper Eastern Shore Training Center, and Easton Memorial Hospital. There were 133 EMS providers who participated in 11 ALS Airway Skills Labs. In the Observation Program, 249 EMS providers observed in the Trauma Resuscitation Unit, and 122 EMS providers in Critical Care. In addition, 45 on-site clinical programs were held at firehouses, training academies, and regional EMS conferences. In addition to the local EMS conferences this year, Shock Trauma has joined forces with *JEMS* to provide speakers and courses for EMS Today and additionally with *EMS Magazine* to provide speakers for Fire House Expo.

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

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

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	

Research Center (ORC). With this designation, the new Center for Trauma and Anesthesiology Research will become a world-class, multi-disciplinary research and educational center focusing on brain injuries, critical care and organ support, resuscitation, surgical outcomes, patient safety, and injury prevention. The Center for Trauma and Anesthesiology Research will encompass the research activities of the UMSOM's Program in Trauma and its Department of Anesthesiology, along with the existing National Study Center, which was established in 1986 by the United States Congress. The new center becomes the seventh ORC at the UMSOM.

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

- Has collaborated with the Department of Pathology to help the University of Maryland, Baltimore become 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.
- Is testing novel systems for the acoustic assessment of resuscitation in hemorrhaging patients, and brain blood flow in victims of Traumatic Brain Injury (TBI). The Acoustic Resuscitation Monitor (ARM) and the Brain Acoustic Monitor (BAM) are noninvasive devices capable of measuring blood flow to the body. They are compact, inexpensive, and suitable for continuous use. Utilizing acoustic technology, these systems may represent a revolutionary advance in the diagnosis and care of critically injured patients. As such, the U. S. Air Force has granted the Shock Trauma Center $2.4 million to continue the study and testing of this technology.
- 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.

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 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 counties (Baltimore, Baltimore City, and Montgomery) sent teenagers. On-site programs were conducted for students who were members of Students Against Destructive Decisions (SADD) or 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 group. Over 200 teenagers participated in these classes.

Seventeen high-school assemblies were provided, reaching 12,000 students. The assemblies were very well received. Health classes were taught to an additional 200 high school and college students.

A similar on-site program is provided to adult DWI offenders. During FY 2008, over 200 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, 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 con-

ferences throughout the state. The program is working with the UMMC Foundation prevention committee to provide the program to private high schools. 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 prevention organization. Debbie Yohn and Laurel Stiff, co-founders, are Certified Prevention Professionals.

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 over 22,000 people. Specially tailored presentations have been given to approximately 1600 people.

PADDD has many working relationships within the state: the Maryland Impaired Driving Coalition Task Force, the Maryland Strategic Highway Safety Planning Committee, 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 and receives a grant from the Maryland Highway Safety Office.

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, 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.

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 presentation was at Aberdeen Proving Ground for approximately 1200 officers, enlisted, support personnel, and contractors.

Level I

The Johns Hopkins Hospital, Adult Trauma Center

Located in Baltimore City, the Johns Hopkins Hospital Adult Trauma Center reported receiving 2,438 trauma patients from June 2007 to May 2008, according to the Maryland State Trauma Registry. (See pages 63 to 68 for additional patient data in various categories.) David T. Efron, MD, FACS, FCCM, serves as Director of the Division of Adult Trauma, 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. Alicia Kieninger, MD, is the Adult Trauma Service Fellow. Marla Johnston, MSN, CEN, is the Trauma Performance Improvement/Injury Prevention Coordinator. Two full-time nurse practitioners, Patricia Freeman, CRNP, and Suzette Heptinstall, CRNP, further enhance the continuum of care. David Chang, PhD, MPH, MBA, is Assistant Professor of Surgery and Director for the Hopkins-Howard Center for Surgical Outcomes Research.

The Johns Hopkins Hospital Adult Trauma Center, housed in the "#1 Hospital in America" according to the *U.S. News & World Report* for 18 consecutive years (1991-2008), receives approximately 2500 adult trauma patients per year. The Adult Trauma Service continues to provide 24-hour a day in-house trauma attending surgeon coverage. Improved survival, triage time, and length of stay among critically injured patients have been documented with this approach (*Archives of Surgery*, 2003).

The Johns Hopkins Hospital Division of Adult Trauma continues to provide services with a core group of five trauma/surgical intensivists, who maintain responsibility for clinical pathways and processes of care. In addition to its standing interest in violence prevention, the division has broadened its academic focus to identify ethnic and gender disparities in outcomes among critically injured patients.

Dr. David T. Efron, FACS, FCCM is newly appointed as the Director of Adult Trauma and Chief of the Division of Acute Care Surgery. He is a Diplomate of the American Board of Surgery with added qualifications in Surgical Critical Care. He is a member of the Eastern Association for Surgery of Trauma, American Association for Surgery of Trauma, and is a newly appointed member of the Board of the Maryland Chapter of the American Trauma Society. He is also an active participant as a representative for Johns Hopkins Hospital to the Maryland Trauma Network (TraumaNet). Dr. Efron is an Advanced Trauma Life Support (ATLS) instructor, as well as an instructor for the Advanced Trauma Operative Management (ATOM) Course.

Elliott R. Haut, MD, FACS has a joint appointment as Assistant Professor of Surgery and Anesthesiology & Critical Care Medicine at Johns Hopkins where he plays an active role in the care of trauma, intensive care unit, and general surgical patients. He is a diplomate of the American Board of Surgery and has a Certificate of Added Qualifications in Surgical Critical Care. He directs Performance Improvement for the Adult Trauma Service at The Johns Hopkins Hospital. Dr. Haut has important educational roles as the director of the newly re-organized Trauma/Acute Care Surgery Fellowship and as an Assistant Program Director for the surgical residency at Johns Hopkins Hospital. He is co-editor of a book entitled *Avoiding Common ICU Errors*. Dr. Haut's ongoing trauma research projects focus on the impact of trauma systems and care delivery models, the role of prehospital procedures in trauma, anemia management in the intensive care unit, and hospital benchmarking related to deep vein thrombosis and pulmonary embolism.

Adil H. Haider MD, MPH is an Assistant Professor of Surgery at the Johns Hopkins School of Medicine. Dr. Haider completed his surgical residency in 2005 and further completed two years of fellowship training in Surgical Critical Care, Trauma and Emergency Surgery in 2007. He is a diplomate of the American Board of Surgery and has a Certificate of Added Qualifications in Surgical Critical Care. Along with his duties as a Trauma Surgeon, Dr. Haider works as a Surgical Intensivist in the SICU, responsible for clinical teaching at the bedside for surgery and anesthesia fellows and residents, as well as numerous teaching conferences.

Dr. Haider has recently received two major research awards for multiple high-profile publications identifying ethnic and gender disparities in outcomes among critically injured patients. He is currently working closely with colleagues at the Johns Hopkins Bloomberg School of Public Health to develop a research group devoted to studying outcomes after trauma.

Dr. Kent A. Stevens, MD, MPH will be joining the service in September 2008, as an Assistant Professor of Surgery at Johns Hopkins. He completed his General Surgery training at the University of Arizona in 2006, and in June of this year completed his training in Trauma/Surgical Critical Care at the University of Maryland, Shock Trauma Center. His research interests are in Injury Prevention and include recent work in Bangladesh in Childhood Drowning.

Dr. Alicia Kieninger is the Acute Care Surgery Fellow and a Clinical Instructor in the Department of Surgery. She is a Diplomate of the American Board of Surgery. After completing her residency training in general surgery at William Beaumont Hospital in Royal Oak, Michigan, Dr. Kieninger came to the Johns Hopkins University in July 2007, where she completed her fellowship in Surgical Critical Care. She is now pursuing additional training in Trauma and Acute Care Surgery.

Kathy Noll, Trauma Program Manager for the Adult Trauma Service, maintains her membership in TraumaNet; the Maryland State Trauma Registry, Education, and Prevention Committee; and the Maryland Trauma Quality Improvement Committee. As the Maryland State Chair for the Society of Trauma Nurses (STN), she is active as an instructor in the Advanced Trauma Care for Nurses (ATCN) course sponsored by STN. Ms. Noll continues on the Steering Committee of Partnership for a Safer Maryland, and has been appointed as an advisory member of the American College of Surgeons' Maryland Committee on Trauma. Ms. Noll is a part of the planning group working with the Mayor's Office and the Baltimore City Health Department to implement the Safe Streets Project, a program aimed at violence prevention in East Baltimore.

Marla Johnston, MSN, CEN, is the Performance Improvement and Injury Prevention Coordinator for the Adult Trauma Service. Since arriving in April

2008, she has implemented alcohol screening and brief intervention for trauma service inpatients, and has been involved in several research projects. Ms. Johnston supports the Maryland TraumaNet; Maryland State Trauma Registry, Education and Prevention Committee; Maryland Trauma Quality Improvement Committee; and the Partnership for a Safer Maryland. She is active in numerous professional organizations, including the Emergency Nurses Association (ENA) where she serves as the treasurer for the Baltimore Chapter. Ms. Johnston maintains faculty status in the Trauma Nursing Core Curriculum program sponsored by ENA.

David Chang, PhD, MPH, MBA, Assistant Professor of Surgery, was trained in health services and outcomes research in the Department of Health Policy and Management in the Johns Hopkins Bloomberg School of Public Health. A member of TraumaNet, Dr. Chang was honored by MIEMSS in May 2005 with the Maryland EMS-Geriatric Award for his commitment in advancing the delivery of prehospital geriatric emergency care. As an active member of the MIEMSS Geriatric EMS Advisory Committee, Dr. Chang collected and analyzed data on the under-triage of elderly patients to trauma centers, and has led an outreach and intervention program to address this problem by presenting the data at several Maryland EMS conferences. Dr. Chang was recently appointed as the Director for the Hopkins-Howard Center for Surgical Outcomes Research, leading the effort to establish a new research center to support the outcomes research activities in the Departments of Surgery both at Johns Hopkins and at Howard University, with a focus on collaborative research in disparity and international surgical health care systems. Dr. Chang also holds a joint appointment in the Johns Hopkins Bloomberg School of Public Health, where he has mentored many masters and doctoral students in outcomes research.

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 1,810 trauma patients, from June 2007 to May 2008. (See pages 63 to 68 for additional patient data in various categories.) Paul Freeswick, MD, FACS, serves as the center's Director, with Robert Dice, RN, MS, as Trauma Coordinator, 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 psychosocial, physical, and rehabilitative needs. In FY 2008, the center registered 1,810 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. The trauma team members and the hospital administrators have dedicated resources and made all necessary commitments to provide a successful trauma program. They take pride in this achievement, reinforced the center's strengths, and bolstered many other areas. Demonstration of this commitment was evident by the successful re-designation of the medical center as a Level II adult trauma center in Spring 2008.

The trauma service continues to show strength through its consolidation of resources under the direction of Dr. Paul Freeswick and Dr. Rob 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 continues to allow the trauma center to remain open to receive patients an average of 97% of available hours each month.

With funds from the Trauma Physician Fund, Bayview Trauma purchased several items that will enhance its care delivery to the injured patient. Using these funds, the trauma service purchased a combination bronchoscopy/gastroscopy cart that will be used to assess and manage patients on ventilator support or in need of nutritional support. The center purchased five stretchers for its emergency department. These stretchers allow for diagnostic imaging while limiting patient movements. The funds partially funded two sonosite ultrasound machines that enhance the ability to visualize venous access, especially in complex patients, and several orthopaedic devices that will enhance the care of those in need of complex orthopaedic operative care. Lastly, the center purchased a SimMan, a patient simulator to be used in the training of surgical residents and nurses who care for the injured patient.

In summary, the JHBMC Trauma Service 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, the Prince George's Hospital Center Trauma Center continues to demonstrate its commitment to the community by providing optimal trauma care for the steady volume of trauma patients that it receives. According to the Maryland State Trauma Registry, Prince George's Hospital Center received 3,003 trauma patients from June 2007 to May 2008. (See pages 63 to 68 for additional patient data in various categories.) K. Singh Taneja is the Executive Director, Dimensions Healthcare Associates, and Vice-President for Ambulatory Services, including Trauma. Carnell Cooper, MD, FACS, serves as the Medical Director and Chief of 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. As part of the hospital's commitment to the Trauma Program, an additional FTE for a Trauma Registrar has been added this year. The addition of a second full-time Trauma Registrar has allowed greater data capture into the Trauma Registry, a vital component of the trauma quality management program.

The Prince George's Hospital Center (PGHC) continues to serve as the primary adult trauma center for the counties of Prince George's, Calvert, Charles, St. Mary's, and southern Anne Arundel, as well as parts of Montgomery and Howard counties and the eastern part of Washington, DC. After undergoing and passing the Trauma Center Re-Verification Process for Re-Designation this year, the PGHC trauma center was re-designated as a Level II Adult Trauma Center for the next 5 years.

The Trauma Service at PGHC strives to provide a high level quality of care to trauma patients. Quality management 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.

The financial stability of the hospital has been the focus of a significant amount of publicity recently. The financial situation has stabilized as the hospital begins to receive the first of the $24 million commitment to be paid to Dimensions Healthcare System (DHS) in quarterly installments over a two-year period. (DHS is the non-profit company that manages PGHC and four other PG County healthcare facilities.) This infusion of public money will enable PGHC to continue to provide uninterrupted operations while a new owner is sought. The county and state have assembled the Prince George's County Hospital Authority, a seven-member body charged by the Governor, County Executive, and County Council with implementing an open, transparent, and competitive bidding process to find an entity to buy and operate the DHS. Maryland and Prince George's County officials have signed a final agreement to commit $174 million over five years to support the Dimensions system's long-term financial stability. This money will become available when the Prince George's County Hospital Authority is successful in finding a new owner.

This past year the Trauma Service received a financial grant of $425,000 from the State Trauma Physician Fund. This grant has provided greatly needed funding for the hospital and enabled the hospital to purchase previously unbudgeted state-of-the-art capital equipment. These purchases of capital equipment have allowed the delivery of an even higher level of quality patient care. The most significant expenditures were for the Emergency Department Trauma Resuscitation Area. The Trauma Resuscitation Area has been provided with two new wall-mounted cardiac monitors, two portable biphasic monitor / defibrillators, and a bedside ultrasound unit/FAST scanner to assist in the immediate detection of life-threatening internal bleeding sites. The trauma areas also received new trauma stretchers that provide considerable comfort to the patient during the trauma evaluation process. The new trauma stretchers are x-ray compatible, allowing x-rays to be taken with less patient repositioning and are easier to travel with. The Emergency Trauma Resuscitation Area acquired several ceiling-mounted surgical lights over each resuscitation bed, thus facilitating procedures that require additional lighting. Fluid warmers, a blanket warmer, and a hyper-hypothermia system will ensure the patient's comfort and maintenance of body temperature, thus decreasing the chances of patients developing complications from hypothermia.

The Radiology Department has begun the transition from a film x-ray system to a state-of-the-art digital x-ray system. The CR for film / PACS Workstation in the trauma area is the first step of this process. These digital images can now be manipulated on the computer, increasing the clarity and thus accuracy of the readings of these images. Quality of care issues related to ED base station staff and prehospital providers will be able to be monitored and addressed with the Trauma Base Station Recorder. The Critical Care Center has acquired additional MPM intracranial pressure monitors, thus allowing for the critical monitoring of patients with serious traumatic brain injuries. The OR has received an argon beam coagulator to manage patients who have sustained severe liver injuries. E-800 (the Med/Surg unit that services most of PGHC trauma patients) will now be able to accommodate eight additional trauma patients requiring telemetry monitoring through funds provided by the Trauma Grant combined with a generous matching contribution from the PGHC Foundation.

PGHC has been active in trauma/injury prevention legislative initiatives. During the 2008 legislative session, Dr. Carnell Cooper provided testimony in support of the motorcycle and ATV helmet laws, the Trauma Fund Bill, and the Dimensions Hospital Authority 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. Over the past year, the trauma service sponsored nearly 40 Ross medical students, providing them with extensive experience in trauma care.

This year marked the second year that the Prince George's Hospital Center Foundation has awarded the Bakulesh B. Patel Emergency and Trauma Services Scholarship/Grant. The scholarship was established in memory of Dr. Bakulesh B. Patel, a beloved trauma surgeon who served at Prince George's Hospital Center Trauma Center for almost two decades. The objective of the scholarship is to provide support for continuing education in emergency and trauma services for nurses, techs, and/or EMS providers. Applicants were required to demonstrate the following characteristics: teaching in the field of emergency medicine and/or trauma services, volunteerism, and awards for performance. This year's recipients were members of the prehospital community. Brian Frankel, an Advanced Life Support Training Coordinator of the Prince George's County Fire & EMS Department, was the primary recipient of the continuing education award. Stephen Mandragos, a firefighter-medic and clinical coordinator for the Fire/EMS Training Academy, and Christine Haber, an EMS curriculum specialist, instructor, and instructor trainer at the Prince George's County Fire/EMS Training Academy, shared a second scholarship.

PGHC continues to host quarterly EMS Liaison meetings. These meetings provide an educational forum to address emergency and trauma patient care issues. The goal of these efforts is to improve relationships and communications with prehospital care providers, fostering a team approach to trauma care.

Dimensions Health Systems welcomes back Mark Arsenault, RN, MSA, who has recently accepted the position of Associate Vice President for Emergency and Disaster Preparedness. He will be coordinating emergency preparedness for all of the Dimensions facilities, including Prince George's Hospital Center. His prior 15-year history with Dimensions, as well as his extensive experience in the Prince Georges County EMS/Fire System, makes Mr. Arsenault a tremendous asset as the hospital continues to improve emergency and disaster preparedness. Mr. Arsenault was instrumental in preparing all six Dimensions facilities for participation in the statewide pandemic flu exercise in June.

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, OEM, MIEMSS, Kaiser Permanente, and representatives from nursing homes. This group continues to work collaboratively to identify and address opportunities for the regional response to disasters. The group has cooperated in setting up Memorandums of Understandings (MOUs) to facilitate the sharing of supplies, resources, and equipment in the event of a disaster. These MOUs have encouraged institutions to procure "like" purchases to be able to take advantage of group price breaks and to have familiarity with the same equipment in the event it needs to be shared in a disaster. A Hazard Vulnerability Assessment (HVA) has recently been developed by the group.

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 1,656 trauma patients from June 2007 to May 2008, 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 position of Trauma Program Coordinator is currently filled by Karen Sweeney, RN, who serves in an interim capacity.

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

To meet the demand for the highest quality in trauma care, Sinai has undergone several initiatives and changes. Two new trauma/critical-care-trained attending surgeons were added to the faculty. Jamshed Zuberi, MD received his training at the Washington Hospital Center and practiced at the West Virginia University Trauma Center prior to joining Sinai Hospital. Sharon Weintraub, MD trained at the University of Connecticut and University of California at Irvine. She practiced for several years at the Louisiana State University Trauma Center and was part of the medical team during hurricane Katrina. Currently the Trauma Center at Sinai is recruiting one 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.

In addition to the core trauma faculty, several other key specialists were added. Carol E. Copeland, MD, a dedicated orthopedic trauma surgeon, Anje Kim, MD and James Conway, MD, neurosurgeons with interest in trauma care, and Gary Warburton, DDS, an oral and maxillofacial surgeon with significant trauma experience, joined the faculty. At the same time Sinai Hospital opened the doors to its new Brain & Spine Institute, was certified as a Stroke Center, is currently undertaking work toward an institution-wide center of excellence for adult critical care services, and was awarded Magnet status by the American Nurses Credentialing Center.

Sinai recently passed MIEMSS' Trauma Center Re-Verification Process for Re-Designation as a level II trauma center. In the process of preparation and fol-

low-up, several critical institution-wide improvements were made to augment trauma and critical care services at Sinai Hospital. The complement of support staff for the trauma program was increased by one FTE; the Trauma Program Coordinator position was elevated to Advanced Practice Nurse status; the position of Trauma QA/PI Nurse Coordinator was added; the positions of Registrar and Administrative Support Staff have been filled. During the re-verification, the surveyors complimented the hospital on its trauma program leadership, institution-wide educational efforts, level of Emergency Medicine services, and radiology QI process. A hospital-wide trauma task force, a trauma multi-disciplinary committee, and educational resource center coordinate these efforts and ensure near 100% compliance. Currently Sinai continues to host 4-6 Trauma Nursing Core Courses (TNCC) per year that are open to all qualified nursing personnel. The hospital also continues to actively participate in the education of EMS providers through student clerkships and EMS lectures/conferences.

Sinai Hospital is currently well into phase II of its plant expansion and renovation process. This work will add approximately 20% OR and approximately 18% ICU capacities in a new state-of-the-art adult critical care unit. Several critical changes have been made to improve Emergency Department throughput. All of these changes have led to a significant reduction in yellow/red alerts and trauma bypass times over the past several months.

The surgical residency program, approved by the Accreditation Council for Graduate Medical Education (ACGME), is currently in its second year and with 10 residents (PGY I-V), nearly completely filled. All residents are certified in Advanced Trauma Life Support (ATLS) and Advanced Cardiac Life Support (ACLS), 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 is being implemented to improve loop-closure between the individual specialties involved in trauma care. The hospital also participates in regional and national initiatives to improve patient care, including the Maryland Trauma Quality Improvement Council (Trauma-QIC), the National Surgical Quality Improvement Program (NSQIP) by the American College of Surgeons, and the CDC/CMS National Surgical Infection Prevention Program (SIPP).

Within Maryland, the Trauma Center maintains active involvement in Maryland's state association of trauma centers, also known as 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 received 1,487 trauma patients from June 2007 through May 2008, according to the Maryland State Trauma Registry. (See pages 63 to 68 for additional patient data in various categories.) Dany Westerband, MD, FACS, continues to serve as the Medical Director of Suburban Hospital's Trauma Services while Melissa Meyers, RN, BSN, has been the full-time Trauma Program Director since June 2007. The Trauma Program staff also includes Patricia Baker, RN, senior Trauma Case Reviewer, and Daniel Goldberg, full-time Trauma Registrar. A search is currently underway for an additional trauma case reviewer, a position recently approved by the hospital administration.

The Suburban Hospital Trauma Center continues to serve Montgomery County and its fast-developing communities of Germantown and Gaithersburg, in addition to providing much-needed backup to Frederick, Washington, and Prince George's counties. Data gathered by the Emergency Department (ED) Collaborative Committee show that the administration has been successful in reducing ED closure by 46% over the past year, through a collaborative process known as the code C protocol. When activated, the code C protocol triggers a hospital-wide administrative and nursing response aimed at averting hospital diversion by expediting patient flow. This very effective process reflects the strong support of the hospital administration, committed to ensure that trauma and other vital healthcare services remain available to the community at all times.

Thanks to the support of the Maryland legislators through the Maryland Trauma Physician Services Fund and the Maryland Health Care Commission, Suburban Hospital received in FY 2008 a special trauma capital grant of $425,000. This fund enabled the trauma center to respond more efficiently to the steady increase in the number of trauma patients with the purchase of new radiology equipment, portable ventilators, surgical lights, medical gas system, electronic upgrades, and state-of-the-art monitoring equipment for the trauma resuscitation area.

Suburban Hospital's most significant accomplishment in FY 2008 has been a full five-year re-verification by the State of Maryland as a Level II Trauma Center. In March 2008, the hospital underwent a rigorous site inspection by a team of surveyors composed of a MIEMSS representative, an out-of-state trauma surgeon, an out-of-state emergency medicine physician, and an out-of-state trauma nurse coordinator, all experts in the field of trauma. The survey team concluded that Suburban Hospital satisfactorily met all the state standards (COMAR) required to maintain a Level II Trauma Center and provide appropriate patient care. In addition, the surveyors were impressed by the high level of collaboration and teamwork that transpired between multiple departments and disciplines in the delivery of outstanding trauma care. They also recognized the commitment of the hospital board and administration in their continued efforts to maintain and foster the growth of the trauma program at Suburban.

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 for the Washington metropolitan area. The hospital has also remained a very active member of the Montgomery County Healthcare Collaborative on Emergency Preparedness (MCHCEP) whose members include all Montgomery County hospitals, the Kaiser Permanente Health Plan, the Public Health

Administration, and Homeland Security. 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 continues to grow. Through a strong collaboration with the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health and Johns Hopkins Medicine, the hospital continues to provide 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 transmission of EKGs from prehospital providers, allowing real-time feedback to 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.

Additional accomplishments in FY 2008 include the implementation of a Rapid Response Team (RRT) and specialized Resource Nurses that provide critical care support to in-house emergencies including trauma and other critical situations. Preliminary data show that the RRT has been very effective in preventing cardiac arrest on the nursing units.

The "MobileMed/NIH Heart Clinic" is a new 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 provides free health care to patients in the Montgomery County area. The MobileMed/NIH Heart Clinic will be celebrating its first anniversary in the fall of 2008, having provided free services to over 250 patients.

The Trauma Center and its staff continue to be committed to trauma prevention through participation in community partnerships and legislative initiatives that strive to educate the public about pedestrian safety, child-related safety issues, and "drinking, drug, and driving" awareness. Other prevention-related activities include the hospital's "Fall Prevention and Balance" program organized by the Physical Medicine Department at local Montgomery County senior centers. Trained physical therapists from Suburban Hospital provide screenings and community education via lectures. They offer diverse classes to seniors and other residents on fall prevention and balance exercises, as well as fall safety strategies.

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, 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.

Melissa Meyers, RN, BSN, the Trauma Program Director, is the current secretary 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 is also an Instructor of ATCN (Advanced Trauma Nursing Course).

The Suburban Hospital Trauma Program remains committed 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. Identified clinical and system issues are timely addressed through direct feedback to individual providers, the development of new policies and procedures, and extensive educational programs. Pertinent and difficult trauma cases are reviewed monthly during formal morbidity and mortality conferences. These reviews serve as an educational forum and are open to all trauma surgeons, emergency and critical care physicians, surgical residents, physician assistants, and registered nurses.

The trauma program also strives to maintain a collaborative relationship with the EMS (Emergency Medical Services) community. In FY 2008, Dr. Westerband and Melissa Meyers participated in joint case reviews at the Montgomery County Training Academy. A formal feedback and loop closure process with Montgomery County EMS is also currently under development. Of note, Suburban Hospital Emergency Department serves as a training site for prehospital care providers in 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 Room Technicians.

In November 2007, 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 approximately 150 trauma care providers.

Level III

Peninsula Regional Medical Center Trauma Center

Located in Salisbury, 30 miles west of Ocean City, the Peninsula Regional Medical Center Trauma Center received 1,677 trauma patients from July 2007 to June 2008, 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 Coordinator.

During FY 2008, construction of an Emergency/Trauma Department and a new critical care tower, Layfield Tower, was completed. This tower will allow the team of Peninsula Regional Medical Center (PRMC) to continue providing efficient and quality care to the rapidly increasing patient population with a new 51-bed Emergency Department and a new 24-bed Intensive Care Unit (an additional 9 critical care beds will be available for the Medical Center once internal unit moves are complete). The helipad has been relocated to the roof of the Medical Center, but another has been constructed on the roof of the Layfield Tower to support expeditious movement of trauma patients. The projected completion for this expansion is August 2008.

PRMC continues to coordinate and participate in community-based injury initiatives. During the spring of 2008, a group of trauma nurses helped in assisting with mock-crash scenarios during pre-prom presentations 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, the Worcester, Wicomico, and Somerset Highway Advisory Committees, as well as local wellness community events.

Peninsula Regional Medical Center continues to assist in planning, coordinating, and sponsoring regular educational events. A multi-disciplinary group continues to coordinate and sponsor the annual "Topics in Trauma" conference which is in its eighteenth year. These topics are applicable to the daily practice of prehospital care to advanced inpatient trauma care. This regional yearly 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, there was an inaugural Stroke Conference for EMS providers organized this year; since it had positive feedback, it will become an annual event. 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.

This past fiscal year, PRMC was able to purchase key equipment necessary for trauma care. These monies were provided by a grant from the Maryland Trauma Fund. With this support, PRMC was able to purchase specialized orthopedic equipment to be utilized by our new orthopedic traumatologist coming in August 2008. A Sonosite ultrasound was also purchased for the Emergency Department. In addition, three Level 1 rapid infusers were purchased, one for each of the following areas: ED, OR, and ICU. The grant also made it possible to add an additional 64-slice CT scanner inside the new Emergency Department. All of these purchases have enhanced the proficiency and quality of trauma care at PRMC.

Level III

Washington County Health Systems Trauma Center

Located in Hagerstown, the Washington County Hospital Trauma Center received 853 trauma patients from June 2007 to May 2008, 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 Manager of Trauma Services; Melissa Burleson, RN, MBA, is the Clinical Coordinator; and Beth Fields, NREMT-P, is the Trauma Registrar.

During the past year, the Trauma Center at Washington County Hospital has continued to provide trauma services to residents of Washington and Frederick counties, Southern Pennsylvania, and the Eastern Panhandle of West Virginia. Vehicle crashes and injuries among the elderly account for the majority of trauma in the tri-state area; however, the incidence of penetrating injuries is increasing. Over 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 attend EMS jurisdiction meetings and Region II EMS Advisory Council meetings on a regular basis. Joan Fortney is currently serving as President of the Region II EMS Advisory Council.

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 the Robinwood Outpatient Medical Center 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 first Medical Academy hosted by Washington County Hospital for high-

school students interested in medical careers. Students spent a week following a trauma patient case study, 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 continue to serve as speakers in trauma-related topics to local health care and community groups. Dr. Kross, Surgeon-in-Chief, served on the planning committee and as faculty for the Maryland Committee on Trauma Symposium. 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 Trauma Center

Located in Cumberland, the Western Maryland Trauma Center received 636 patients from June 2007 to May 2008, 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; Chuck Barrick, RN, is the Trauma Nurse Coordinator; and Kathy Witt is the Trauma Registrar.

In April 2008, the Western Maryland Health System's (WMHS) Memorial Campus was once again designated as a Level III Trauma Center through MIEMSS. During the survey process, the surveyors received information that the new WMHS hospital is set to open in 2009. Also in April, the Trauma Service instituted the Mass Transfusion Protocol to ensure more blood for the patients who need it most. Although in use only a short time, it has proven to be extremely effective.

In February 2008, the White Room concept for Traumatic Brain Injuries (TBI) was implemented. These rooms are designed to decrease stimulation so that TBI patients can better focus on their therapies, which can often expedite their transfer to a brain injury program. Since these rooms have been available, patient length of stay (LOS) has decreased on an average of seven days.

Through the aid of state grant funds, the WMHS-Memorial Trauma Center has increased its ability to provide state-of-the-art medical equipment for trauma patients. Acquisitions included a portable ultrasound machine to perform FAST (Focused Assessment with Sonography for Trauma) exams; two portable x-ray machines, including a mini C-arm machine that is better suited for joint repair; and bladder scanners for trauma patients on the Med-Surgical floors. The Emergency Department now has portable monitors that are capable of performing arterial line monitoring, beds that are radiographic, and beds to weigh patients. The ICU also benefited from this funding by receiving portable monitors that are able to monitor patients with increased intracranial pressure as well as arterial lines.

With nearly 61 percent of its trauma cases attributable to motor vehicle and motorcycle crashes, the WMHS-Memorial Trauma Center focuses much of its community injury prevention efforts on traffic safety and seatbelt use. ATV safety is included with these prevention efforts. Most recently, Chuck Barrick, Trauma Nurse Coordinator, was named to the Governor's Task Force on ATV Safety.

WMHS works cooperatively with the Allegany County Health Department, local law enforcement agencies, and other area organizations to promote child passenger safety issues and conduct safety seat checks at various locations in the community. The Trauma Services Department has used data collection to increase safety on the roads of Western Maryland. The Trauma Coordinator for WMHS has addressed the Highway Traffic Safety Board to increase awareness in problem areas that have shown to have a higher incidence for traffic crashes.

Staff from the WMHS-Memorial Trauma Center also participate in the School Safety Council, which brings together the Allegany County Board of Education, law enforcement agencies, the Allegany County Health Department, and the Allegany County Emergency Operations Center to effect a safer school environment. A new clinical coordinator in the Emergency Department, Elizabeth Wooster, RN, started the course "Trauma Nurses Talk Tough" that is taught at the area high schools and includes information for teens about drinking and driving, seatbelt use, and other safe driver responsibilities. To date, she has reached over 2400 students in this rural area and has been asked to return next year to these schools. Nurses from the Emergency Department participate in teaching the course, which has been well received. This educational program is used to reach new drivers and is presented in the spring semester preceding prom and graduation events.

Continuing education is another important component. The telemedicine link between the University of Maryland R Adams Cowley Shock Trauma Center and the WMHS-Memorial Trauma Center enables physicians, nurses, EMS personnel, and other healthcare providers to participate in classes throughout the year. The WMHS has been able to bring in nationally known speakers to the hospital for staff education as well.

Staff members also participated in the highly successful Miltenberger Emergency Services Seminar, now held annually in Allegany County at the Rocky Gap State Park. It is named in memory of Fred Miltenberger, MD, a long-time advocate for Maryland's trauma network. This program offers a variety of topics related to trauma and emergency cases, including specialized tracks for nurses, EMS, firemen, and dispatchers. The 2008 Miltenberger Seminar was again a sellout, attended by more than

300 people from across the state, Pennsylvania, and West Virginia. This year's conference included speakers from across the country, including Colin Whitmore, EMS Commander from Virginia Tech University, and humorist Michael Perry, who gave a different spin on rural EMS from his small town. He is the author of the novel *Population 485*.

The WMHS staff have an excellent relationship with the Maryland State Police Aviation Command and Trooper 5. The State Police and Trauma Center staff work together in providing education for helicopter safety and classes for packaging and transport.

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 Division of Burns, 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 611 patient visits between June 2007 and May 2008. Of these, 380 (62%) required inpatient admission to the Burn Center, whereas 231 (38%) were successfully treated as outpatients.

During FY 2008, education staff from the Johns Hopkins Burn Center presented its Emergency Burn Care Poster to 23 area hospitals, reaching over 260 emergency department healthcare personnel–physicians, nurses, and technicians. The Burn Center team designed this poster as a quick reference guide for emergency burn care management, stabilization, and referral of the critically burn-injured patient. Burn Center education staff plan to continue the effort over the next 2-3 years, distributing the poster and educating emergency department (ED) personnel within the region served by the Burn Center, which includes all Maryland hospitals as well as seven hospitals in Pennsylvania and six hospitals in West Virginia. Working with MIEMSS, the Burn Center plans to extend this program to prehospital EMS personnel throughout the region in the near future.

Johns Hopkins Burn Center team members also lectured at several EMS and trauma conferences over the past year, including conferences in EMS Region III and Region IV, as well as the ENA by the Bay Conference.

Final Disposition Distribution (Inpatient)

Disposition	Count	Percent
Acute Care Hospital	3	0.8%
Against Medical Advice	6	1.6%
Death	17	4.4%
Home	276	72.6%
Home w/Services	33	8.7%
Not Available	6	1.6%
Psychiatric	2	0.5%
Rehabilitation Center	16	4.2%
Skilled Nursing Facility	21	5.5%
Total	**380**	**100.0%**

Statistics for Inpatient and ED patients

Mode of Arrival to JHBC

Mode	Count	Percent
Advanced Life Support	211	34.5%
Basic Life Support	10	1.6%
Commercial Ambulance	124	20.3%
Commercial Helicopter	18	2.9%
MD State Police Med-Evac	67	11.0%
Not Recorded	14	2.3%
Private Vehicle	1	0.01%
Walk	166	27.2%
Total	**611**	**100.0%**

Burn Wound Types

Type	Count	Percent
Chemical	30	4.9%
Contact	37	6.1%
Electrical	37	6.1%
Explosion	27	4.4%
Flame	219	35.8%
Inhalation, Smoke	14	2.3%
Late Effect, Burn	2	0.3%
Not Recorded	12	2.0%
Other Burn	3	0.5%
Other Non-Burn	1	0.2%
Radiation	2	0.3%
Readmission	1	0.2%
Scald	203	33.2%
Skin Disease	21	3.4%
Sunburn	1	0.2%
Unknown	1	0.2%
Total	**611**	**100.0%**

Flame and scald burns account for 422 (69%) of patients seen in the ED or admitted to the Johns Hopkins Burn Center at Bayview. Prevention efforts by the Office of Community Relations focus on these two etiologies. Examples include providing smoke detectors to those in need and giving the parents of each newborn infant a tap water thermometer at time of hospital discharge.

The JHBC provides consultant services for physicians from the surrounding communities for burn patients seen in outlying hospitals. The Center received 236 patients in transfer from these hospitals. This represents an increase of 64 patients (37%) from last fiscal year.

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

In FY 2008, the Pediatric Burn Service at the Johns Hopkins Children's Center admitted 133 children with severe burn injuries as inpatients. (See pages 73 to 75 for additional pediatric burn data in various categories.) Dr. Richard Redett has served as the Pediatric Burn Director since its inception. Dr. Bradley Phillips just recently joined the team as Program Director. 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. In FY 2008, 133 children under the age of 15 were admitted with severe burn injuries. Critically injured burn patients are managed in the 26-bed Pediatric Intensive Care unit, while the rest of the children are managed on a 16-bed unit specifically designed for the care of burned children and their families. Additionally, over 300 outpatient burned children were treated at the Pediatric Outpatient Burn Clinic located in the David Rubinstein Child Health Building. Follow-up care is offered three times a week in the burn clinic. Specialized pediatric home nursing can be arranged for those that need additional outpatient care.

Burns in children require special expertise and pose a unique set of medical and psychological challenges. 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

In FY 2008, Children's National Medical Center, as a pediatric burn specialty referral center, treated as inpatients 142 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.) Martin R. Eichelberger, MD is the Director of Emergency Trauma-Burn Service; Ananth Murthy, MD is the Associate Burn Director; Geraldine Pratsch, RN, MPH is the Trauma & Burn Program Manager; Elaine Lamb, MSN, CPNP is the Trauma & Burn Nurse Practitioner; 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. In November 2007, the newly constructed East Tower Pavilion for patient care dedicated an entire clinical area to serve the child needing surgery or trauma or burn treatment.

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, 142 children from Maryland have been admitted to the Burn Service, while 224 children have been treated on an outpatient basis for a total of 1,130 outpatient burn clinic visits, and 331 children were treated and discharged from the emergency department. For summary data in various categories, see pages 73 to 75.

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 and has made substantial progress to receive a formal designation under the new regulations as a recognized specialty trauma center.

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 and 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 2008, 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.

This year the Hyperbaric Medicine Center is starting 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 has also started to participate 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.

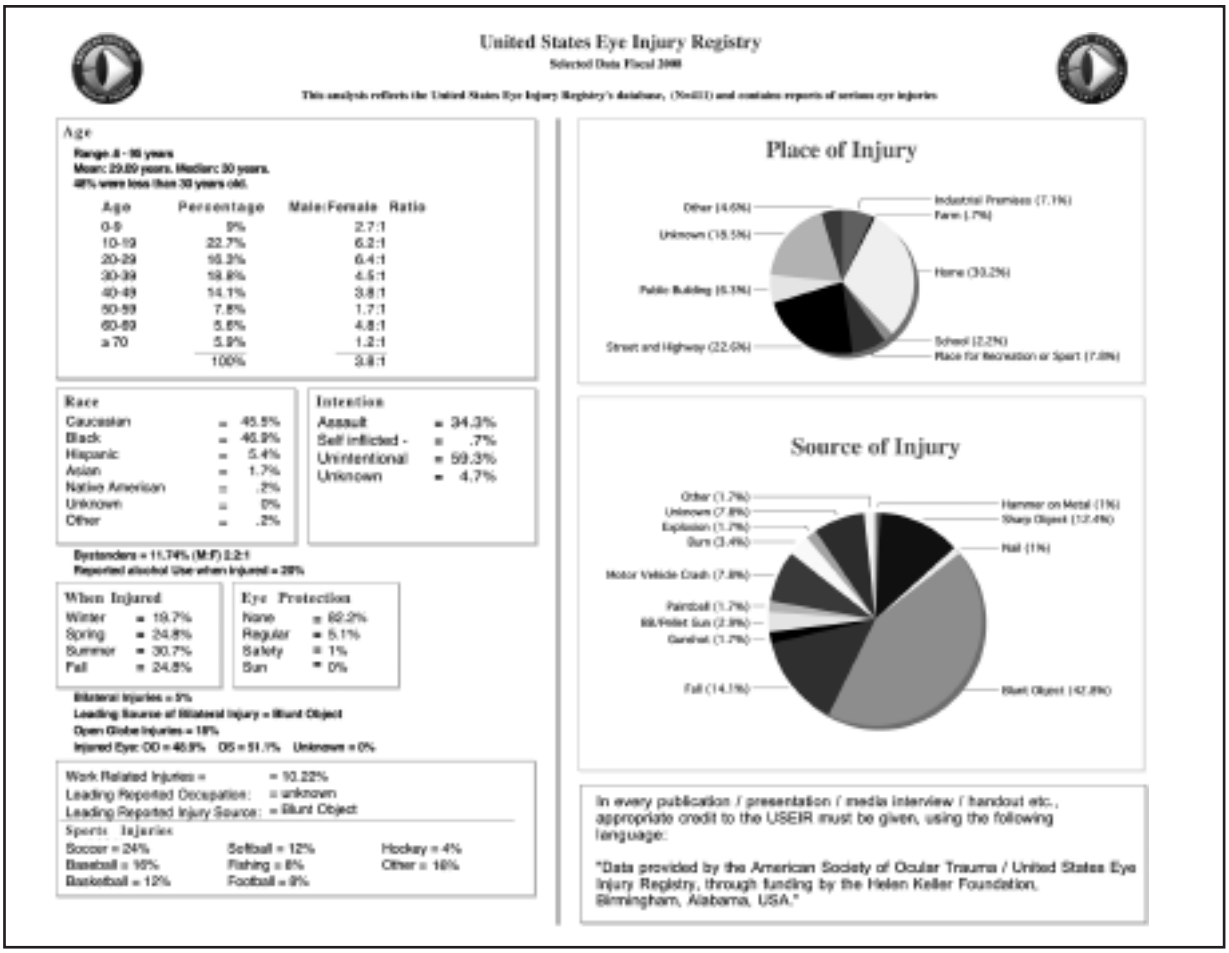
Maryland Eye Trauma System The Wilmer Eye Institute at Johns Hopkins

The Eye Trauma Center at the Wilmer Eye Institute (WEI), Johns Hopkins Hospital is the first statewide eye trauma center in the nation. The main objectives of the eye trauma center are to provide optimal clinical management of severe ocular injuries, to conduct research into the natural history of eye trauma, to develop new treatments for ocular trauma, and to initiate and support eye trauma prevention activities. Michael P. Grant, MD, PhD, FACS, is the Director of the Center; the Associate Director for FY 2008 is Henry Alexander Leder, MD; and Shailaja Chopde, RN, is the Eye Trauma Coordinator.

For FY 2008, the Wilmer Emergency Department logged 4,553 patient visits and reported 411 serious eye injuries to the U.S. Eye Injury Registry. The highest number of injuries occurred between the ages of 10 and 19 years and 48% of the patients were less than 30 years old. Injuries occurred mostly in homes (30.2%), followed by street and highway. Soccer continues to be the highest for sports injury. Blunt object injury remains the highest source, followed by falls and sharp objects. See page 51 for the WEI ocular trauma statistics for FY 2008 as reported to U.S. Eye Injury Registry.

The conversion program (to obtain data from the U.S. Eye Injury Registry) was completed with Digital Innovation Inc. The state of Maryland is now able to verify cases admitted and managed at Wilmer for the Physician Reimbursement Fund.

The table "MIEMSS Trauma Quality Improvement Indicators of Care for Ocular Trauma, July 2007-June 2008" shows that 37% of our trauma patients came from the Johns Hopkins Hospital Adult and Pediatric Emergency Departments (EDs). Prehospital providers continue to be in 100% compliance with applying the appropriate protective device or shield to prevent further damage to the injured eye during transport to the Wilmer ED.



United States Eye Injury Registry

Selected Data Fiscal 2008

This analysis reflects the United States Eye Injury Registry's database, (N=411) and contains reports of serious eye injuries

Age

Range: 0 - 98 years
Mean: 29.89 years. Median: 30 years.
48% were less than 30 years old.

Age	Percentage	Male:Female Ratio
0-9	9%	2.7:1
10-19	22.7%	6.2:1
20-29	16.3%	6.4:1
30-39	19.8%	4.5:1
40-49	14.1%	3.8:1
50-59	7.8%	1.7:1
60-69	5.8%	4.8:1
≥ 70	5.9%	1.2:1
	100%	3.8:1

Race

Caucasian	= 45.5%
Black	= 46.9%
Hispanic	= 5.4%
Asian	= 1.7%
Native American	= .2%
Unknown	= 0%
Other	= .2%

Intention

Assault	= 34.3%
Self inflicted -	= .7%
Unintentional	= 59.3%
Unknown	= 4.7%

Bystanders = 11.74% (M:F) 2.2:1
Reported alcohol Use when injured = 28%

When Injured

Winter	= 19.7%
Spring	= 24.8%
Summer	= 30.7%
Fall	= 24.8%

Eye Protection

None	= 82.2%
Regular	= 5.1%
Safety	= 1%
Sun	= 0%

Bilateral Injuries = 5%
Leading Source of Bilateral Injury = Blunt Object
Open Globe Injuries = 18%
Injured Eye: OD = 46.9% OS = 51.1% Unknown = 0%

Work Related Injuries = = 10.22%
Leading Reported Occupation: = unknown
Leading Reported Injury Source: = Blunt Object

Sports Injuries

Soccer = 24%	Softball = 12%	Hockey = 4%
Baseball = 16%	Fishing = 8%	Other = 16%
Basketball = 12%	Football = 8%	

Place of Injury

Source of Injury

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

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

MIEMSS Trauma Quality Improvement Indicators of Care for Ocular Trauma

July 2007 – June 2008

Total number of eye trauma (structural or functional damage) patients seen in Wilmer Emergency Department (ED)	454	
Patients presented directly to Wilmer ED	60	13%
Patients referred from community hospitals/ physician offices	108	24%
Patients referred from Johns Hopkins Hospital (JHH) Adult and Pediatric ED (includes ambulance transport)	169	37%
JHH inpatients referred for consult	118	26%
Patients with systemic injuries referred to an adult/pediatric emergency department or appropriate specialty service such as neurology, neuro-surgery, otolaryngology, general surgery, etc.	1/1	100%
Patients with ocular chemical burns have eye irrigation initiated by pre-hospital provider in the field and during transport to an eye emergency department (direct ambulance transport to the Wilmer ED)	0	N/A
Eye(s) is protected from further injury or damage (i.e., application of appropriate eye protection device or shield during transport by prehospi-tal provider to an eye emergency department) (direct ambulance trans-port to the Wilmer ED).	12/12	100%

Two important articles authored by Dr. Michael Grant and Wilmer faculty are in press or accepted for publication: "Vision Survival after Open Globe Injury Predicted by Classification and Regression Tree Analysis" and "Prospective Analysis of Ocular Injuries Associated with Isolated Orbital Floor Fractures." In June 2008, at the International Society of Ocular Trauma meeting in Wurzburg, Germany, Dr. Grant gave four invited lectures and chaired the session on complex anterior segment injuries. Dr. Grant was also invited to talk at the World Ophthalmology Congress, sponsored by the International Council of Ophthalmology in Hong Kong, China. He presented on "Vision Survival after Open Globe Injury" and "Management of Open Globe Injuries with Associated Orbital Fractures: Outcomes and Implications for Treatment."

"Preventing Avoidable Blindness: A Global Perspective" was the theme for the 25th Wilmer Nursing Conference. Dr. Ferenc Kuhn, past President of the American Society of Ocular Trauma, gave a presentation on "Epidemiology of Blinding Eye Trauma in the United States Eye Injury Registry," followed by Dr. Michael Grant who presented "Changing Demographics of Ocular Trauma."

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 2008, there were 337 cases of cervical spine injuries and craniotomies. 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

In FY 2008, the Pediatric Trauma Center at the Johns Hopkins Children's Center treated as inpatients 827 children under the age of 15 with multiple trauma. (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.

Located within The Johns Hopkins Hospital (ranked as America's best hospital by *U.S. News & World Report* for the past 18 years), the Pediatric Trauma Service at the Johns Hopkins Children's Center provides the highest level of care (Level 1) for pediatric trauma patients.

In FY 2008, 827 children under the age of 15 came to Hopkins Children's Center seeking care related to trauma. Life-threatening blunt injuries related to motor vehicle crashes, pedestrian injuries, and falls accounted for the majority of the admissions. Mortality continued to be less than 2 percent.

Considered an integral part of the Pediatric Trauma Service, the Injury Prevention 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 neighborhoods, has expanded to West Baltimore, training over 50 community residents in three 5-week classes 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. Combined totals from all classes since 2005, indicate that over 2000 homes have been serviced. The Johns Hopkins Hospital Injury Prevention Program also partnered with the Baltimore City Fire Department to co-sponsor the Summer Fire Safety Camp for juvenile fire starters. Ben Selassie also serves as the Fire Marshall at all BGE City-Wide Energy Assistance Expos and is a member of the Maryland Office of Home Energy Programs Steering Committee.

The Pediatric Trauma Service also supports education initiatives for medical personnel throughout the state and surrounding areas. The Hopkins Outreach for Pediatric Education (HOPE) office, managed by Rose Stinebert, continues to add quality education programs for prehospital providers, as well as medical and nursing staff. Approximately 30 Pediatric Advanced Life Support courses (PALS) are offered throughout the state yearly. Furthermore, monthly Advanced Trauma Care for Nurses of Maryland (ATCN) classes are held in conjunction with the Advanced Trauma Life Support (ATLS) classes for physicians at the R Adams Cowley Shock Trauma Center.

Looking ahead, the Johns Hopkins Children's Center, a 175-bed children's hospital, will increase to a 205-bed hospital in early 2011 with the opening of the new state-of-the-art pediatric hospital. The new Children's Tower at the Johns Hopkins Hospital will include emergency, surgical, interventional, critical, and acute care for infants and children. It will have sufficient capacity to maintain its current status as the designated Level 1 pediatric trauma center for the state of Maryland. The new Children's Tower will be connected to the David M. Rubenstein Child Health Building, which opened in 2006 at the corner of Wolfe and Orleans streets and houses most of the pediatric specialty clinics, as well as the Harriet Lane community clinic. The Rubenstein Building also houses one of our two Children's Safety Centers (CSC). The CSCs are a significant resource to children and families, providing education and injury prevention supplies, such as car seats and bike helmets, at a reduced cost.

The Pediatric Trauma Service at Hopkins Children's Center is part of a legacy of excellence in pediatric healthcare. The opening of the new Children's Tower will further enhance its outstanding position in the field of trauma care for children.

Pediatric Trauma Center Children's National Medical Center

In FY 2008, Children's National Medical Center, as a pediatric specialty referral center, treated 886 Maryland children with multiple trauma. (See pages 69 to 72 for additional pediatric trauma data in various categories.) Martin R. Eichelberger, MD, is the Director, Trauma & Burn Services; Ananth Murthy, MD, Associate Director of Burn Services; Geraldine Pratsch, RN, MPH, Program Manager; Sarah Storing, RN, BSN, Trauma Coordinator; Elaine Lamb, MSN,CPNP, Inpatient Trauma and Burn Nurse Practitioner; 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 in July 2004 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 five times a year. The Trauma Nurse Core Curriculum (TNCC) is offered five times per 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 SKWW (formerly the National SAFE KIDS Campaign), the Injury Prevention focus of CNMC, has contributed to a 45 percent decrease in child fatalities from unintentional injuries by promoting changes in attitudes, behaviors, laws, and the environment to prevent accidental injury to children. In the United States, SKWW has contributed to a 45 percent reduction in the child fatality rate from accidental injury, saving an estimated 38,000 children's lives. Working through more than 450 state and local Safe Kids coalitions in the United States and 16 other countries, Safe Kids delivers proven programs at the grassroots level to prevent unintentional injury to children ages 14 and under. By mobilizing communities at the local level, SKWW provides public education programs, facilitates engineering and environmental modifications, enacts and enforce 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).

The Emergency Medical Services for Children (EMSC) National Resource Center (NRC) was established in 1991 to help improve the pediatric emergency care infrastructure throughout the United States and its territories. The NRC is housed within Children's National Medical Center. The program is designed to ensure that all children and adolescents, no matter where they live, attend school, or travel, receive appropriate care in a health emergency. It supports states and health professionals to implement programs to enhance the quality of medical and trauma care provided to children and youth. These performance measures address medical direction, equipment on ambulances, hospital facility recognition programs for pediatric emergency and trauma care, interfacility transport agreements, and educational requirements for the recertification of paramedics. Resources for grantees are provided related to strategic planning and program development, coalition building, and project management. The EMSC National Resource Center maintains the EMSC program web site at http://www.mchb.hrsa.gov/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 2007, the Maryland Poison Center (MPC) received 65,804 calls. While 35,457 of these calls involved a human exposure, 2,154 involved animal exposures, and the remaining 28,193 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 1,438 cases in 2007. In at least 287 of those cases, transportation by EMS 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 180 years of combined poison center experience, ensuring that callers have access to experienced, qualified, and well-trained staff.

In CY 2007, MPC specialists received 19,553 non-emergency requests to identify medications from the public, health professionals, and law enforcement. In response to this rapidly growing number of drug identification requests, the MPC implemented a drug identification service in 2006 which was expanded in 2007. Funding was obtained to employ additional substance abuse counselors to help manage these calls, referring callers to drug counseling opportunities when appropriate.

Through the efforts of organizations, including MIEMSS, University of Maryland School of Pharmacy, Maryland Department of Health and Mental Hygiene, and the Maryland legislature, state funding was made available to create new positions for an IT specialist and a Quality Assurance Specialist. The IT specialist will enable the MPC to gather and analyze data on calls to the center to a degree not available in the past. The Quality Assurance specialist will develop more advanced processes to regularly review cases for quality purposes as well as to identify and analyze certain substances involved in poisonings to optimize treatment and outcomes.

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 2007, the MPC provided speakers and/or materials for 116 programs and health affairs in 15 Maryland counties and Baltimore City. Angel Bivens, BSPharm, MBA, CSPI, led classes that were attended by over 8,200 people and participated in numerous health fairs. Several organizations partnered with the MPC to provide education to their patients, customers, clients, and students. These organizations included fire departments, hospitals, health departments, schools, police departments, childcare agencies, pharmacies, hospital perinatal education programs, CPR instructors, parish nurses, Red Cross, Head Start and Healthy Start programs. In all, more than 50,000 pieces of educational materials (brochures, magnets, telephone stickers, Mr. Yuk stickers, teacher's kits, and other pieces) were distributed at these programs and by these organizations. Over 120,000 additional pieces of materials were mailed to people and groups who requested them. The MPC is also an important resource for the media. In 2007, MPC staff did 17 television and 15 newspaper interviews, as well as one radio interview on various poison-related 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 2007, 53 programs were conducted at hospitals, fire departments, colleges, and state, regional, and national conferences. These programs were attended by more than 2,000 EMS providers, physicians, nurses, pharmacists, and physician assistants throughout Maryland. The MPC also provides professional education through publications. "ToxTidbits," a monthly toxicology update, and "ToxAlert" are faxed to every Maryland emergency department and emailed to over 3,600 health professionals. Current and past issues of "ToxTidbits" and "ToxAlert," as well as information on how to sign up to receive 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 2007, 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 2007)

Circumstance	Number of Patients	Percentage
Unintentional	28,156	79.4
Intentional	5,959	16.8
Adverse Reaction	1,017	2.9
Other & Unknown	325	0.9
TOTAL	35,457	100.0

Medical Outcome of Poisoning (CY 2007)

Medical Outcome	Number of Patients	Percentage
No Effect/Minor Effect	32,125	90.6
Moderate Effect	1,680	4.7
Major Effect	177	0.5
Death	31	0.1
Other & Unknown	1,444	4.1
TOTAL	35,457	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 2007)

Region	Number of Exposures	Percentage
Region I (Garrett, Allegany)	813	2.3
Region II (Washington, Frederick)	3,058	8.6
Region III (Carroll, Howard, Harford, Anne Arundel, Baltimore County, Baltimore City)	22,519	63.5
Region IV (Cecil, Kent, Queen Anne's, Talbot, Caroline, Dorchester, Wicomico, Worcester, Somerset)	3,873	10.9
Region V (*Montgomery, *Prince George's, Charles, Calvert, St. Mary's)	3,697	10.5
Unknown County/ Other state	1,497	4.2
TOTAL	35,457	100.0

**NOTE: Routing for the nationwide telephone number automatically connects callers from Montgomery and Prince George's counties to the National Capital Poison Center in Washington, DC. Some callers from these counties reach the Maryland Poison Center by dialing local telephone numbers still in service. This report reflects calls to the Maryland Poison Center only. An additional 12,580 human exposures in Maryland were reported to the National Capital Poison Center in 2007.*

REHABILITATION

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

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

Rehabilitation services are provided in hospitals, acute inpatient rehabilitation hospitals, long-term care facilities, home care, outpatient services, and community-based rehabilitation programs. During FY 2008, trauma centers in Maryland referred 1,554 trauma patients ages 15 and over to inpatient rehabilitation services. There was a decrease of 98 patients referred for rehabilitation from FY 2007. The ten rehabilitation facilities receiving the most patients are listed on this page.

TOP TEN DESTINATIONS OF PATIENTS 15 & OVER WHO WENT TO INPATIENT REHABILITATION FACILITIES: (JUNE 2007 TO MAY 2008)

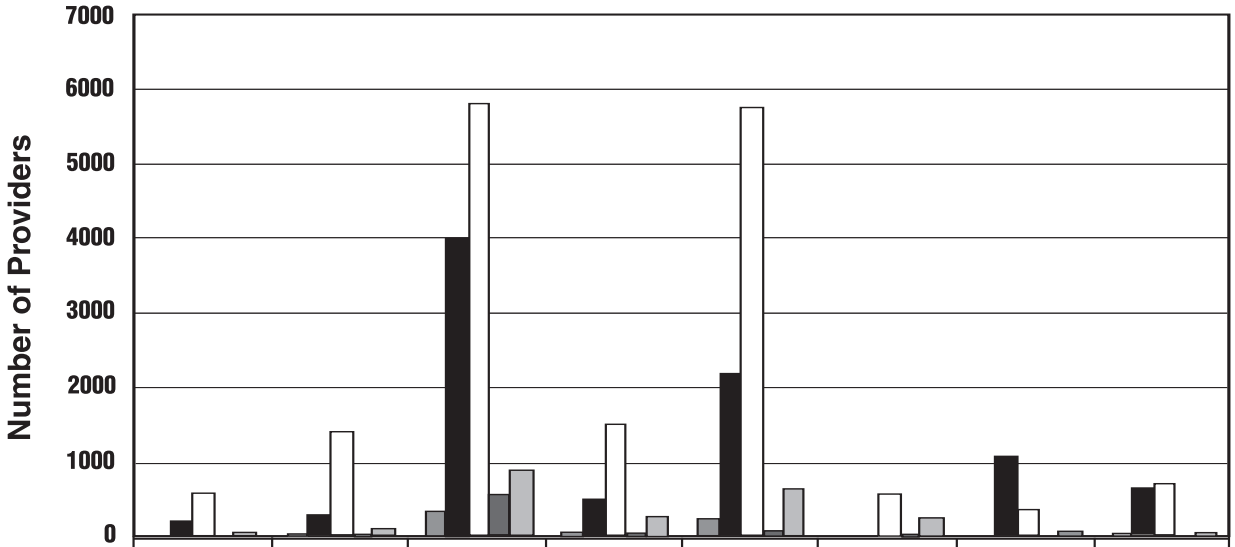
Source: Maryland State Trauma Registry

Rehabilitation Center	Number
Adventist Health Care	41
Future Care Long-Term Care Facilities	12
Genesis Long-Term Care Facilities	30
Good Samaritan Hospital of Maryland	23
Health South Chesapeake Rehabilitation Hospital Salisbury, MD	12
Johns Hopkins Hospital Comprehensive Inpatient Rehabilitation Unit	11
Kernan Hospital	342
Maryland General Hospital	48
University Specialty Center	49
Washington County Health System Rehabilitation Services	40

Note: Total patients ages 15 and over who went to rehabilitation centers = 1,554

MARYLAND EMS STATISTICS

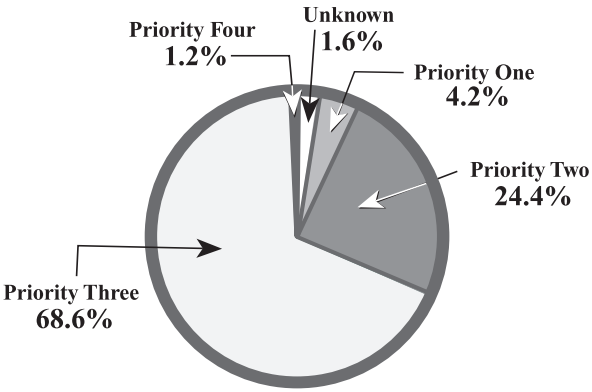
Number of EMS Providers (Primary Affiliation) by Region
(as of 8/07/08)



	Region I	Region II	Region III	Region IV	Region V	Commercial	Other (Govt)	Inactive
EMD	19	31	368	78	260	4	0	34
FR	227	302	3983	533	2205	9	1104	670
EMTB	611	1439	5811	1543	5767	606	384	756
CRT99	14	26	601	46	98	34	0	6
EMTP	63	107	916	292	641	268	81	69

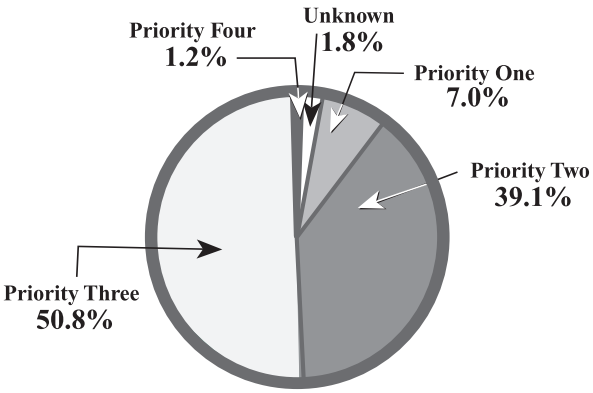
Types of EMS Calls

PATIENT PRIORITY FOR INJURY CALLS
CY 2007



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

PATIENT PRIORITY FOR MEDICAL CALLS
CY 2007



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

Public Safety EMS Units

Public Safety EMS Vehicles by Region

Region	Vehicles							
	ALS Transport Vehicles	BLS Transport Vehicles	ALS Chase Vehicles	BLS First Response Vehicles	MCSU Type 1 100 pts	MCSU Type 2 50 pts	MCSU Type 3 25 pts	Ambu Buses
Region I	32	9	5	18	0	1	2	0
Region II	37	21	39	37	2	2	1	0
Region III	172	15	40	179	8	1	0	0
Region IV	131	18	33	26	3	6	0	0
Region V	51	139	20	10	3	4	3	3
STATEWIDE TOTAL	423	202	137	270	16	14	6	3

Source: Vehicle data reported by the Jurisdictional Programs

Vehicle Definitions:

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

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

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

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

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 MSCU is stocked to handle at least 100 patients.
Type 2 MSCU 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.

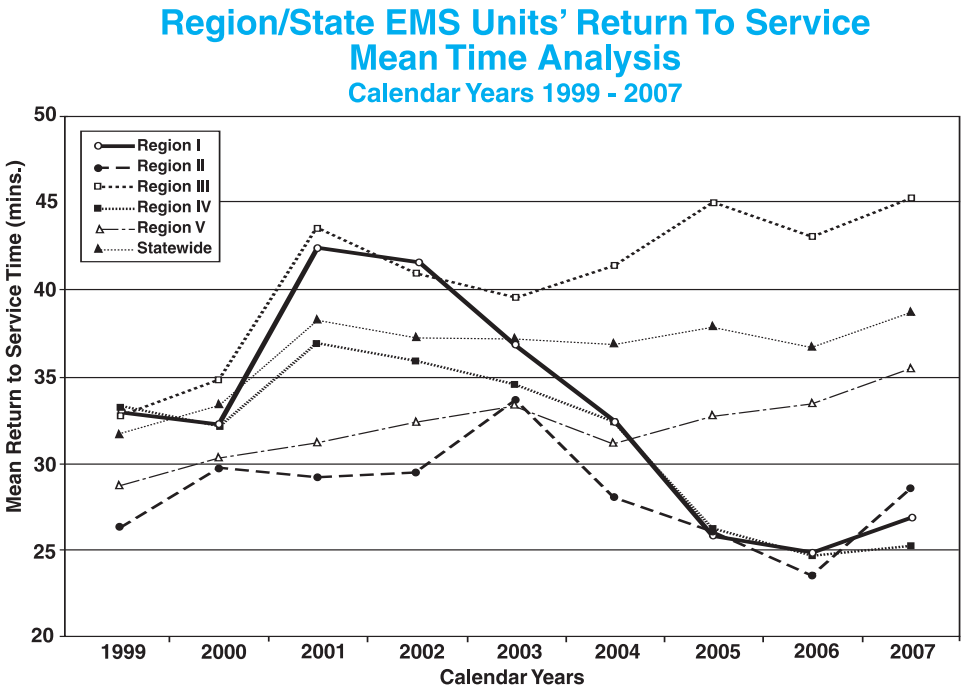
Ambu Bus — A passenger bus configured or modified to transport as many as 20 bed-ridden patients.

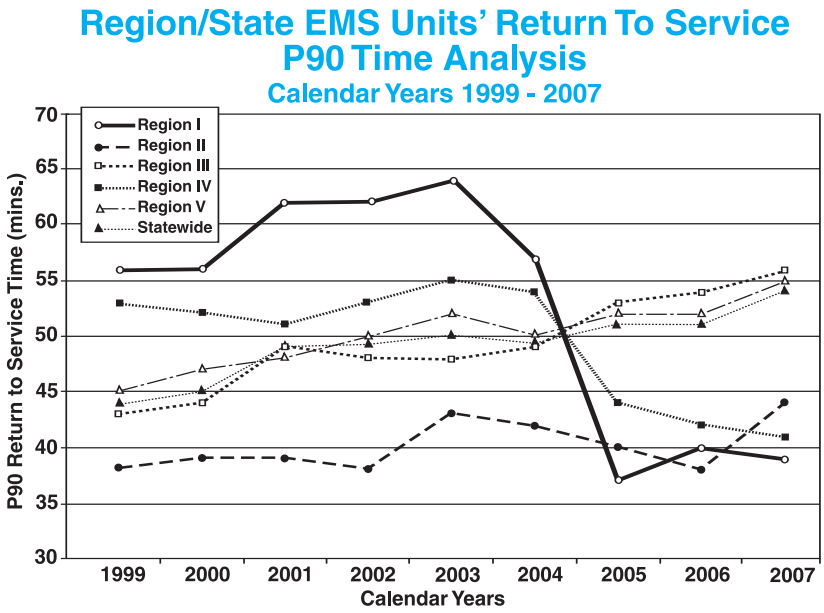
MIEMSS Grant Disbursements (FY 2008) by Region

	50/50 Matching Equipment Funds	ALS Training Funds	Emergency Dispatch Programs	HPP Bioterrorism Grants (FFY 2007)	DOT Highway Safety Grants (FFY 2007)	Total By Region
Region I	$50,426	$31,269	$3,695	$23,272	$33,699	$142,361
Region II	$45,409	$36,932	$4,556	$36,572	$30,000	$153,469
Region III	$114,501	$104,835	$13,668	$128,002	$30,000	$391,006
Region IV	$87,518	$71,150	$20,340	$104,724	$26,306	$310,038
Region V	$98,556	$98,970	$13,047	$91,430	$29,900	$331,903
Total	$396,410	$343,156	$55,306	$384,000	$149,905	$1,328,777

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

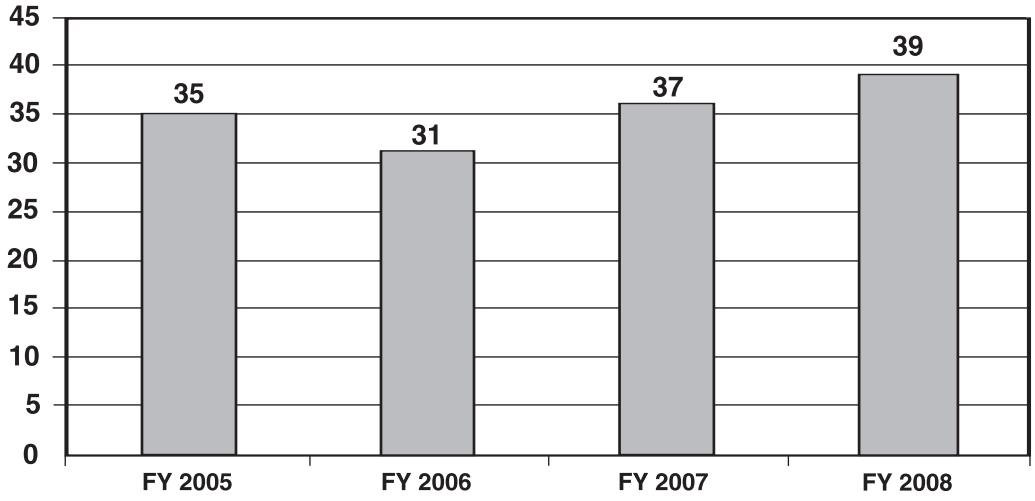
Public Safety EMS Units



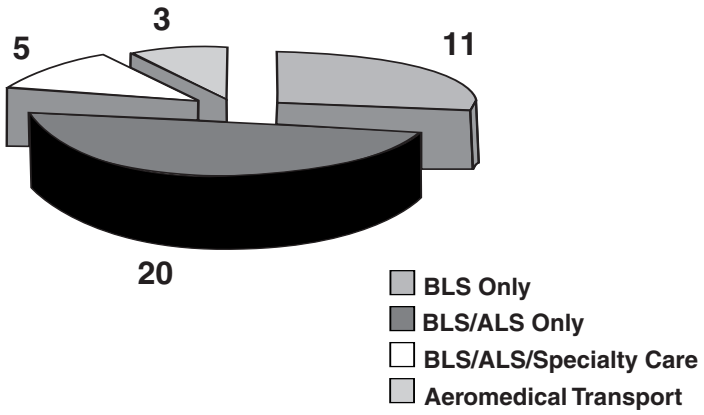


Commercial Ambulance Services

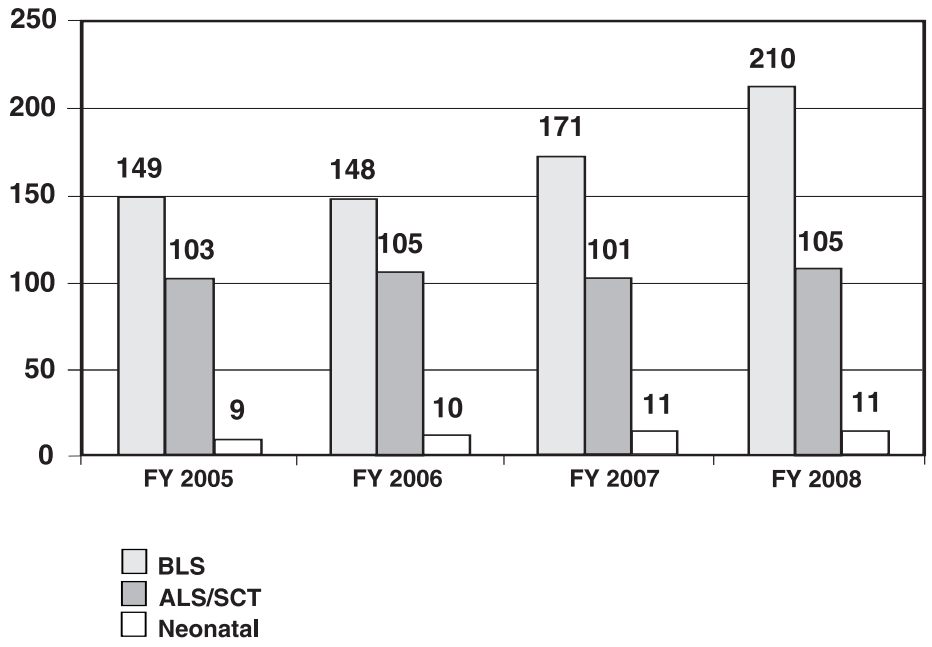
Commercial Ambulance Services (Ground & Air)
(FY 2005 – FY 2008)



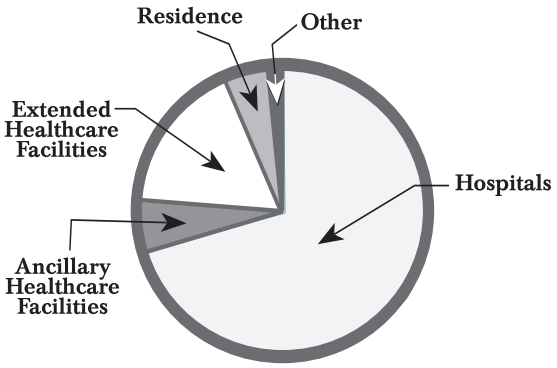
Commercial Services by License Type
(FY 2008)



Commercial Ground Ambulance Vehicles by Type
(FY 2005 – FY 2008)



COMMERCIAL ORIGIN LOCATION TYPES
CY 2007



Source: Commercial Maryland Ambulance Information System (CMAIS)

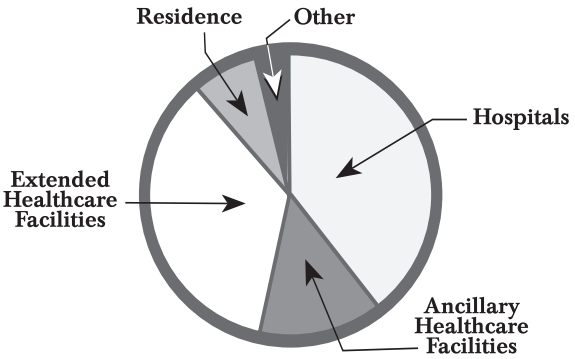
Notes:

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

COMMERCIAL DESTINATION LOCATION TYPES
CY 2007



Source: Commercial Maryland Ambulance Information System (CMAIS)

Notes:

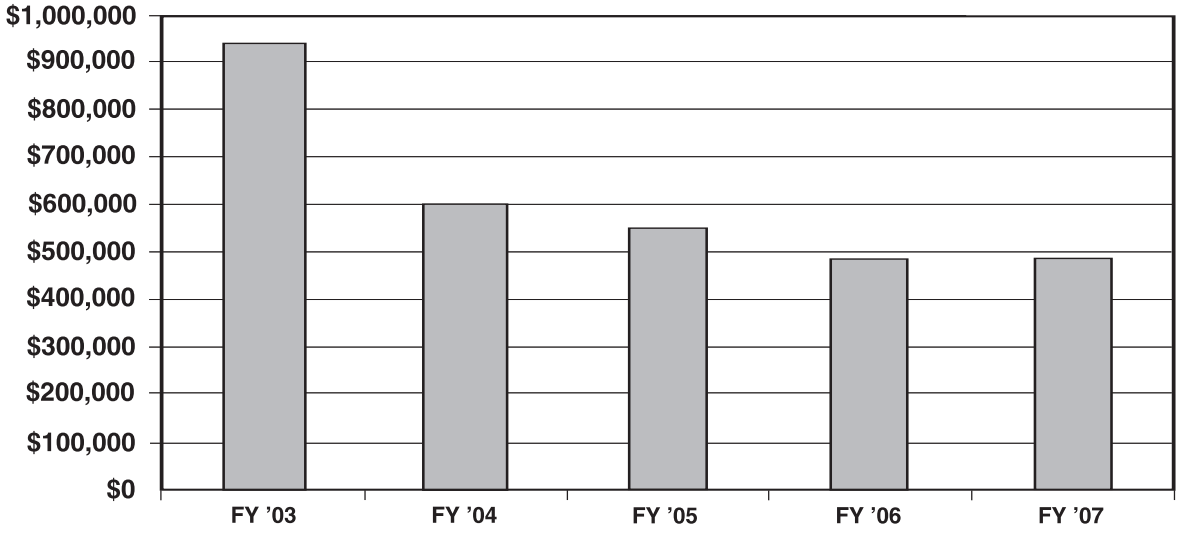
Hospitals = Hospitals & Hospital EDs, CCUs, & Perinatal Units

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

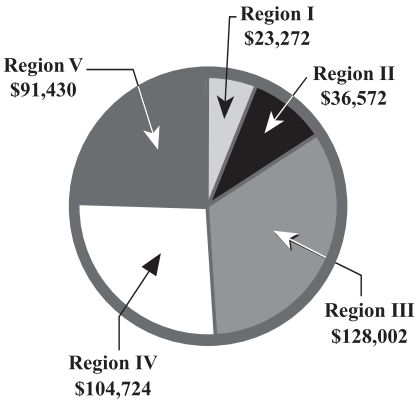
Extended Healthcare Facilities = Nursing Home, Adult Day Care, Rehab

Health Preparedness Program (HPP)
Bioterrorism Funding for Maryland EMS
(Federal FY 2003 – FY 2007)

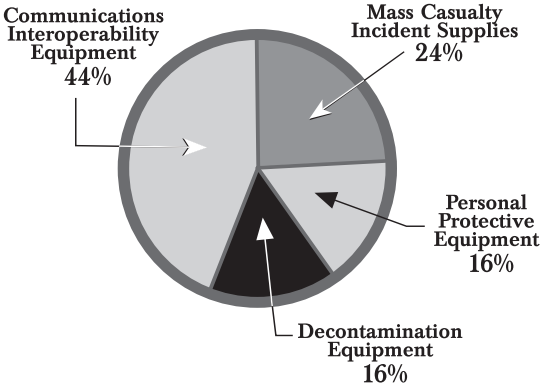
HPP Bioterrorism Funding Totals
(Federal FY 2003 – FY 2007)



HPP BIOTERRORISM FUNDING ALLOCATION BY MARYLAND EMS REGION
(Federal FY 2007)



HPP BIOTERRORISM FUNDING CATEGORIES
(Federal FY 2007)



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 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
Under 1 year	182	227	217
1 to 4 years	499	596	592
5 to 9 years	600	546	538
10 to 14 years	911	878	801
15 to 24 years	5,530	5,833	5,560
25 to 44 years	6,760	6,994	7,004
45 to 64 years	4,035	4,340	4,732
65 + years	1,826	1,918	2,196
Unknown	28	11	14
TOTAL	20,371	21,343	21, 654

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

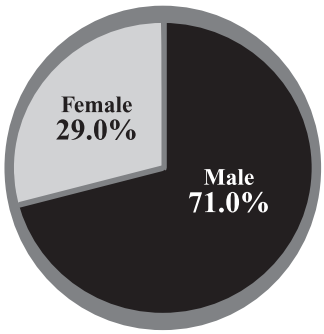
TOTAL CASES REPORTED BY TRAUMA CENTERS (3-YEAR COMPARISON)

Source: Maryland State Trauma Registry

Trauma Center	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
The Johns Hopkins Bayview Medical Center	1,526	1,372	1,810
Johns Hopkins Medical System	1,899	2,542	2,438
Peninsula Regional Medical Center	1,172	1,333	1,677
Prince George's Hospital Center	3,097	3,136	3,003
R Adams Cowley Shock Trauma Center	6,129	6,253	6,381
Sinai Hospital of Baltimore	1,748	1,673	1,656
Suburban Hospital	1,434	1,503	1,487
Washington County Hospital Association	943	998	853
Western Maryland Health System—Memorial Campus	669	710	636
TOTAL	18,617	19,520	19,941

GENDER OF PATIENTS: PRIMARY ADMISSIONS ONLY (June 2007 to May 2008)

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 emeregency department arrival.

OCCURRENCE OF INJURY BY COUNTY: SCENE ORIGIN CASES ONLY (JUNE 2007 TO MAY 2008)

Source: Maryland State Trauma Registry

County of Injury	Number
Allegany County	329
Anne Arundel County	971
Baltimore County	2,381
Calvert County	152
Caroline County	92
Carroll County	389
Cecil County	160
Charles County	297
Dorchester County	80
Frederick County	330
Garrett County	46
Harford County	467
Howard County	422
Kent County	50
Montgomery County	1,307
Prince George's County	1,029
Queen Anne's County	167
St. Mary's County	188
Somerset County	73
Talbot County	91
Washington County	553
Wicomico County	301
Worcester County	211
Baltimore City	5,239
Virginia	109
West Virginia	184
Pennsylvania	89
Washington, DC	103
Delaware	182
Other	1
Not Indicated	1,833
TOTAL	17,826

Note: Scene origin cases represent 89.4% of the total trauma cases treated statewide.

RESIDENCE OF PATIENTS BY COUNTY: SCENE ORIGIN CASES ONLY (JUNE 2007 TO MAY 2008)

Source: Maryland State Trauma Registry

County of Residence	Number
Allegany County	259
Anne Arundel County	921
Baltimore County	2,385
Calvert County	187
Caroline County	118
Carroll County	429
Cecil County	154
Charles County	353
Dorchester County	91
Frederick County	300
Garrett County	35
Harford County	575
Howard County	364
Kent County	52
Montgomery County	1,275
Prince George's County	1,822
Queen Anne's County	102
St. Mary's County	127
Somerset County	83
Talbot County	68
Washington County	436
Wicomico County	394
Worcester County	190
Baltimore City	4,892
Virginia	412
West Virginia	270
Pennsylvania	408
Washington, DC	417
Delaware	291
Other	356
Not Indicated	60
TOTAL	17,826

Note: Scene origin cases represent 89.4 % of the total trauma cases treated statewide.

PATIENTS WITH PROTECTIVE DEVICES AT TIME OF TRAUMA INCIDENT: PRIMARY ADMISSIONS ONLY (3-YEAR COMPARISON)

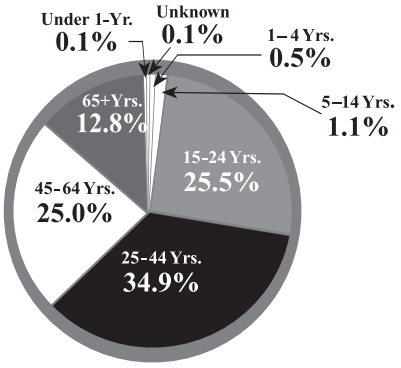
Source: Maryland State Trauma Registry

Protective Device	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
None	22.9%	21.4%	20.8%
Seatbelt	32.1%	28.8%	28.7%
Airbag & Seatbelt	15.3%	16.7%	18.1%
Airbag Only	3.3%	3.3%	3.6%
Infant/Child Seat	0.2%	0.2%	0.2%
Protective Helmet	13.0%	11.1%	12.8%
Padding/Protective Clothing	0.1%	0.1%	0.1%
Other Protective Device	0.1%	0.0%	0.0%
Unknown	13.0%	18.4%	15.7%
TOTAL	100.0%	100.0%	100.0%

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

AGE DISTRIBUTION OF PATIENTS: PRIMARY ADMISSIONS ONLY (June 2007 to May 2008)

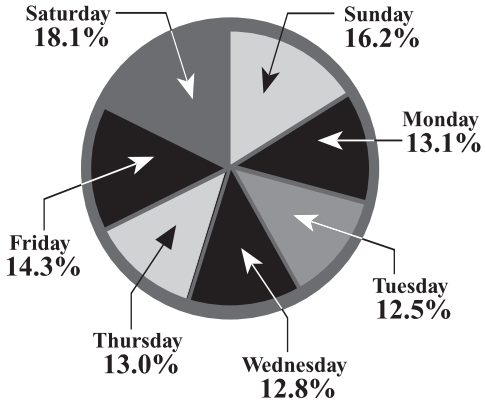
Source: Maryland State Trauma Registry



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 trauma center tables and graphs.

EMERGENCY DEPARTMENT ARRIVALS BY DAY OF WEEK: PRIMARY ADMISSIONS ONLY (June 2007 to May 2008)

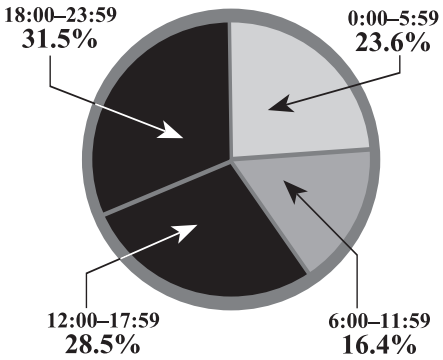
Source: Maryland State Trauma Registry



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

EMERGENCY DEPARTMENT ARRIVALS BY TIME OF DAY: PRIMARY ADMISSIONS ONLY (June 2007 to May 2008)

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 (JUNE 2007 TO MAY 2008)

Source: Maryland State Trauma Registry

Modality Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMHS	TOTAL
Ground Ambulance	91.6%	82.8%	64.7%	54.5%	92.5%	63.0%	86.6%	81.0%	77.8%	73.5%
Helicopter	0.3%	1.2%	19.3%	39.7%	0.0%	35.1%	9.1%	6.6%	15.7%	19.1%
Other	8.1%	16.0%	16.0%	5.8%	7.5%	1.9%	4.3%	12.4%	6.5%	7.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

ORIGIN OF PATIENT TRANSPORT TO TRAUMA CENTERS (JUNE 2007 TO MAY 2008)

Source: Maryland State Trauma Registry

Origin Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMHS	TOTAL
Scene of Injury	97.8%	94.1%	83.2%	98.3%	97.3%	79.0%	95.2%	96.6%	94.9%	89.8%
Hospital Transfer	0.3%	5.0%	1.9%	1.1%	0.6%	21.0%	2.2%	1.4%	2.7%	8.1%
Other	1.9%	0.9%	14.9%	0.6%	2.1%	0.0%	2.6%	2.0%	2.4%	2.1%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

NUMBER OF DEATHS BY AGE (3-YEAR COMPARISON)

Source: Maryland State Trauma Registry

Age	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
Under 1 year	0	0	2
1 to 4 years	1	0	2
5 to 14 years	10	8	8
15 to 24 years	186	192	151
25 to 44 years	227	221	224
45 to 64 years	134	161	141
65+ years	168	161	192
Unknown	9	5	11
TOTAL	735	748	731
Deaths Overall as a Percentage of the Total Injuries Treated	3.9%	3.8%	3.7%

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 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
Under 1 year	21	41	28
1 to 4 years	84	101	135
5 to 14 years	392	353	318
15 to 24 years	5,471	5,762	5,514
25 to 44 years	6,760	6,994	7,004
45 to 64 years	4,035	4,340	4,732
65+ years	1,826	1,918	2,196
Unknown	28	11	14
TOTAL	18,617	19,520	19,941

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 2007 TO MAY 2008)

Source: Maryland State Trauma Registry

	Number of Injured Patients		Number of Deaths	
Age	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	28	24	2	1
1 to 4 years	135	107	2	2
5 to 14 years	318	265	8	6
15 to 24 years	5,514	4,895	151	143
25 to 44 years	7,004	6,126	224	191
45 to 64 years	4,732	4,090	141	119
65+ years	2,196	1,932	192	166
Unknown	14	12	11	10
TOTAL	19,941	17,451	731	638

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 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
Motor Vehicle Crash	36.4%	37.0%	35.7%
Motorcycle Crash	6.4%	5.7%	5.8%
Pedestrian Incident	5.3%	5.6%	5.7%
Fall	20.3%	20.0%	22.4%
Gunshot Wound	8.0%	8.7%	7.0%
Stab Wound	8.1%	7.1%	7.1%
Other	15.5%	15.9%	16.3%
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 2007 TO MAY 2008)

Source: Maryland State Trauma Registry

Blood Alcohol Content	Motor Vehicle Crash	Assault	Fall	Other	Total
Negative	65.9%	51.9%	58.2%	62.4%	60.9%
Positive	20.8%	26.3%	17.1%	10.8%	20.3%
Undetermined	13.3%	21.8%	24.7%	26.8%	18.8%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

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

ETIOLOGY OF INJURIES BY AGES OF PATIENTS: PRIMARY ADMISSIONS ONLY (JUNE 2007 TO MAY 2008)

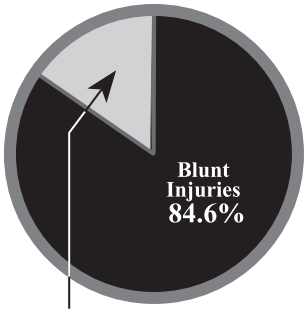
Source: Maryland State Trauma Registry

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound	Other	Total
Under 1 year	0.1%	0.0%	0.0%	0.3%	0.1%	0.0%	0.1%	0.1%
1 to 4 years	0.2%	0.0%	0.9%	1.1%	0.0%	0.0%	1.0%	0.5%
5 to 14 years	1.1%	0.7%	2.1%	0.9%	0.5%	0.4%	1.6%	1.1%
15 to 24 years	30.8%	23.9%	25.2%	8.9%	47.0%	35.4%	23.4%	25.5%
25 to 44 years	35.4%	43.2%	32.7%	22.2%	41.6%	46.6%	40.8%	34.8%
45 to 64 years	22.2%	30.0%	30.1%	32.5%	8.5%	17.0%	28.1%	25.1%
65+ years	10.2%	2.2%	8.8%	34.0%	1.7%	0.6%	5.0%	12.8%
Unknown	0.0%	0.0%	0.2%	0.1%	0.6%	0.0%	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.

INJURY TYPE DISTRIBUTION OF PATIENTS: PRIMARY ADMISSIONS ONLY (June 2007 to May 2008)

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.

ETIOLOGY DISTRIBUTION FOR PATIENTS WITH BLUNT INJURIES: PRIMARY ADMISSIONS ONLY (JUNE 2007 TO MAY 2008)

Source: Maryland State Trauma Registry

Etiology	Percentage
Motor Vehicle Crash	42.6%
Motorcycle Crash	6.9%
Pedestrian Incident	6.8%
Fall	26.4%
Other	17.1%
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.

ETIOLOGY DISTRIBUTION FOR PATIENTS WITH PENETRATING INJURIES: PRIMARY ADMISSIONS ONLY (JUNE 2007 TO MAY 2008)

Source: Maryland State Trauma Registry

Etiology	Percentage
Motor Vehicle Crash	0.3%
Motorcycle Crash	0.1%
Gunshot Wound	46.2%
Stabbing	46.5%
Fall	1.6%
Other	4.9%
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.

FINAL DISPOSITION OF PATIENTS: PRIMARY ADMISSIONS ONLY (3-YEAR COMPARISON)

Source: Maryland State Trauma Registry

Final Disposition	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
Inpatient Rehab Facility	11.5%	12.0%	10.9%
Skilled Nursing Facility	1.7%	1.2%	1.7%
Residential Facility	1.2%	1.2%	1.0%
Specialty Referral Center	3.2%	4.1%	4.1%
Home with Services	2.7%	2.1%	2.7%
Home	70.0%	69.5%	69.4%
Acute Care Hospital	1.8%	1.8%	2.1%
Against Medical Advice	2.0%	2.2%	2.1%
Morgue/Died	5.4%	5.4%	5.2%
Left Without Treatment	0.0%	0.0%	0.1%
Other	0.5%	0.5%	0.7%
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.

INJURY SEVERITY SCORES OF PATIENTS WITH PENETRATING INJURIES: PRIMARY ADMISSIONS ONLY (3-YEAR COMPARISON)

Source: Maryland State Trauma Registry

ISS	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
1 to 12	73.2%	72.7%	74.0%
13 to 19	10.7%	10.3%	10.6%
20 to 35	11.9%	12.1%	10.9%
36 to 75	4.2%	4.9%	4.5%
TOTAL	100.0%	100.0%	100.0%

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

INJURY SEVERITY SCORE (ISS) BY INJURY TYPE: PRIMARY ADMISSIONS ONLY (JUNE 2007 TO MAY 2008)

Source: Maryland State Trauma Registry

ISS	Blunt	Penetrating	Total
1 to 12	70.9%	74.0%	71.4%
13 to 19	15.7%	10.6%	14.9%
20 to 35	10.8%	10.9%	10.8%
36 to 75	2.6%	4.5%	2.9%
TOTAL	100.0%	100.0%	100.0%

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

INJURY SEVERITY SCORES OF PATIENTS WITH BLUNT INJURIES: PRIMARY ADMISSIONS ONLY (3-YEAR COMPARISON)

Source: Maryland State Trauma Registry

ISS	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
1 to 12	69.3%	68.5%	70.9%
13 to 19	16.6%	16.7%	15.7%
20 to 35	11.6%	12.2%	10.8%
36 to 75	2.5%	2.6%	2.6%
TOTAL	100.0%	100.0%	100.0%

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

INJURY SEVERITY SCORES OF PATIENTS WITH EITHER BLUNT OR PENETRATING INJURIES: PRIMARY ADMISSIONS ONLY (3-YEAR COMPARISON)

Source: Maryland State Trauma Registry

ISS	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
1 to 12	69.9%	69.2%	71.4%
13 to 19	15.6%	15.6%	14.9%
20 to 35	11.7%	12.2%	10.8%
36 to 75	2.8%	3.0%	2.9 %
TOTAL	100.0%	100.0%	100.0%

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

MARYLAND PEDIATRIC TRAUMA STATISTICS

LEGEND CODE

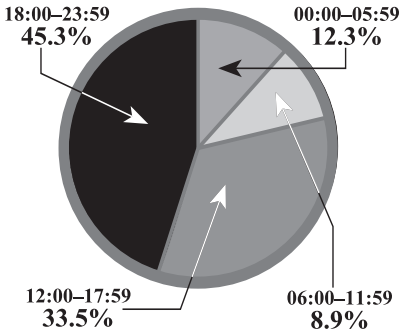
Children's National Medical Center	CNMC
Johns Hopkins Pediatric Trauma Center	JHP

TOTAL CASES TREATED AT PEDIATRIC TRAUMA CENTERS (3-YEAR COMPARISON)

Trauma Center	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
CNMC	853	900	886
JHP	901	923	827
TOTAL	1,754	1,823	1,713

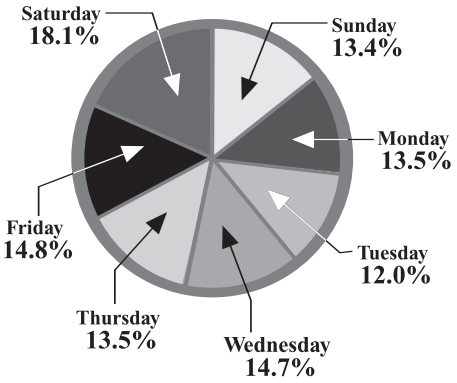
Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

EMERGENCY DEPARTMENT ARRIVALS BY TIME OF DAY: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2007 to May 2008)



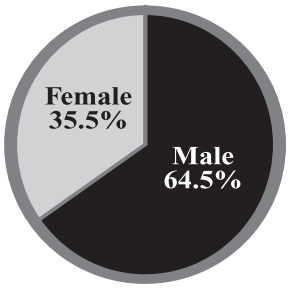
Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

EMERGENCY DEPARTMENT ARRIVALS BY DAY OF WEEK: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2007 to May 2008)



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.

GENDER PROFILE: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2007 to May 2008)



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.

OCCURRENCE OF INJURY BY COUNTY: SCENE ORIGIN CASES ONLY

Children Treated at Pediatric Trauma Centers (June 2007 to May 2008)

County of Injury	Number
Anne Arundel County	71
Baltimore County	88
Calvert County	18
Caroline County	7
Carroll County	33
Cecil County	25
Charles County	39
Dorchester County	7
Frederick County	24
Harford County	51
Howard County	31
Kent County	3
Montgomery County	95
Prince George's County	209
Queen Anne's County	21
St. Mary's County	24
Talbot County	7
Wicomico County	1
Worcester County	2
Baltimore City	150
Virginia	1
Washington, DC	23
Not Indicated	140
TOTAL	1,070

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 62.5% of the total cases treated at pediatric trauma centers. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

MODE OF PATIENT TRANSPORT BY CENTER

Children Treated at Pediatric Trauma Centers (June 2007 to May 2008)

Modality Type	CNMC	JHP	Total
Ground Ambulance	36.9%	59.5%	47.0%
Helicopter	19.5%	36.8%	27.2%
Other	43.6%	3.7%	25.8%
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.

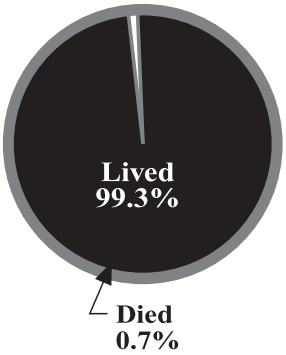
ORIGIN OF PATIENT TRANSPORT BY CENTER:

Children Treated at Pediatric Trauma Centers (June 2007 to May 2008)

Origin	CNMC	JHP	Total
Scene of Injury	48.7%	77.2%	62.5%
Hospital Transfer	39.2%	20.6%	30.2%
Other	12.1%	2.2%	7.3%
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.

OUTCOME PROFILE: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2007 to May 2008)



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

Children Treated at Pediatric Trauma Centers (3-Year Comparison)

Final Disposition	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
Inpatient Rehab Facility	1.4%	2.4%	3.0%
Skilled Nursing Facility	0.0%	0.0%	0.1%
Residential Facility	0.5%	0.9%	0.1%
Specialty Referral Center	0.2%	0.3%	0.4%
Home with Services	0.9%	0.9%	0.4%
Home	94.8%	92.8%	94.3%
Acute Care Hospital	0.2%	0.2%	0.1%
Against Medical Advice	0.1%	0.1%	0.1%
Morgue/Died	0.9%	0.9%	0.7%
Foster Care	0.5%	0.9%	0.4%
Other	0.5%	0.6%	0.4%
TOTAL	100.0%	100.0%	100.0%

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

ETIOLOGY OF INJURIES BY AGES

Children Treated at Pediatric Trauma Centers (June 2007 to May 2008)

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
Under 1 year	5.4%	0.0%	2.5%	16.1%	0.0%	0.0%	11.9%	10.9%
1 to 4 years	25.1%	0.0%	20.8%	36.4%	10.0%	15.0%	16.5%	26.8%
5 to 9 years	32.8%	16.7%	35.0%	23.9%	15.0%	30.0%	18.5%	25.4%
10 to 14 years	34.7%	83.3%	41.1%	22.0%	70.0%	50.0%	47.5%	34.3%
15+ years	2.0%	0.0%	0.6%	1.6%	5.0%	5.0%	5.6%	2.6%
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

Children Treated at Pediatric Trauma Centers
(3-Year Comparison)

Injury Type	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
Blunt	89.3%	88.4%	94.9%
Penetrating	3.6%	3.6%	2.9%
Near Drowning	0.7%	0.9%	0.5%
Hanging	0.3%	0.0%	0.2%
Ingestion	4.9%	5.7%	0.0%
Snake Bite/Spider Bite	0.2%	0.1%	0.1%
Animal Bite/Human Bite	0.8%	1.2%	1.3%
Other	0.2%	0.1%	0.1%
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.

MECHANISM OF INJURY

Children Treated at Pediatric Trauma Centers
(3-Year Comparison)

Mechanism	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
Motor Vehicle Crash	20.2%	19.7%	21.0%
Motorcycle Crash	3.0%	1.6%	1.4%
Pedestrian Incident	10.8%	9.7%	9.7%
Gunshot Wound	1.5%	1.4%	1.2%
Stabbing*	2.0%	2.1%	1.2%
Fall	34.1%	36.2%	42.0%
Other	28.4%	29.3%	23.5%
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 INJURIES BY AGE

Children Treated at Pediatric Trauma Centers
(3-Year Comparison)

Age	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
Under 1 year	161	186	189
1 to 4 years	415	495	457
5 to 9 years	474	446	432
10 to 14 years	645	625	589
15+ years	59	71	46
TOTAL	1,754	1,823	1,713

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.

NUMBER OF DEATHS BY AGE

Children Treated at Pediatric Trauma Centers
(3-Year Comparison)

Age	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
Under 1 year	3	3	3
1 to 4 years	3	8	2
5 to 9 years	4	3	4
10 to 14 years	5	3	3
15+ years	1	0	0
TOTAL	16	17	12

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.

NUMBER OF INJURIES AND DEATHS BY AGE

Children Treated at Pediatric Trauma Centers
(June 2007 to May 2008)

	Number of Injured Patients		Number of Deaths	
Age	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	189	181	3	3
1 to 4 years	457	429	2	2
5 to 9 years	432	408	4	4
10 to 14 years	589	555	3	3
15+ years	46	43	0	0
TOTAL	1,713	1,616	12	12

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.

RESIDENCE OF PATIENTS BY COUNTY: SCENE ORIGIN CASES ONLY

Children Treated at Pediatric Trauma Centers (June 2007 to May 2008)

County of Residence	Number
Anne Arundel County	91
Baltimore County	107
Calvert County	20
Caroline County	8
Carroll County	41
Cecil County	27
Charles County	37
Dorchester County	8
Frederick County	22
Harford County	45
Howard County	22
Kent County	2
Montgomery County	103
Prince George's County	195
Queen Anne's County	18
St. Mary's County	23
Somerset County	1
Talbot County	3
Worcester County	2
Baltimore City	228
Virginia	12
West Virginia	1
Pennsylvania	9
Washington, DC	19
Delaware	3
Other	16
Not Indicated	7
TOTAL	1,070

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 62.5% 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: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (3-YEAR COMPARISON)

Protective Device	June 2005 to May 2006	June 2006 to May 2007	June 2007 to May 2008
None	34.3%	30.5%	34.8%
Seatbelt	17.0%	18.5%	20.2%
Airbag & Seatbelt	1.2%	2.9%	2.4%
Airbag Only	0.4%	0.0%	0.6%
Infant/Child Seat	12.2%	13.2%	14.2%
Protective Helmet	10.6%	8.1%	8.8%
Padding/Protective Clothing	1.0%	0.8%	1.4%
Other Protective Device	0.0%	0.8%	0.0%
Unknown	23.3%	25.2%	17.6%
TOTAL	100.0%	100.0%	100.0%

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

ETIOLOGY OF INJURIES BY AGES

Children Treated at Pediatric Trauma Centers or Adult Trauma Centers (June 2007 to May 2008)

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
Under 1 year	4.6%	0.0%	2.4%	15.9%	3.4%	3.4%	10.2%	10.0%
1 to 4 years	24.4%	0.0%	23.3%	38.2%	6.9%	10.3%	19.2%	27.6%
5 to 9 years	31.0%	19.4%	31.4%	23.6%	10.3%	31.1%	20.1%	25.2%
10 to 14 years	40.0%	80.6%	42.9%	22.3%	79.4%	55.2%	50.5%	37.2%
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.*

MARYLAND PEDIATRIC BURN STATISTICS

LEGEND CODE

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

TOTAL NUMBER OF PEDIATRIC BURN CASES

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (June 2007 to May 2008)

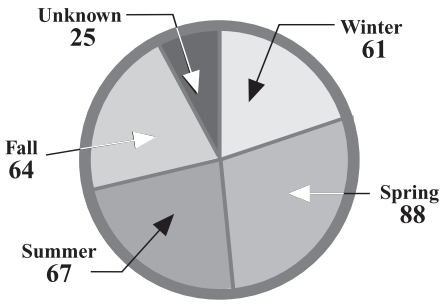
Source: Maryland State Trauma Registry

Burn Center	Number
CNMCBC	142
JHPBC	133
JHBC	30
TOTAL	305

SEASON OF YEAR DISTRIBUTION

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at Johns Hopkins Burn Center at Bayview (June 2007 to May 2008)

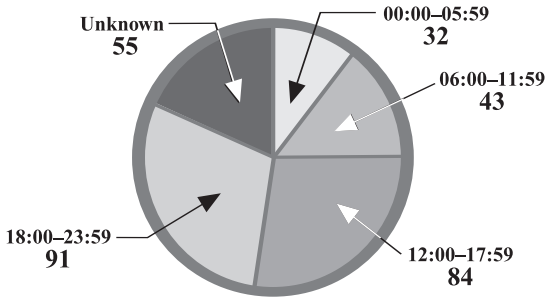
Source: Maryland State Trauma Registry



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 2007 to May 2008)

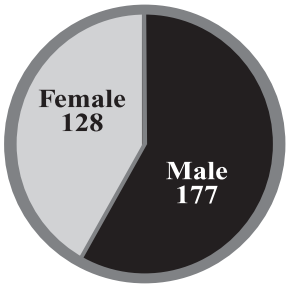
Source: Maryland State Trauma Registry



GENDER DISTRIBUTION

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at Johns Hopkins Burn Center at Bayview (June 2007 to May 2008)

Source: Maryland State Trauma Registry



PLACE OF INJURY

Patients Treated at Pediatric Burn Centers and Patients Less Than Age Fifteen Treated at John Hopkins Burn Center at Bayview (June 2007 to May 2008)

Source: Maryland State Trauma Registry

Place of Injury	Number
Home	244
Place of Recreation or Sport	4
Street/Highway	2
Public Building	3
Other Specified Place	24
Unspecified Place	28
TOTAL	305

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 2007 to May 2008)

Source: Maryland State Trauma Registry

County of Injury	Number
Allegany County	2
Anne Arundel County	13
Baltimore County	31
Calvert County	2
Carroll County	1
Cecil County	3
Charles County	5
Frederick County	9
Harford County	3
Howard County	8
Montgomery County	38
Prince George's County	72
Queen Anne's County	1
St. Mary's County	9
Talbot County	4
Washington County	2
Wicomico County	2
Baltimore City	65
Virginia	1
Pennsylvania	7
Not Indicated	27
TOTAL	305

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 2007 to May 2008)

Source: Maryland State Trauma Registry

County of Residence	Number
Allegany County	1
Anne Arundel County	13
Baltimore County	29
Calvert County	2
Carroll County	3
Cecil County	3
Charles County	6
Dorchester County	1
Frederick County	8
Harford County	5
Howard County	8
Montgomery County	36
Prince George's County	74
Queen Anne's County	1
St. Mary's County	10
Talbot County	3
Washington County	1
Wicomico County	2
Baltimore City	84
Virginia	2
West Virginia	1
Pennsylvania	8
Washington, DC	2
Other	1
Not Indicated	1
TOTAL	305

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 2007 to May 2008)

Source: Maryland State Trauma Registry

Modality Type	CNMCBC	JHPBC	JHBC	Total
Ground Ambulance	32	24	0	56
Helicopter	5	12	0	17
Other	102	36	28	166
Not Valued	3	61	2	66
TOTAL	142	133	30	305

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 2007 to May 2008)

Source: Maryland State Trauma Registry

Origin Type	CNMCBC	JHPBC	JHBC	Total
Scene of Injury	58	75	27	160
Hospital Transfer	48	40	3	91
Not Valued	36	18	0	54
TOTAL	142	133	30	305

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 2007 to May 2008)

Source: Maryland State Trauma Registry

Final Disposition	Number
Inpatient Rehab Facility	13
Specialty Referral Center	19
Home with Services	11
Home	250
Acute Care Hospital	2
Medical Examiner/Morgue	3
Foster Care	2
Other	3
Not Indicated	2
TOTAL	305

TOTAL BODY SURFACE AREA BURNED BY LENGTH OF STAY IN DAYS

Patients Treated at Pediatric Burn Centers Only* (June 2007 to May 2008)

Source: Maryland State Trauma Registry

Length of Stay	Less Than 10% TBSA	10 - 19% TBSA	20% or Greater TBSA	Not Valued	Total
0 Days	1	0	1	1	3
1 Day	79	15	0	51	145
2 - 3 Days	29	6	2	18	55
4 - 7 Days	7	9	1	10	27
8 - 14 Days	3	4	0	3	10
15 - 21 Days	3	1	0	1	5
22 - 28 Days	0	0	1	0	1
Over 28 Days	0	0	3	1	4
Unknown	17	0	2	6	25
TOTAL	139	35	10	91	275

Note: 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.

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 2007 to May 2008)

Source: Maryland State Trauma Registry

Age Range	Electrical	Chemical	Thermal			Inhalation	Unknown	Total
			Flame	Contact	Scald			
Under 1 year	0	2	1	15	21	2	1	42
1 to 4 years	4	1	7	35	109	2	5	163
5 to 9 years	0	0	4	14	34	0	1	53
10 to 14 years	0	2	17	4	18	0	0	41
15+ years	0	0	2	1	2	0	1	6
TOTAL	4	5	31	69	184	4	8	305

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 Center for Trauma and Anesthesiology Research 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 Center for Trauma and Anesthesiology Research will encompass the research activities of the UMSOM's Program in Trauma and its Department of Anesthesiology, along with the existing National Study Center, which was established in 1986 by the United States Congress. The new center becomes the seventh ORC at the UMSOM. The new ORC will be led initially by co-directors 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. A national search is being conducted for a permanent director.

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 through 2009. A total of 52 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. The CIREN team also participated in the Baltimore County Traffic Safety Task Force's I-AM program at Owings Mills High School by presenting the "Physics of Car Crashes" as part of the school's science program. In addition, a study of CIREN cases was published by NSC investigators this year in the *Journal of Trauma*, demonstrating the relationship of car crash mortality with restraint use, direction of force, and changes in velocity.

During the past year, the Maryland CODES (Crash Outcome Data Evaluation System) team has assumed 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 products, including a monthly fatality report prepared for the Maryland Chiefs of Police, are available at http://nsc.umaryland.edu.

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

During FY 2008, study findings of a project completed the previous year and supported by the Blue Ribbon Panel for Evaluation of Advanced Air Bag Technology were published by NSC investigators in *Traffic Injury Prevention* and the *American Journal of Epidemiology*.

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.

Occupational Injuries: The NSC completed a final report on its surveillance of work-related injuries in Maryland, a study that was funded by the National Institute for Occupational Safety and Health (NIOSH). This is the first comprehensive study to document the magnitude of the problem of serious occupational injury on a statewide basis. Previous studies of severe occupational injuries have concentrated largely on fatalities. Few have documented the incidence of the more serious injuries requiring hospitalization, largely because of the difficulties identifying these injuries as work-related.

Results of the study indicated that, despite the necessity for treatment in an ED or hospitalization, many of the injuries sustained by workers were relatively minor, with one primary body part injured, and are unlikely to result in long-term sequelae. However, given their frequency, these injuries in aggregate have significant implications with respect to the burden on the health care system, and financial repercussions. The more serious, multisystem injuries resulted primarily from falls (largely related to construction work) and from motor vehicle crashes.

One of the major contributions of this research is a better understanding of the difficulty in identifying work-related injuries and some of the practical implications of trying to resolve these problems. The immediate contribution of this research will be to enable an effective, ongoing surveillance in the state of Maryland, using those databases which have been found to provide the best yield and the highest sensitivity of detecting work-related injuries, namely the ED, hospital discharge, and trauma registry data. In addition, we will propose potential improvements to the current data collection systems. The results of the statewide surveillance have been shared with the Maryland Department of Health and Mental Hygiene (DHMH) and Maryland Occupational Safety and Health (MOSH), in order to identify high priority areas that need further investigation. In addition, findings have been accepted for oral presentation at the upcoming annual meeting of the National Occupational Injury Research Symposium (NOIRS) in Pittsburgh, Pennsylvania, scheduled for October 2008.

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.

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 trainees per year for two-year fellowships. The first NIH-supported R Adams Cowley Research Fellow started in July 2007.

Internationally, continued funding by the Fogarty International Center of the National Institutes of Health through their International Collaborative Trauma and Injury Research Training Program has provided for training in the United States and the Middle East of health professionals in a number of injury prevention and response-related courses. The material covered in these various courses includes injury epidemiology, emergency preparedness and disaster response, and the clinical care of trauma patients. As a key component of this grant, five Egyptian physician trainees came to the United States during June and July of 2007 to increase their knowledge and understanding of injury-related research. 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 200 Egyptian and Iraqi physicians have been trained during the past two years, and additional Egyptian, Palestinian, and Afghani trainees are expected during the coming year. 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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Robert R. Bass, MD, FACEP
Executive Director

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Note: All names valid as of September 2, 2008.

Past Chief and Chief Emeritus J. Donald Mooney
February 28, 1938 - July 10, 2008

The MIEMSS 2007-2008 Annual Report is dedicated to Chief James Donald Mooney. A long-time member of the Lansdowne Volunteer Fire Department, including 22 years as its Chief, he was active in both Baltimore County and Maryland State firemen's associations, as well as in the Maryland Fire/Rescue Education & Training Commission. But he is also remembered as the driving force behind the Maryland Fire-Rescue Services Memorial in Annapolis.

From its inception in 1997, Chief Mooney served as the Chairman of the Memorial Foundation's Board of Directors. He devoted a major part of his life to inspiring and leading the design and development of the Maryland Fire-Rescue Services Memorial dedicated to the career and volunteer emergency services providers of Maryland who made the ultimate sacrifice for their fellow citizens.

Chief J. Donald Mooney represented every aspect of Maryland's emergency services well, and his loss will be felt throughout the system.

Maryland Institute for
Emergency Medical Services Systems
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