Maryland Institute for Emergency Medical Services Systems

2006-2007 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.

2006–2007 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.

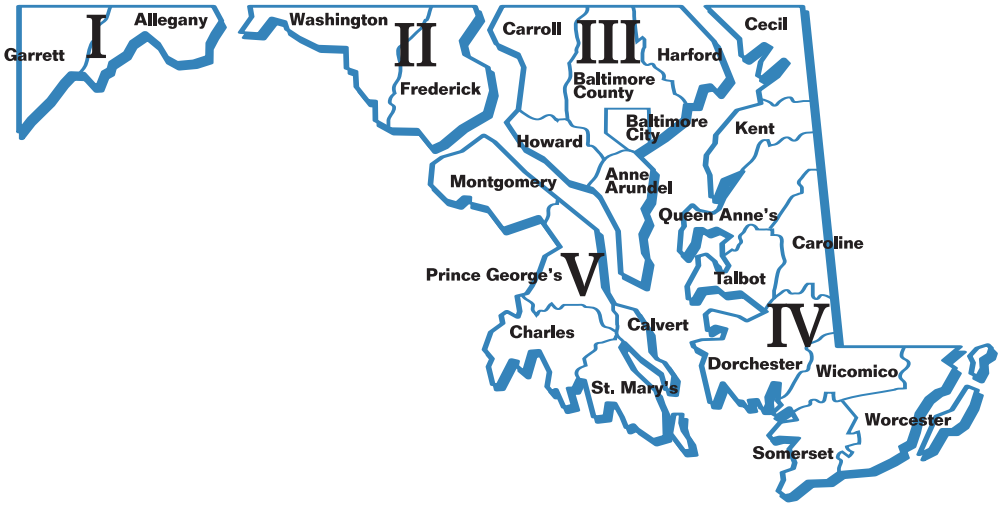
VISION

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

Since my tenure as chairman of the Emergency Medical Services Board began in 1993, I have been enriched by meeting so many dedicated members of the fire and emergency medical services communities. This is indeed a unique group of dedicated citizens who serve selflessly to save people and property. The risks are great while the pay is nonexistent for thousands of volunteers and meager in comparison to other life-saving paid professions. They are driven by intrinsic values and the satisfaction of serving their community. How different our quality of life would be without them.

This past year, the fire and EMS community was deeply saddened by the sudden loss of Chief John R. (Jack) Frazier. Jack was the most senior member of the Baltimore City Fire Department with a career that spanned over five decades. From receiving his first toy fire engine for Christmas as a child through his last day alive and on duty in the halls of Annapolis, Jack demonstrated a passion and a love for the fire and EMS service. Jack rose through the ranks of the service in Baltimore, never failing to respond nor to volunteer. His portfolio of work is legendary.

Jack brought that same love and dedication to the Emergency Medical Services Board. After playing an important role in the passage of legislation to secure dedicated funding for fire and EMS in 1992, he was a key player in House Bill 1222, legislation passed in 1993 that dramatically changed the governance of the state emergency medical services and the Maryland trauma system. Jack was named as a member of the original EMS Board in 1993 and served over a decade in that capacity. He was co-chairman of the Board's Finance Subcommittee, headed the Board's Legislative Committee, and served on the Helicopter Committee, Infection Control Committee, the AED Task Force, and numerous other ad hoc committees. I knew when I asked for volunteers to serve any cause, Jack would be there first. He brought a wealth of knowledge and history, often backed up by yellowed newspaper articles, long-forgotten legislative archives, and relevant anecdotes. When his term ended on the Board, his level of commitment to the Board and the Maryland Institute for Emergency Medical Services Systems did not. He regularly attended meetings and supported our efforts in Baltimore and in Annapolis.

The fire and EMS community will miss Jack Frazier; I will miss Jack. His accomplishments, his commitment to and impact on fire and EMS will not be forgotten.

On behalf of MIEMSS and the EMS Board, I would like to dedicate this year's Annual Report to the memory of Chief John Frazier.

MIEMSS
FROM THE EXECUTIVE DIRECTOR

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

Maryland's EMS system is guided by a Statewide EMS Plan that contains goals and objectives for future development and effective operation of the EMS system. In September 2006, the State EMS Board and the Statewide EMS Advisory Council approved a revised and updated Statewide EMS Plan. The EMS Plan includes initiatives recommended by the National Academy of Sciences Institute of Medicine's report to improve emergency care throughout the U.S. Maryland's EMS system is cited as a "model" EMS system in the report.

A key recommendation of the Institute of Medicine's report involves creation of a coordinated, regionalized, accountable system to ensure seamless emergency and trauma services for the patient. Maryland's statewide EMS system is built on a regionalized approach to care. Over the past year, MIEMSS has worked to further this regionalized approach by designating Primary Stroke Centers and by working with EMS providers, physicians, hospitals, and others to develop draft criteria for the designation of Acute Cardiac Interventional Centers. These designations will permit EMS providers to transport patients with time-sensitive, acute medical conditions that need specific care directly to a designated hospital for rapid treatment.

The designation as a "Primary Stroke Center" indicates that a hospital has committed the necessary resources to provide acute stroke services as required by state standards. Certain treatments for stroke are time-sensitive and direct ambulance transport to a Primary Stroke Center can be important to effective stroke care. As of this writing, 25 hospitals have been designated as Primary Stroke Centers, and a new protocol for EMS providers is being used to help identify patients with suspected acute stroke for transport to the closest designated Primary Stroke Center, bypassing non-designated hospitals. The complete list of Primary Stroke Centers that have been designated to date can be found on page 34. MIEMSS expects to designate additional hospitals as Primary Stroke Centers later in 2007.

Acute Cardiac Interventional Centers will be able to receive ambulance-transported patients with acute ST-elevation myocardial infarction (STEMI) who need certain catheter-based coronary intervention techniques, including balloon angioplasty, to relieve coronary vessel narrowing. Centers will be required to provide the needed cardiac intervention within defined time limits after patient arrival. Development of the criteria for designating Acute Cardiac Interventional Centers will be completed during the upcoming year and will represent the latest statewide initiative to improve emergency treatment for acute cardiac patients. Our previous efforts have included increasing the availability of 12-lead electrocardiography (ECG) in EMS jurisdictions throughout the state. 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. MIEMSS also continues efforts to expand placement of auto-

mated external defibrillators (AED) and to encourage the lay public to be trained in cardiopulmonary resuscitation and use of AEDs.

Once completed, the designated Primary Stroke Centers and Acute Cardiac Interventional Centers will join the ranks of the other specialty center designations in Maryland: adult trauma center, pediatric trauma center, eye trauma center, burn center, hand and upper extremity center, and perinatal referral center. All these centers operate in support of our EMS system by providing definitive, specialty treatment to critically ill and injured patients in Maryland.

Also during the year, MIEMSS continued to work with EMS providers and local jurisdictions to expand the use of EMAIS®, the electronic patient care ambulance report. EMAIS® has been embraced by EMS jurisdictions throughout Maryland as a way to rapidly and accurately record EMS-provided patient care and has provided a cost-effective and less cumbersome alternative to paper-based ambulance run forms. The reporting capabilities of EMAIS® have been significantly enhanced. EMS jurisdictions and providers are now able to print more than 60 comprehensive reports from EMAIS®. MIEMSS will continue to work with jurisdictions to further expand use of EMAIS® in anticipation of an eventual transition to full statewide electronic patient care reporting by 2010. Along with EMS providers, hospitals, state agencies, and others, MIEMSS also began efforts to work toward an integrated information system that will link EMS ambulance run information to emergency department and hospital information. Direct linkage capabilities between information captured in the prehospital phase of care to definitive clinical care in the emergency department and hospital environments will aid in collaborative efforts between the hospital and EMS community to address a variety of emergency health care needs and to promote research into effectiveness of care.

On behalf of MIEMSS, I want to thank Maryland's EMS providers for their commitment and unselfish dedication that has made our Statewide emergency medical system effective not only in meeting the needs of our citizens, but also in providing 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 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, 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.

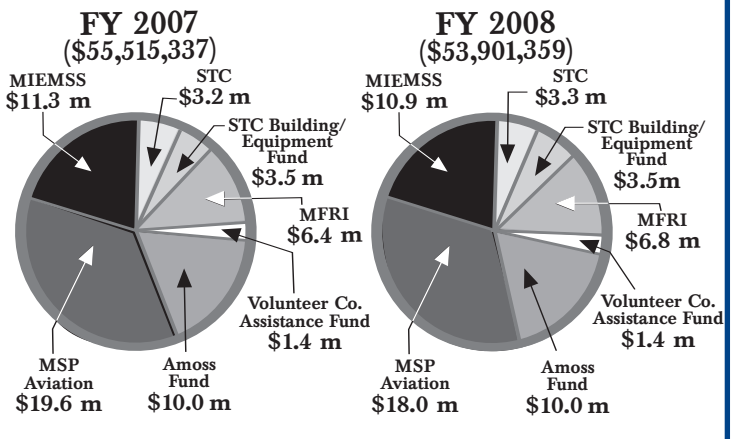
The purchasing staff procures all necessary supplies, materials, and services for the MIEMSS staff. It is also responsible for the timely payment of invoices.

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 2007 budget information is displayed by state object code and department in the charts on page 5.

EMS Operations Fund



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

AEROMEDICAL OPERATIONS

Mission: To provide the physician medical support necessary for the Maryland State Police Aviation Command to meet the emergency helicopter needs of Maryland's citizens. The State Aeromedical Director is actively involved in the ongoing training and verification of skill proficiency for the State Police flight paramedics. He provides around the clock consultation support to SYSCOM for 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 2007 there were 4,730 patients transported by the Maryland State Police (MSP) Aviation Command. Of these patients, 4,634 (98%) were transported from the scene of injury at the request of the local fire services, and 96 (2%) were transported between hospitals to a higher level of care.

Types of calls included the following:

• Motor vehicle crashes	2,187
• Falls	687
• Pedestrians	210
• Assaults	100
• Gunshot wounds	85
• Burns	72
• Stabbings	61
• Industrial accidents	44
• Hand injuries	43
• Eye injuries	9
• Hyperbaric patients	9
• Drownings	8
• Electrocutions	6

In March 2007, the Maryland State Police Aviation Command celebrated 37 years of providing med-evac service to the citizens of Maryland. In addition to being 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 2007 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 endo-

tracheal intubation for patients who are not breathing adequately

Scenario-based simulation training was again utilized for MSP flight paramedics in verification of advanced skill proficiency. These exercises, conducted at the University of Maryland Human Simulation Laboratories, allowed life-like simulation of patient care situations as would be faced by flight paramedics in the course of their normal duties.

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, the Maryland Cardiac Arrest Surveillance System (MCASS) (see page 17 for additional information), the trauma systems, and aeromedical operations.

In addition, AIR staff presented at EMS meetings, including EMS Today, EMS Care, and various regional conferences.

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).

MIEMSS FY 2007 EMS OPERATIONS FUND APPROPRIATION BY DEPARTMENT

Administrative Offices	
Executive Director, Legal Office	$633,450
Financial & Human Resources Administration	1,055,170
Planning/Program Development/Total Quality Management	241,304
Communications	
Equipment	1,258,817
Maintenance	1,500,401
EMRC/SYSCOM	1,018,706
Education/Public Information	
Education, Licensure, & Certification/Compliance	1,255,557
Public Information & Media Services	471,650
Information Technology	1,390,863
Medical Services	
Office of Medical Director	553,755
Office of Hospital Programs	322,042
EMS-Children	166,047
Regional Administration	903,663
TOTAL	$10,771,425

MIEMSS FY 2007 EXPENDITURE BY OBJECT CODE (INCLUDES ALL FUNDS)

FY 2007	Actual
Number of Positions	93.1
Salaries and Wages	$7,095,784
Technical/Special Fees	334,506
Communication	1,246,669
Travel	165,226
Fuel and Utilities	111,363
Motor Vehicle Operation and Maintenance	161,287
Contractual Services	1,811,756
Supplies and Materials	154,265
Equipment–Replacement	58,334
Equipment–Additional	139,621
Fixed Charges	83,878
Grants	1,174,900
Total Expenditure	$12,537,589

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 30 cases of alleged prohibited acts by EMS providers and applicants and provided legal advice and support to the State Office of Commercial Ambulance Licensing and Regulation in all compliance matters.

The Attorney General's Office participated in a variety of committees, task forces, and work groups. The Attorney General's Office worked with MIEMSS to institute regulations for the designation of primary stroke centers, hand and upper extremity trauma centers, and freestanding emergency medical facilities and to implement changes to the burn center regulations, the public access automated external defibrillator program, and the requirements for EMS quality assurance programs.

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 also participates in a work group of Assistant Attorneys General representing several state agencies studying the state's response to bioterrorism and other security issues. 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 (FIELD OPERATIONS)

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

Highlights for FY 2007 include the following:

- The western Emergency Medical Resource Center (EMRC) became operational and now serves Garrett and Allegany counties. Washington County will join the network in 2008.
- Three regular Central Alarm Advisory Council meetings were held around the state: one in Anne Arundel County in August, one in Queen Anne's County in December, and one in Frederick County in April.
- A total of 114 mobile EMS radios and 39 EMS portable radios were distributed throughout the state. Grant funding in the amount of $322,937 was supplied for the purchase of cardiac monitor/defibrillators and automated external defibrillators. Forty-five new Med Channel base stations were purchased and installed around the state.
- MIEMSS Communications processed a total of 1476 service reports and performed 35 volunteer ambulance inspections during FY 2007.
- The build-out of the Public Safety Intranet (PSI-Net) continues with CMARC and CHART sites. There are now 71 PSI-Net sites.
- The display monitors in SYSCOM were upgraded.
- The Smithville tower was added to the Region IV EMRC for improved coverage in Dorchester County.
- A new communications shelter was installed at the Crownsville site in Anne Arundel County.
- New microwave links were installed from the State Highway Administration tower in Chestertown to the Kent County Public Safety Answering Point (PSAP) and from the Sideling Hill tower in Washington County to the Town Hill tower in Allegany County. Additional links were installed in Carroll County at the Gorsuch Road tower to the PSAP, from Gorsuch Road to the Maryland State Police (MSP) tower in Westminster, and from the new Lineboro tower to the MSP tower.

- The new VHF trunked radio system in Cecil County was interfaced with the Region III EMRC.

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 2007

• Incidents Reported to IRC	295
• IRC Investigations Initiated	215
• IRC Investigations Conducted	200
• IRC Investigations (FY 2006) Continued	15
• IRC Complaints Forwarded to PRP	32
• Complaints Dismissed by PRP	1
• Complaints Forwarded to EMS Board	31

EMS Board Action

• Reprimands	3
• Probation	4
• Suspensions	3
• Revocations	7
• Remedial training	3
• Surrenders	0
• Evaluations	1
• Applications Denied	3
• Case Resolution Conferences	7
• Dismissed	1
• Counseling	1

Hearings conducted by OAH	5

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.

In FY 2007, the EMS/DNR program provided 22 in-service trainings to health-care providers about the use of the forms. Additionally, the EMS/DNR program responded to 400 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 CAAHEP. 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 EHS Department welcomed a new clinical coordinator, Michael Cooney, BS, NREMT-P, who has worked with local and regional hospitals, specialty centers, and EMS services to expand the number of clinical and field sites available to paramedic track students. The department continues to participate in the FISDAP national database of paramedic student clinical and field internship experiences.

The department's Critical Care Transport program continues to grow, now having served over 6500 students through 450 courses offered nationwide and internationally. The Pediatric and Neonatal Critical Care Transport (PNCCT) program continues to expand nationwide.

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. During the past year, CEEDR worked with the Howard County School System to provide incident management training for school system personnel.

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 ten local communities, the Child Passenger Safety Hospital grant project, and the federal EMSC Partnership grant and research activities.

MIEMSS Associate State EMS Pediatric Medical Director Dr. Joseph L. Wright and MIEMSS Executive Director Dr. Robert R. Bass participated in a two-year study with the Institute of Medicine (IOM) Board on Health Care Services and were members of the Committee on the Future of Emergency Care in the U.S. Health System. In spring 2007, the IOM released a three-volume set of reports: Emergency Care Services at the Crossroads, Emergency Care for Children: Growing Pains, and Hospital-Based Emergency Care: At the Breaking Point.

EMSC Program Activities

The state PEMAC Committee met on a bimonthly basis throughout FY 2007 with an expanded membership. 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. 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. This steering committee meets jointly with the state PEMAC and the Maryland chapter of the American Academy of Pediatrics' (AAP) Committee on Pediatric Emergency Medicine. This committee supported the implementation of the 2005 PEPP-2 edition and the American Heart Association 2006 PALS changes for emergency cardiovascular care. Updates and information for coordinators and faculty can be found at www.miemss.org/EMSCwww/PEPPEnhanced2.htm.

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.

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 Maryland during 2005-2006, pediatric case reviews were presented to highlight the protocol changes. The

Month and Location	Conference Title	Pediatric Components
September 2006 Columbia	Mid-Atlantic Life Safety Conference	Family Preparedness for Disasters (display)
September 2006 Ocean City	Peninsula Regional Medical Center Trauma Conference	Family Disaster Preparedness (display) Child Passenger Safety Hospital Project (display)
September 2006 Linthicum	Maryland AAP Annual Education Meeting	Child Passenger Safety Hospital Project (display and demonstration of DVD)
October 2007 Solomons Island	PYRAMID: Tri-County EMS Conference	*Preconference Session:* Pediatric Data *Workshops:* Pain Management, Safe Transport of Children in Ambulances, Tracheotomy Care & Ventilator Management
October 2007 Laurel	ENA Barbara Proctor Conference	Child Passenger Safety (display)
January 2007 Tilghman Island	WINTERFEST 2007	Pediatric Burn Care (lecture) Child Passenger Safety & EMSC Program (displays)
March 2007 Rocky Gap	Miltenberger Conference	Vehicle Safety-Beyond EVOK (preconference lecture) Preconference Workgroup on Safe Transport of Children in Ambulances OB & Neonatal Resuscitation (workshop)
March 2007 College Park	Public Education & Life Safety Conference hosted by MFRI	EMSC Life Safety & Injury Data (display)
April 2007 Linthicum	EMS CARE 2007 & ENA by the BAY 2007	*Workshops:* Family Centered Care, Working with Children in Emergency Environments, Pediatric Cardiac Emergencies, Pediatric Cardiac Arrest Data, Pediatric Case Studies, Caring for Children with Special Health Care Needs, and Pediatric Orthopedic Injuries *Displays:* CPS Hospital Project, RISK WATCH® programs, Safe Transport of Children in Ambulances
May 2007 Silver Spring	Advances in Pediatric Emergency Medicine, Children's National Medical Center	PEMAC membership participated
June 2007 Ocean City	Maryland State Firemen's Convention	RISK WATCH® 101 (in the Fire Ambassadors Workshop) RISK WATCH®-Home Safety Display & Natural Disasters modules Pediatric Spinal Immobilization (in the MIEMSS Instructor Workshop)

EMSC staff partnered with the BLS Subcommittee and MIEMSS Office of Licensure and Certification to support instructor training sessions for the Teaching Resource on Spinal Immobilization. Twelve workshops were held in the spring and summer of 2007.

During May 2007, 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 23, 2007,

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. Retired Lt. Dennis Beard from the Howard County Department of Fire & Rescue received the EMS for Children Star of Life award for his many years of dedication and leadership across the county and state with Safe Kids and RISK WATCH®. More information can be found at www.miemss.org/EMSCwww/RightCare.html.

The Pediatric QIC continues to provide training for the two 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. These 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.

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.

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 Fire Prevention 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 fourth year of the RISK WATCH® Champion program, ten 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. These include:

1. Carroll County: with a mainstreamed elementary school in Winfield
2. Frederick County: in partnership with the YMCA summer camp programs
3. Howard County: in partnership with Park & Recreation after-school programs
4. Montgomery County Fire & Rescue: in elementary schools, private schools, home-school programs through partnership with local libraries, after-school programs, county child-care programs, Risk Watch Recess initiatives, public safety education at stations and community events
5. Prince George's County Volunteer Association: public safety education at station events
6. Early Childhood Centers in Prince George's County: focus on special needs populations
7. Prince George's County Fire & EMS Department: 30 after-school programs
8. Johns Hopkins Children's Center: Pediatric Emergency Department & Child Life
9. Cecil County: exploring school programs
10. Southern Maryland Tri-County: exploring new program opportunities

MIEMSS continues to expand the website page for RISK WATCH® and produced posters and mouse pads to increase the access for teachers and parents in other counties and school systems. 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. RISK WATCH® projects were displayed at the September 2006 Mid-Atlantic Life Safety Conference, the March 2007 Public Education and Life Safety Seminar, and the June 2007 Maryland State Firemen's Association Convention. Some of

the schools and programs are exploring the Natural Disasters curricula and modules from both RISK WATCH® and the American Red Cross.

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 support the EMSC Regional Symposia and provides ongoing leadership in the coordination of the Mid-Atlantic (now nine-states) EMSC Region. The Mid-Atlantic EMSC group includes North Carolina, Virginia, West Virginia, the District of Columbia, Maryland, Delaware, Pennsylvania, New Jersey, and New York. The special Symposium on Family Centered Care was held in Pennsylvania in October 2006, with participation from three Maryland EMS Regions and poster presentations on Family Centered Care from PEMAC members, along with faculty from the Children's National Medical Center and the Johns Hopkins Children's Center.

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 continues to work 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 second-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, in joint sponsorship with the National Highway Traffic Safety Administration (NHTSA) of the U.S. Department of Transportation. The 2006-2009 EMSC Partnership Grant will focus 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.

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.

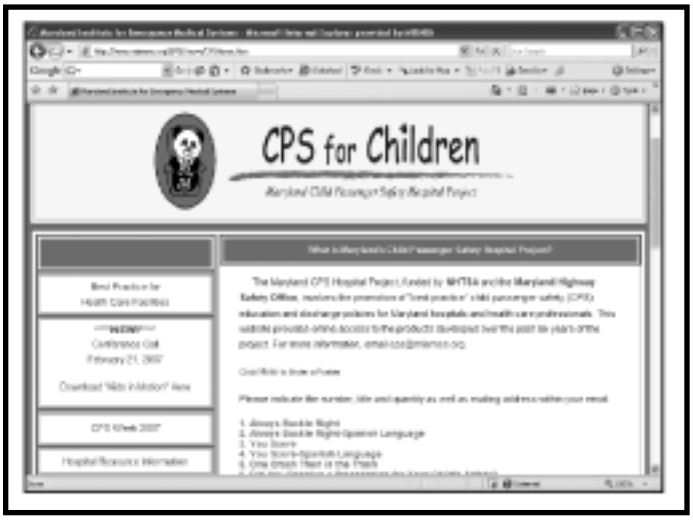
3. Expand the current EMSCS pediatric education activities available to both out-of-hospital and hospital providers through regional and state conferences, with a continued annual EMSC "Right Care When It Counts" recognition process.

Child Passenger Safety Project

The EMSC Program continues to provide leadership for the sixth year of a Maryland Department of Transportation Highway Safety Grant focused on improving the child passenger safety (CPS) 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 host an annual February CPS conference call. The 2007 CPS conference call focused on Child Safety In and Around Cars and featured the Safe Kids Spot the Tot programs. This sixth year of the grant focused on Safe Transport of Children in Ambulances, with the development of a training workshop, convening a work group on ambulance safety, and the development of a Safe Transport in Ambulance questionnaire and display for EMS Care. The 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 hospital on both CPS Best Practices and promoting policy development;

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.

EMRC/SYSCOM (FIELD OPERATIONS)

In FY 2007, the Emergency Medical Resource Center (EMRC) handled 170,133 telephone calls and 148,924 radio calls. Of these 319,057 calls, 129,235 were communications involving a patient or incidents with multiple patients.

In FY 2007, the System Communications Center (SYSCOM) handled 49,330 telephone calls and 4,492 radio calls. Of these 53,822 calls, 6,186 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 550 calls for the Maryland Department of Health and Mental Hygiene (DHMH) 24-hour Duty Officer.

GOVERNMENT AFFAIRS

Each year, MIEMSS Office of Government Affairs 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. Partnering with EMS providers, physicians, nurses, hospitals, and other health care providers, MIEMSS works to assist the Executive and Legislative branches of State government in developing effective statutory solutions and approaches to a variety of emergency care needs. During the 2007 Legislative Session, EMS-related legislative initiatives included the following bills that were passed by the General Assembly and signed into law by the Governor:

- As of October 1, 2007, a health care provider, other than a certified/licensed EMS provider, who sees a valid EMS Do-Not-Resuscitate order, is authorized to withhold or withdraw treatment in accordance with the order before a patient's cardiac or respiratory arrest, and will be required to withhold or withdraw treatment in accordance with the order after cardiac arrest.

- Beginning October 1, 2007, organizations and agencies that require a professional training program for first responders, 9-1-1 operators, and emergency shelter operators must include in the training program a segment on the rights of individuals with disabilities who are accompanied by service animals.

- Legislation was passed authorizing the establishment of a freestanding medical facility in Queen Anne's County as part of a state pilot project on such facilities. A freestanding medical facility is a facility in which medical and health services are provided, that is physically separate from a hospital or hospital grounds, and is an administrative part of a hospital or related institution.

- The Maryland Health Care Commission must report to the Legislature regarding various aspects of the Trauma Physician Services Fund no later than November 1, 2007, and must report options for reducing the trauma fund surplus.

- MIEMSS will report to the Legislature on the number of off-road vehicle accidents, includ-

ing all-terrain vehicle accidents, that resulted in ED, hospital, or trauma center visits, the extent to which these accidents involve children, State costs associated with the resulting injuries, and recommendations to reduce such injuries. MIEMSS will also study and report on whether automated external defibrillators (AEDs) should be provided on-site at swimming pools and will examine the safety of providing automated external defibrillation at a swimming pool; which swimming pools should be subject to a requirement to provide AEDs; and whether AED-trained individuals should be required at swimming pools.

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, 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.

There were nine Primary Stroke Center designation visits under the MIEMSS review completed during FY 2007. An additional sixteen hospitals had a Joint Commission specialty care accreditation visit. A total of 25 hospitals were designated as Primary Stroke Centers during FY 2007. An additional 6 hospitals are requesting designation for the fall of 2007.

Freestanding Emergency Facilities

The Office continued to collaborate with Maryland's Department of Health and Mental Hygiene (DHMH) to further integrate freestanding emergency facilities into the EMS system. MIEMSS offered constructive input to DHMH's licensing regulations. An EMS protocol systematically determines which patients may be transported to these facilities.

EMS Base Stations

Office staff also continued to collaborate with the Office of the Medical Director on EMS Base Station verification during FY 2007. The staff surveyed four new EMS Base Stations, and conducted follow-up surveys at 13 hospitals. Forty-three hospitals are currently designated as EMS Base Stations.

Geriatric Emergency Medical Services Advisory Committee

As part of an ongoing effort to maintain high-quality emergency medical care, MIEMSS identified a need for geriatric-specific EMS educational programs, evaluation of geriatric emergency assessment guidelines and treatment protocols, and other relevant geriatric emergency management issues. In order to incorporate a geriatric-specific component into the Maryland EMS System, MIEMSS established the Geriatric

Emergency Medical Services Advisory Committee (GEMSAC), consisting of members with clinical knowledge and expertise in geriatric patient care. The committee's primary responsibilities include the evaluation of current geriatric assessment guidelines, recommendations for geriatric-specific protocol changes, advisement on EMS geriatric educational curricula in the future, and research into EMS clinical issues specific to EMS. The committee meets on a quarterly basis and includes representation from physicians and nurses specializing in geriatrics and emergency medicine, EMS providers with geriatric clinical expertise and knowledge, and the Maryland Department of Aging. Issues reviewed within this forum included research on under-triage in elderly trauma patients and the frequency of EMS transports from nursing homes.

Trauma System

MIEMSS collaborated with the Maryland Trauma Network to revise and update the Trauma Triage Decision Tree protocol for EMS providers. The revised protocol is 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).

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 EMS Board approved changes to the current Burn Center Regulation that would allow MIEMSS to designate a Pediatric Burn Center; those changes became effective as an emergency regulation on June 1, 2006, and the designation process was completed in March 2007 with the designation of the Johns Hopkins Children's Center's Pediatric Burn Center. MIEMSS collaborated with Union Memorial Hospital and TraumaNet to propose draft regulations for the designation of a Hand and Upper Extremity Trauma Center. The EMS Board approved the draft, and regulations were promulgated for the Hand and Upper Extremity Trauma Center that will become effective in late August 2007.

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). Online reports containing individual facility alert activity for all hospitals are available on the MIEMSS webpage at www.MIEMSS.org/HospitalAlert/indexCHATS.asp. MIEMSS also updates graphs on a weekly basis that show the percentage of daily yellow alert utilization by region. The graphs can be viewed at http://www.miemss.org/Graphs9.xls. Additionally, MIEMSS monitors emergency medical services (EMS) return to service times recorded on the MAIS (Maryland Ambulance Information System) runsheets. "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 times 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. MIEMSS plans to begin collecting transfer of care times in the near future.

Yellow alert utilization and return to service times continue to remain a concern, especially in Regions III and V. Although yellow alert utilization decreased in 2004, EMS "return to service" times and yellow alert utilization increased in 2005, 2006, and to date in 2007. As in the 2005-2006 flu season, the 2006-2007 season was relatively mild, according to reports from the Maryland Department of Health and Mental Hygiene (DHMH); however, there were still significant increases in alert utilization, primarily around the same time that flu activity peaked, but also for brief periods around the holidays. During

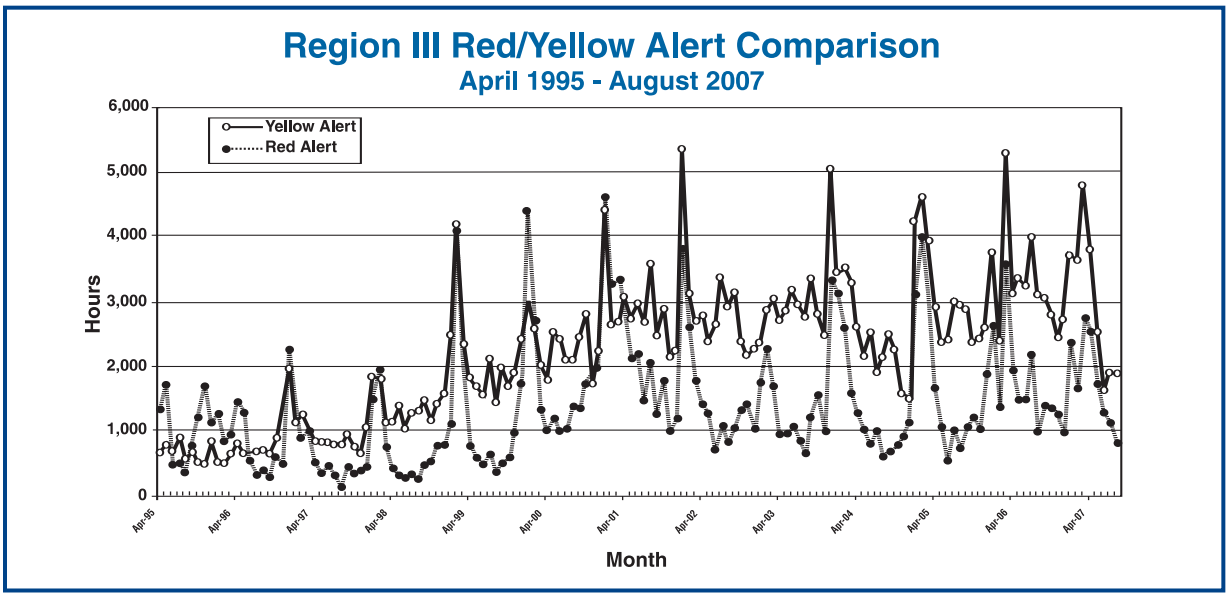
the flu season, MIEMSS monitors alert activity on a daily basis and provides reports to the regions to assist in decision-making regarding implementation of strategies from the Maryland Hospital & EMS Emergency Department Overload Mitigation Plan. No strategies from the Plan were required to be implemented during the 2006-2007 flu season; however, MIEMSS did communicate with individual hospitals as necessary regarding increased and extended durations of alert activity.

National studies, including the 2006 Institute of Medicine's report on the Future of Emergency Care, continue to indicate that inpatient capacity and prolonged throughput times are the largest reason for ED delays. Additionally, the Maryland Health Care Commission issued a report on ED utilization that discusses several aspects of ED overcrowding, as well as several recommended strategies to address the crisis (Maryland Health Care Commission. *Use of Maryland Hospital Emergency Departments: An Update and Recommended Strategies to Address Crowding.* January 1, 2007). On September 25, 2006, MIEMSS, in partnership with the Maryland Hospital Association, hosted a statewide Summit entitled the Maryland Emergency Department Overcrowding Leadership Summit. National and local speakers attended and discussed strategies available for improving inpatient capacity and prolonged throughput times, thus decreasing ED delays. Over 250 participants, including hospital executives, physicians, and nurses, as well as the EMS community and various agencies and organizations such as the Maryland Health Care Commission, DHMH, the Office of Health Care Quality, the American College of Emergency Physicians, and the Maryland State Firemen's Association, were in attendance.

Layperson Automated External Defibrillator Program

The Layperson Automated External Defibrillator (AED) Program continues to flourish throughout Maryland. Under the "public access defibrillation" 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 more than 800 approved programs in the state, totaling 1,992 sites with AEDs and thousands of individuals trained in CPR and AED use. The Maryland Facility AED Program has had 38 successful AED uses out of 212 reported incidents (18%). Success is measured by the patient having a return of pulse at EMS arrival or during EMS transport. Of the overall arrests, 125 were witnessed, and 34 of those witnessed arrests regained a pulse at the time of EMS arrival for a 27% save rate for witnessed cardiac arrests. A list of AED facilities and program information can be viewed at www.miemss.org/AED.htm.

The 2006 legislative session of the Maryland General Assembly passed a new law requiring all Maryland public high schools to have AEDs. This is the first statewide mandate for AEDs in Maryland. During the 2007 legislative session, a bill was introduced to require AEDs at all public 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 is working with the AED Task Force to develop the report. The AED Task Force also 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.

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 2007 EMS Star of Life Awards Ceremony in Annapolis, MIEMSS was proud to honor the AED Program at the Maryland Club for saving the life of one of its members on the squash court in August 2006. The survivor and staff from the Maryland Club were all 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 IT systems for the EMS community.

During FY 2007, 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 22 jurisdictions (Allegany, Annapolis City, Aberdeen Proving Ground, BWI Airport, Calvert, Caroline, Carroll, Cecil, Charles, Dorchester, Frederick, Garrett, Harford, Kent, Martin State Airport, Maryland State Police Aviation Division, Queen Anne's, St. Mary's, Somerset, Talbot, Washington, and Wicomico). 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 Information Technology Department has continued to scan patient care reports during FY 2007 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 its possible to review the text portions of the forms that are not otherwise captured electronically. As of June 2007, MIEMSS has successfully imaged over 3,750,000 MAIS forms.

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.

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 rights through ULS, can run the reports themselves online.

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 on CHATS on the MIEMSS website, which also provides a series of reporting capabilities.

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 IT 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.

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 19,000 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 has been requested by 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 2007, the total number of EMDs, EMT-Basics, CRT99s, and EMT-Paramedics continued to rise while the number of First Responders decreased.

Throughout FY 2007, the Office had a steady workload and issued 3,124 initial licenses and certificates, as well as renewed 7,252 prehospital provider licenses and certificates. The number of initial licenses issued for paramedics and EMDs increased this past fiscal year, compared to previous years, with the number of paramedic licenses

issued per year (212) exceeding the numbers from the past decade. The Office worked with other departments throughout the agency by providing 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 monitored the results of the newly implemented EMT-Basic practical examinations, implemented in July 2006. The new practical examination aligns with the new American Heart Association Guidelines, has a new format which allows for a more objective and precise measurement of candidates' performance, and contains multiple trauma and random basic skills to more comprehensively evaluate entry-level candidates. The pass rates of the new practical examination are consistent with the Committee's expectations. Anecdotally, the end results of the new practical exam have been a better prepared entry-level EMT-Basic, which are attributed to the fact that more classroom time is dedicated to skills.

In addition to monitoring the results of the exam, the Committee also created skills resources for EMS Instructors. The EMS instructor resources help to ensure accuracy and promote consistency in skills instruction. The resources and accompanying instructor workshops during 2007 focused on spinal immobilization. The digital pictures associated with spinal immobilization were placed into dynamic PowerPoint presentations and given to instructors on CDs. The skills resource CDs and workshops were rolled out in all regions of the State and were a huge success. In the fall months of 2007, the BLS Committee will focus on developing instructor resources for lower-extremity long bone injuries. The update sessions will occur in the various regions of the State in the summer months of 2008.

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, efforts are well underway to move the existing test generator and grading system to a web-based system. This 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 available by February 2008. The Council has also continued to develop, pilot, and add examination items to the bank, including several hundred test items from North Carolina, the newest state participating with the AEMSC. The implementation and continued enhancement of the WebTG will allow the Office of Licensure and Certification to maximize the protection of the public by ensuring the certification of competent entry-level providers.

Similar to Maryland's initiatives to maximize exam integrity, the National Registry of Emergency Medical Technicians (NREMT) implemented their computer-based testing (CBT) on January 1, 2007. All of Maryland's EMT-I99 and EMT-P candidates taking the NREMT examination as of January 1, 2007 are required to complete the computer adaptive test. The transition to the CBT will allow for quicker turn-around times of written examination results, as well as increased security and precision of measurement of candidates.

The Office has also continued with initiatives to continually increase the quality of educational services provided to EMS providers, as well as to offset costs. In January, the third annual EMS Educators' Symposium took place at College Park. MIEMSS and the Maryland Fire & Rescue Institute (MFRI) brought in representatives from METI, a medical simulation company based in Florida, to overview the potential that medical simulation has for EMS educational programs. The symposium also allowed for sharing of information between the programs with the ultimate goal of continually improving the quality offered

Level	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
EMD	907	873	731	732	832
FR	11,034	10,551	10,980	10,666	9,306
EMT-B	15,548	15,323	15,609	15,285	15,993
CRT	490	361	312	277	234
CRT-99	136	252	342	505	619
EMT-P	2,332	2,192	2,180	2,200	2,364
TOTAL	**30,447**	**29,552**	**30,154**	**29,665**	**29,348**

EMS Providers (Primary Affiliation)

	EMD	FR	EMTB	CRT	CRT99	EMTP
Region I	20	228	594	9	7	61
Region II	43	276	1,336	4	34	100
Region III	403	3,894	5,665	187	434	921
Region IV	75	477	1,444	15	48	282
Region V	268	2,348	5,492	5	65	652
Commercial	4	11	505	10	28	221
Other (Govt.)	2	1,371	337	0	0	89
Inactive	17	701	620	4	3	38
Total	**832**	**9,306**	**15,993**	**234**	**619**	**2,364**

to Maryland's EMS students. Additionally, the Office continues with the education program approval process with the second round of site visits which started in June 2007. 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 2007, MCISM staff held 67 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 12th Annual Medical Director's Symposium was attended by Regional, Jurisdictional, and Commercial Ambulance Service Medical Directors, as well as Base Station Physician Coordinators. A variety of presentations were given this year:

- Specialty Care Program: Protocol, Dispatch Screening, and Quality Assurance
- Trauma Decision Tree, System Resource Utilization, Special Considerations and Protocol Clarification
- The Institute of Medicine Report on the Future of Emergency Care in the U.S. Health System
- The Institute of Medicine Report on the Future of Emergency Care in the United States Health System–Pediatric Considerations
- Maryland EMSC Program: EMSC–Growing Pains and EMSC Partnership Grant, Federal EMSC Performance Measures
- Proposed Protocol Submission Request Policy and Template
- COMAR Title 30.02.04.01-Prohibited Conduct

- EMTALA: Emergency Medical Treatment and Active Labor Act
- Introduction to EMAIS®: PCR and Aggregated Reports
- Program Update: EMS Base Stations and Primary Stroke Centers

The 2007 updates and revisions for the *Maryland Medical Protocols for EMS Providers* manual took effect statewide January 2007. Several months later, a Protocol Clarification Document was issued to EMS providers, designed to interpret variations in protocols and to remove inconsistent dosing, route, or joules settings. The clarifications have been incorporated into the statewide EMS Protocols manual. There will be an additional roll-out required for all EMS providers (ALS and BLS) prior to July 2008 called "Trauma Decision Tree, System Resource Utilization, Special Considerations and Protocol Clarification" that will cover the Trauma Decision Tree, capacity alert resources, system resource utilization, START, Glasgow Coma Scale review, pelvic fracture assessment, stroke patient assessment, special considerations and protocol clarification.

The Office of the Medical Director continued quality monitoring of the Base Station hospitals. This ensures quality on-line medical direction and a quality review process for Base Station hospitals giving real-time medical consultations with EMS providers. Multiple base station instructors have been approved to expand the instructor pool for this curriculum. This has made the Base Station Course more available and ensures that each hospital has the opportunity to provide courses for new staff and annual EMS protocol updates.

The Office of the Medical Director, under the lead of the National Study Center, provided international disaster preparedness education as part of a National Institutes of Health Fogarty International Center grant. The target audience for this grant is public health and system physicians from Egypt, Iraq, and the Middle East. The program includes a comprehensive table-top disaster exercise which challenges each of the students to identify system improvements that they could incorporate within their home country's disaster preparedness plans. This program was initiated in Amman, Jordan for Iraqi public health physicians and has been repeated several times in Cairo, Egypt. The participants and their sponsoring entities have been very positive about the courses, their educational experiences, and the impact of knowledge gained.

The Maryland Emergency Medical Services System is viewed internationally as one of the premier comprehensive programs, and this last year it had multiple visits from countries seeking to advance their developing EMS system. MIEMSS provided tours and comprehensive system overviews for delegations from Israel, Egypt, Russia, Korea, and China. Through this exchange, not only did the guests come away with a better understanding of the Maryland EMS system, but models of other programs influenced protocols and policies within Maryland to improve its capabilities.

The Office of the Medical Director was the liaison to the National Conference of Commissioners on Uniform State Laws (NCCUSL), representing both the National Association of State EMS officials and the American College of Emergency Physicians. The Model State Law entitled, "Uniform Emergency Volunteer Health Practitioner Act," had two sections that were under consideration that had significant potential impact on the EMS, nursing, and physician immunity and workman's compensation protections. Multiple subcommittee meetings were held with representation for constituent parties, including the American Trial Lawyers Association (now called the American Association for Justice) and multiple health practitioner organizations, including the American Medical Association, the American Red Cross, and the American Nurses Association. Model language was proposed from this working task force to the Annual Meeting of the NCCUSL, which was held in Pasadena, California. With minor amendments, the Immunity and Workmen's Compensation sections were approved with a vote of 48 supporting, 1 abstention, and 1 nay vote.

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 providers 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." During FY 2007, the newsletter continued 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. An update of the *Maryland Medical Protocols for EMS Providers* was completed, including editing, layout, and design. These documents can also be found on the MIEMSS web page.

This year the annual EMS Week Stars of Life Awards Ceremony was held in Annapolis with the assistance of Deputy Secretary of State Brian Moe. He assisted with both the EMS for Children "Right Care When it Counts" Awards and the Stars of Life Awards. Governor's proclamations in recognition of EMS for Children Day and EMS Week were presented. Press releases were distributed statewide and media coverage obtained on the award winners.

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 Maryland Highway Safety Grant, “Impaired Driver Prevention Media Campaign,” which included posters, statewide television Public Service Announcements (PSAs), public awareness events, and press conferences. Participation 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.

The Office provides 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.

The MIEMSS exhibit is utilized to spread information about the EMS System and prevention topics. It was in use 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 prevention information from the Maryland Poison Center.

Several training modules were produced during the past year. These included “The Prehospital Protocol Update,” “Quality Assurance (QA) Officer Training,” “Safe Transport of Children,” “National Disaster Life Support Training (Maryland Coalition),” and "Spinal Immobilization for Adult and Pediatric Patients." These modules were produced on compact disc 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 the Child Passenger Safety program.

Video projects included the documentation of various Haz-Mat and multi-casualty disaster drills throughout the State. Other projects included "Trauma Prevention for Risky Behaviors" and "In the Eyes of Glory," which documented the sculpture process and erection of the Fallen Firefighter Memorial in Annapolis and involved a close working relationship with the Maryland State Firemen's Association (MSFA). “In the Eyes of Glory” included information on the line of duty deaths and the extreme dedication our emergency services providers give on a daily basis. 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. Participation with the 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 pub-

lic 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 eleven years, MIEMSS, like all State agencies, has been required to submit a Managing for Results (MFR) plan 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 six associated objectives. Two objectives are outcome oriented, while the remaining four 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 Maintain an overall inpatient complication rate of 10% or less for Maryland trauma centers.

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

Objective 2.1 Ensure all jurisdictions use a uniform set of quality indicators for prioritized emergency medical dispatch (EMD) services.

Objective 2.2 See that jurisdictions achieve or exceed 90% compliance with prehospital provider standards of care per the "Maryland Medical Protocols" annually.

Objective 2.3 Maintain an EMS response incident location to hospital base station communication at a successful completion rate of 95% or better.

Objective 2.4 Maintain at least an 85% rate for seriously injured patients transported to a designated trauma center in Maryland.

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 100 providers have attended workshops at Pyramid and EMS Care 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. A two-day core curriculum was modified and presented at EMS Care '07 and two other jurisdictional programs. Additionally, this same course was incorporated within the JEMS '07 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. Through the work of MIEMSS and the Regional Jurisdiction Quality Improvement Committee, proposed regulations were submitted for comment, and Fall 2007 is the anticipated implementation time frame.

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. Additionally, detailed analyses of the triage and airway maintenance of geriatric trauma patients have continued, and findings have been presented to the EMS community for the development of improvement strategies. These initiatives have lead to two publications in national journals.

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 second funding request for EMAIS® upgrades and mobile solution approaches again received high priority. 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 National EMS Information System (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 1300 requests have been tracked and facilitated. Profiles of requestor, types, format, and content are reviewed at the end of each year so that MIEMSS' routine, non-confidential reports are modified to better meet the most common needs of data requestors.

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. The pie chart below shows the wide distribution of activities in which the offices were involved.

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.

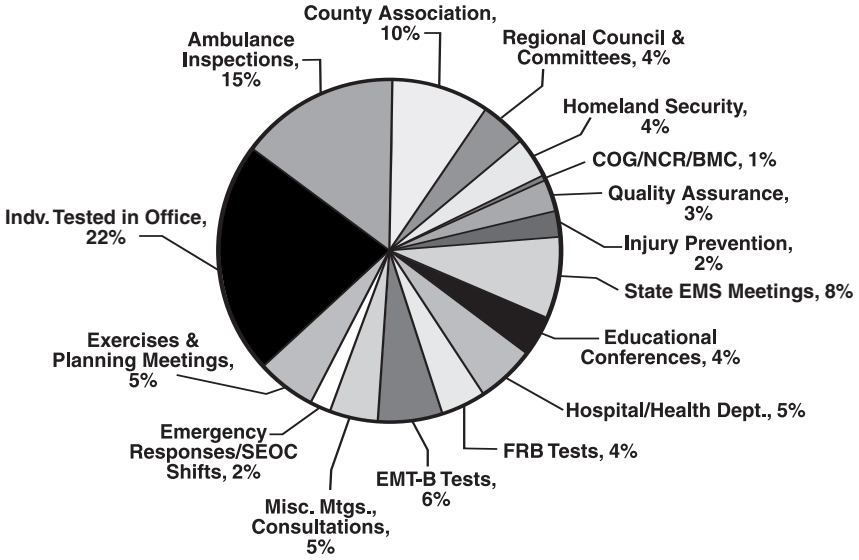
Grant Programs

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

Regional Program Activities



Safety Administration. The Regional Councils and the SEMSAC Regional Affairs Committee review these requests for rescue equipment, personnel safety equipment, mass casualty supplies, and rescue and safety training. The Region I Administrator participated at the summit that was sponsored by the Maryland Office of Highway Safety and serves to set the priorities for Highway Safety activities.

Health Resources & Services Administration (HRSA)

HRSA 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 HRSA, can be found on page 61.

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 Federal Emergency Management Agency (FEMA) awarded $294,000 to Allegany and Garrett counties under the Staffing for Adequate Fire and Emergency Response (SAFER) Grant program. The MIEMSS Region I Office had prepared the grant application. Region I also secured $7500 for ATV safety education from 4-H and is coordinating the administration of that grant. The Bystander Care Grant, funded through the Maryland Office of Highway Safety for $26,000, is in its third year and expanded its target area from Region I to the entire state. This fiscal year 504 students completed the Bystander Care course.

Urban Area Security Initiatives (UASI)

Both Regions III and V receive funding under the Department of Homeland Security (DHS) Urban Area Security Initiative. Through the work of the Region III Health and Medical Task Force organized by the Region III office under the Statewide Health and Medical Committee, $500,000 was awarded for a cache of prophylactic medications to protect responders during a biologic event. 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 receive. 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. A total of 25 hospitals were designated as Primary Stroke Centers during FY 2007, and additional hospitals will be designated later in 2007. (See page 34 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.

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.

Medical Review Committees

Regional Administrators have been instrumental in the establishment of Medical Review Committees since the establishment of the Medical Direction Regulations in COMAR, Title 30. This year Region IV assisted in updating the Dorchester County Medical Review Committee. This included writing a new medical review committee plan, identifying new and updated membership, and assisting in coordination between the committee, the Dorchester County EMS Advisory Council, and the Jurisdictional Medical Director. The Medical Review Committee Plan is redrafted and is due for final approval at their September 2007 meeting.

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 Council and coordinated four Quality Assurance Officer Courses this fiscal year. Over 100 people have completed this course. Six courses are scheduled for FY 2008. As part of the quality improvement effort, the Regional Jurisdictional Quality Improvement Council developed an "EMS One" Course to familiarize new EMS officers with State programs and operations. This program was piloted at EMS Care 2007.

Although no new local programmatic assessments were completed this year, Allegany and Garrett Counties' Commissioners initiated implementation of the recommendations from the FY 2006 Strengths, Weaknesses, Opportunities, and Threats study (SWOT) that was conducted by MIEMSS. In Allegany County, an EMS Chief was hired, planning for a Length of Service Award Program was initiated, and steps were begun to hire ALS personnel. In Garrett County, an Emergency Services Board was officially established, an Emergency Services Coordinator was hired, and steps are being taken to initiate a Length of Service Award Program.

VAIP

The regional offices continue to perform inspections of ambulances under the Voluntary Ambulance Inspection Program (VAIP). This year the offices completed 290 inspections. The Region I Office initiated the statewide committee to update the Voluntary Ambulance Inspection Program guidelines to account for protocol changes. These should be complete by the end of 2007.

Conferences and Training

Conferences

The Regional Offices support various regional and statewide conferences. Pyramid 2006, Southern Maryland's 18th annual EMS Conference, was held October 20-22, 2006 in Solomons. EMS providers from across the State came to participate in this educational weekend that featured presentations on the future of EMS and ongoing challenges. The program concluded with "EMS: Survivor Style," an educational game hosted by Richard Alcorta, MD. The Winterfest Conference held in January 2007 marked its 10th anniversary. Over 200 providers throughout the state attended to hear educational presentations provided by, among others, Robert Bass, MD, Richard Alcorta, MD, Gordon Graham, and Randolph Mantooth. In addition to the outstanding speakers and breakout sessions, the program

offered special classes in water rescue, ATV safety, and a 12-hour skills class.

In Region I, the Miltenberger Emergency Services Seminar was held March 10 and11, 2007, with over 400 individuals participating (911 dispatchers, fire personnel, EMS responders, nurses, and physicians). This year's seminar included pre-seminar workshops on moulage, ambulance safety, and a case review for physicians. Region V also supported EMS Care 2007 as it partnered for the first time with ENA by the Bay, an educational conference for nurses sponsored by the Maryland Emergency Nurses Association. Held April 13-15, 2007, EMS Care 2007/ENA by the Bay covered a broad spectrum of educational topics for both EMS and nurses.

The Sixteenth Annual Peninsula Regional Medical Center Trauma Conference was held September 22, 2006 at the Clarion Resort Fontainebleau in Ocean City. The theme for this year's conference was "Topics in Trauma." Speakers from the Children's Hospital at Vanderbilt, the Johns Hopkins Hospital, R Adams Cowley Shock Trauma Center, and MIEMSS were presenters. The conference was host to approximately 200 physicians, nurses, and prehospital providers.

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. Among some of this past year's topics were Pediatric Case Reviews, ATV Safety Instructor Courses, and Methamphetamine Lab Recognition. All of the regions support the EMAIS® and Protocol Rollout classes. Other programs, such as "EMS One" and National Incident Management System (NIMS) training and incident command classes, are mentioned in other sections of this report.

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 (Statewide EMS

Advisory Council) 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 88 First Responder and 119 EMT- Basic exams for classes, as well as 443 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 23 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 12 incidents. Some were planned events that EMS supported, such as the Repatriation of U.S. Citizens from Lebanon through BWI Airport, the Preakness at Pimlico Race Course in Baltimore City, and Governor Martin O'Malley's Inauguration in Annapolis. Some of the more unfortunate events in which the regional offices assisted included the evacuation of a senior housing facility due to flooding in Montgomery County, the full evacuation of an assisted living facility in Towson, and elevated carbon monoxide levels in a nursing home in Baltimore City.

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 training in Web Emergency Operations Center (EOC).

A new Region II committee is planning for accommodating evacuees from metropolitan areas; increasing their alerting, resource, and patient tracking capabilities; and improving their interoperable communication systems. The Region III Task Force was formalized and is now responsible for overseeing the UASI health and medical projects mentioned previously. They submitted four projects totaling $8 million for consideration by the Urban Area Working Group. Region IV has been planning for an upcoming Pandemic Influenza Exercise testing hospital surge capacity and Emergency Medical Dispatch protocols for times of medical surge. The Region V committee has been coordinating the work of the various local health collaboratives and the National Capital Region initiatives.

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 identified four goals. They include improving redundant communication, setting procedures for the use of the Voice Over Internet Protocol system, documenting all the line of communication for health and medical assets, and drafting requirements for a new emergency management application for health and medical that will enhance the functions of FRED and the County\City Hospital Alert Tracking System (CHATS). They completed the list of requirements that MIEMSS is now using to contract with a vendor.

The EMS Focus Group has redrafted the Mass Casualty/Catastrophic Incident (MCCI) Plan and

is working with all interested parties to gain approval for the plan. It should be finalized during the fall of 2007 with implementation of its components, including Ambulance Strike teams, taking place next year.

The Hospital Focus Group, staffed by the Maryland Hospital Association, conducted Public Information Officer training during the past year and is planning to do Hospital Incident Command: Train the Trainer courses over the next year.

The Health Facilities Evacuation TAG, staffed by DHMH, is working on model evacuation plans, and the Medical Surge TAG, also staffed by DHMH, is also continuing its work to formalize a Medical Surge Operational Plan

Mutual Aid Agreements

In February 2007, the Region II Office facilitated the signing of a memorandum of understanding (MOU) by the members of the Tri-Sate Health Care Coalition. This allows organizations to share resources, information, and personnel not only between counties but across state lines. The agreeing organizations include Allegany, Frederick, Garrett, and Washington County Health Departments, Frederick Memorial Hospital, Washington County Hospital, Western Maryland Healthcare System, Garrett County Memorial Hospital, and City Hospital and Jefferson Memorial Hospital in West Virginia.

Both Montgomery County hospitals and healthcare facilities and those in Prince George's County had previously established similar MOUs in each county that have provided the models for such agreements. The hospitals in the tri-county area of Southern Maryland have also entered into a similar MOU.

Emergency Response Exercises

MIEMSS regional offices supported more than 15 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 a multiple-site, multidisciplinary mass casualty incident (MCI) in Harford County, the CMAX '06 exercise in Montgomery County and the National Capital Region to test hospital MOUs and communication, and multiple motor vehicle crashes at the end of I-70 in Baltimore County. In Kent County, Region IV assisted the Chester River Hospital Center and the county Emergency Management and EMS and Health departments to conduct a drill to simulate an ongoing weather and healthcare event over a 3-day period. The hospital was able to test its incident command system, and the prehospital providers were able to respond in simulated conditions with the transport of a limited number of patients to the hospital. Other exercises included the following:

- Washington County Hospital: Winter Weather Plans
- Washington County Emergency Services: MCI
- Frederick County: MCI
- Calvert County: Hazardous Materials Incident
- St. Mary's County: MCI/HazMat
- University of Md. Medical System: Multiple Explosions/MCI
- Prince Georges County: Hospital Communication
- Garrett County: MCI

At the request of the Dorchester County Volunteer Firemen's Association, the Region IV Office was asked to coordinate efforts between the Dorchester General Hospital and the Drill Committee to assist in the planning of a drill which will be held in Fall 2007.

Staff Training

As emergency response duties increase, the need for more education for the regional administrators has become a priority. This year all regional administrators and associate administrators completed the National Incident Management System (NIMS) training up to the 400 level courses (IS 100, 200, 700, 800 and Command and General Staff Course). They also completed Web EOC training and are encouraged to attend and support local training for hospitals and public health in the emergency preparedness arena. Next year's training may include Ambulance Strike Team Leader and Strategic National Stockpile courses.

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 the Maryland Emergency Management Agency (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.

Chempack

The Region V Administrator escorted representatives of Centers for Disease Control on a 7-day sustainment visit to all sites in July 2006. In June 2007 sustainment visits were covered by staff in each region. Additionally hospital and field familiarity programs have been developed.

Region-Specific Activities

Region I

The MIEMSS Region I Office organized the Western Maryland Communication Summit held in September 2006 with an audience of over 100 individuals. Updates were provided by local and state agencies (911 Centers, MEMA, and MIEMSS) to make all participants aware of the dramatic changes/improvements that are occurring for EMS and communications in Region I.

The Western Maryland EMRC was two-thirds completed, with Allegany and Garrett Counties coming online in March and May, respectively. Washington County is expected to be included in the early months of FY 2008.

The Region I Administrator participated with the Garrett County Health Assessment Task Force in a needs assessment.

Region II

The Region II Administrator has led Regional programs to coordinate the offices' support for all emergency response exercises. He has maintained the MIEMSS Emergency Response Exercise Calendar and coordinates this with MEMA's calendar. He ensures that all requests for support for exercises are addressed. This year he was able to obtain inflatable manikins with pumps and carrying cases for each of the regional offices.

Region III

In 2005, Base Realignment and Closure (BRAC) legislation was passed, initiating a process to reorganize the Department of Defense's base structure to more efficiently and effectively support our forces, increase operational readiness, and facilitate new ways of doing business. In anticipation of the largest surge of individuals moving into the Ft. Meade area of Anne Arundel County since World War II, the MIEMSS Region III Office worked with expanded Ft. Meade administration to update key personnel on Maryland Emergency Operations procedures. Attendees were oriented to key systems and practices, such as FRED, EMRC/SYSCOM, and the Maryland Triage System. This training assisted Fort Meade in planning for a full-scale emergency exercise that is expected to occur in early October 2007.

Region IV

The Region IV EMS Advisory Council unanimously recommended Dr. Daniel Ochsenschlager to fill the vacancy for Pediatric Medical Director. Dr. Ochsenschlager is well known to the EMS for Children community and is a leader in pediatrics. He was formerly involved as the Pediatric Medical Director for EMS Region V. He has offered his assistance in the recruitment of additional pediatricians and is assisting with education throughout Region IV. Dr. Ochsenschlager is a welcome addition to the Region IV EMS Advisory Council.

The Region IV Office was asked to coordinate efforts between the Dorchester General Hospital and the Drill Committee to assist in the planning of a drill that will be held in the Fall of 2007. As part of this planning process, the Region IV Office scheduled and hosted three additional training programs at the request of the Firemen's Association to deal with medical education, trauma education, and triage enhancement.

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. 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 2006-May 2007:

7 New Service Licenses Issued
- 2 Basic Life Support Services
- 1 Advanced Life Support Service
- 1 Air Ambulance Service
- 3 Specialty Care Services

72 Vehicles Inspected
- 15 BLS Vehicles
- 12 ALS Vehicles
- 17 Specialty Care
- 28 License Change Inspections

June 2007:

34 Ground Ambulance Service Licenses Issued
- 9 Basic Life Support Services
- 25 Advanced Life Support Services
  - 3 Specialty Care Services
  - 3 Neonatal Services

3 Air Ambulance Service Licenses Issued

284 Annual Vehicle Inspections in June 2007
- 170 - BLS vehicles
- 85 - ALS vehicles
- 17 - Specialty Care
- 12 - Neonatal vehicles

FY 2007 marked the fourteenth year of operation for the State Office of Commercial Ambulance Licensing and Regulation (SOCALR). In addition to carrying out its mission of ensuring patient and provider health, safety, and welfare, the Office continued its efforts to optimize commercial EMS' efficiency and effectiveness of care in order to maintain alignment with MIEMSS' statewide vision for the EMS system.

Overall, the status of the commercial ambulance industry during FY 2007 can be described as one of "steady growth." During FY 2006 the number of ground services dropped slightly from 33 to 31 (6% decrease) and during FY 2007 rebounded with the number of ground services increasing from 31 to 34 (8% increase). In FY 2007 the number of vehicles climbed from 262 to 284 (8% increase). Within the vehicle category, the BLS vehicles exhibited a marked increase from 148 to 170, a 13% increase.

In addition to the day to day licensing activities described above, the Office continued progress on core initiatives. Foremost, progress continued on applying the Specialty Care Transport regulations. Three services were issued licenses to provided Specialty Care Transports (SCT), and several more services are working toward SCT licensure.

Progress continued on two long-term initiatives assigned to the office under the EMS Plan. Subject matter experts at the Centers for Disease Control's National Institute of Occupational Safety and Health (CDC/NIOSH), the American Ambulance Association (AAA), and the National Study Center for Trauma and Emergency Medical Systems (NSC) have been instrumental in focusing efforts of office staff to mitigate hazards faced by patients and providers in commercial EMS. In a continuing effort to improve passenger safety during ambulance transports, SOCALR joined forces with the Emergency Medical Services for Children (EMSC) Program at MIEMSS to establish a Safe Transport in Ambulance initiative. With input from experts within the commercial ambulance community, the Safe Transport in Ambulance project is working to educate and promote best practices that will lead to safer ambulance transports.

SOCALR also continued working to facilitate commercial EMS' contribution to disaster response. Office staff participated on the MIEMSS Field Operations Support Team (FOST) and facilitated commercial ambulance involvement in the repatriation of American citizens returning from Lebanon. Over the course of 8 days, approximately 4,492 repatriates arrived at BWI, with those in need being provided immediate medical assistance. Additionally, SOCALR and commercial services played an important role in the revision of the Mass Casualty Catastrophic Incident (MCCI) plan.

In summary, consistent with the overall mission of MIEMSS, SOCALR continued to provide leadership in issues related to clinical care, education, healthcare policy, and system operations. SOCALR will continue efforts toward the regulatory review, thereby ensuring that the commercial ambulance regulations remain relevant and reflective of state-of-the-art practices in interfacility transport. Similarly, it will continue to advocate for and contribute to the creation of objective, rigorously reviewed, and scientifically valid standards for patient and provider protection, within the context of high-quality commercial EMS operations. Finally, it will continue to support planning, organizing, providing, and evaluating the role of commercial EMS in disaster response.

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: Adult

Johns Hopkins Burn Center/The Johns Hopkins Bayview Medical Center, Baltimore City
Burn Center/Washington Hospital Center, Washington, DC

Burns: Pediatric

Johns Hopkins Children's Center, Baltimore City
Children's National Medical Center, Washington, DC

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
Franklin Square Hospital Center
Good Samaritan Hospital
Greater Baltimore Medical Center
Harbor Hospital Center
Holy Cross 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
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
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 6,247 trauma patients from June 2006 to May 2007, according to the Maryland Adult Trauma Registry. (See pages 62 to 71 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.

Shock Trauma Center staff were very active in prehospital EMS educational activities. Tours were given to 35 groups. Evening educational programs open to prehospital care providers were held quarterly and linked to broadcasts in the Western Maryland Health System in Cumberland, the Peninsula Regional Medical Center in Salisbury, the Cecil County Department of Public Safety, and Easton Memorial Hospital. There were 135 EMS providers who participated in 12 ALS Airway Skills Labs. In the Observation Program, 277 EMS providers observed in the Trauma Resuscitation Unit, and 196 EMS providers in Critical Care. In addition, 46 on-site clinical programs were held at firehouses, training academies, and EMS conferences.

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 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 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	

Trauma," by studying methods designed to reduce blood transfusions, control hemorrhage, and reduce mortality in trauma patients.
- Developed and tested innovative teaching methods to improve patient safety through better trauma residency training, and better compliance to sterile techniques, through the newly created Patient Safety Research section.
- 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.
- Is participating in an ongoing study seeking to identify biological markers of sepsis in patients' blood, and to validate their ability to detect sepsis 24 hours or more prior to the onset of clinical symptoms. The goal of this study is to develop a clinical assay which will aid in the early diagnosis and management of sepsis.

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 multidisciplinary 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 four counties: Cecil, Anne Arundel, Frederick, and Howard. In addition, other counties (Baltimore, Carroll, 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.

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

A similar on-site program is provided to adult DWI offenders. During FY 2007, 234 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 conferences throughout the state. The program is working with the UMMC Foundation prevention committee to provide the program to private high schools. The Prevention Program was featured in *Nursing Spectrum*, (January 2007). 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, Mrs. Yohn and Mrs. Stiff have taught over 4000 people in their "court ordered" classes. Presentations to judges, high-school students, driving classes, drug courts, the U.S. military, businesses, and health fair/convention participants have reached over 15,000 people. Specially tailored presentations have been given to approximately 1000 people.

PADDD was honored with the Governor's Award for Community Programs. It currently is involved in educational activities around the state and has been featured on Channel 45's “Street Talk,” which is carried on cable in three counties in Maryland, and interviews have been done for WTTR Radio in Carroll County.

PADDD participates in the IDC Task Force, the Maryland Strategic Highway Safety Planning Committee, MAPPA, Crash Coalition, Partnership for a Safer Maryland, Seniors on the MOVE, the Young Driver Task Force, and other organizations. It is funded through educational fees, donations, and 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 departments, 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 in schools in Anne Arundel County.

Level I

The Johns Hopkins Hospital, Adult Trauma Center

Located in Baltimore City, the Johns Hopkins Hospital Adult Trauma Center reported receiving 2,537 trauma patients from June 2006 to May 2007, according to the Maryland Adult Trauma Registry. (See pages 62 to71 for patient data in various categories.) Edward Cornwell III, MD, FACS, FCCM, serves as Director of The Johns Hopkins Hospital Division of Adult Trauma, and Kathy Noll, MSN, is the Trauma Program Manager. David Efron, MD, Elliott Haut, MD, and Adil Haider, MD, MPH, are the division's full-time trauma surgeons. Preeti John, MD, MPH, is the Adult Trauma Service Fellow. David Chang, PhD, MPH, MBA, is Assistant Professor of Surgery and Acting Director for The Johns Hopkins Center for Surgical Trials and 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 17 consecutive years (1991-2007), received over 2500 adult trauma patients in the past 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 has enhanced its service, and now has a core 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. Edward E. Cornwell III, Director of Adult Trauma Services, has a joint appointment as Professor of Surgery and Anesthesia & Critical Care Medicine at The Johns Hopkins Hospital, and an appointment in the Department of Health Policy and Management at The Johns Hopkins School of Medicine. Dr. Cornwell has maintained extensive involvement with the non-profit J.E. Hart Foundation. The foundation makes numerous community presentations, and is creating a

public service announcement (Hype vs. Reality), designed to draw a response to society's glamorization of violence. As part of his many trauma prevention activities, Dr. Cornwell continued his membership on the Board of the American Trauma Society (state), and he is a member of the Committee on Trauma of the American College of Surgeons. Dr. Cornwell also works with the Fort Worthington Police Athletic League (PAL) Center and New Song Community Learning Center in the Sandtown neighborhood of West Baltimore.

Kathy Noll, Trauma Program Manager for the Adult Trauma Service, maintains her membership in TraumaNet; Maryland 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 as a member of the Steering Committee of Partnership for a Safer Maryland, whose mission is to raise awareness of injury and violence prevention, and incorporate the resources of injury prevention programs within the State. She was instrumental in planning "Trauma Care 2007," the inaugural trauma symposium sponsored by the Maryland Committee on Trauma. She continues as a lecturer on trauma nursing topics, and has co-authored several trauma research articles.

Dr. Elliott R. Haut 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. He is active in numerous professional organizations, including membership in the Eastern Association for the Surgery of Trauma (EAST) program committee, which sets the agenda and reviews abstracts for the annual scientific meeting.

Dr. Haut has research interests in both trauma and critical care. He has edited a book entitled "Avoiding Common ICU Errors." His ICU research focuses on prevention and treatment of anemia in the Intensive Care Unit. He was awarded the American College of Chest Physicians Young Investigator Award for his presentation entitled "Anemia Management Program (AMP) Reduces Transfusion Rates and Costs in a Surgical Intensive Care Unit: A Prospective Study." His main trauma research interests relate to trauma systems and care delivery models, as well as deep vein thrombosis and pulmonary embolism prevention.

Dr. Haut is heavily involved in education at many levels. He is an Assistant Program Director for the General Surgery Residency at Johns Hopkins Hospital. He is an instructor for both the Advanced Trauma Operative Management course (co-sponsored by Shock Trauma and Johns Hopkins Hospital) and ATLS. Other teaching endeavors include focuses on medical student, resident, public health student, and nursing education, as well as instructing at the Johns Hopkins Wilderness Medicine course.

Dr. David Efron has had a joint appointment as an Assistant Professor of Surgery and Anesthesia and Critical Care Medicine at the Johns Hopkins Hospital since July 2004, where he plays an active role in the care of trauma patients, as well as general surgery patients. He is 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, and he is a reviewer for *Practical Reviews in Critical Care Medicine*. He also has an appointment at the Johns Hopkins University School of Nursing as Assistant Professor of Surgery. Dr. Efron received the Junior Faculty Fellowship grant in July 2005 from the Surgical Infection Society Foundation for Research and Education for his work on the "Mechanism for the Attenuation of the Septic Inflammatory Response Following HMG-CoA Reductase Inhibition." He continues basic science investigation in sepsis and the inflammatory response in critical illness, as well as investigation into the protective role that statins may play following traumatic injury. Additionally, he has an active interest in urban trauma mortality and recidivism. He was appointed to be Medical Director of Parenteral and Enteral Nutrition Support Services at the Johns Hopkins Hospital in February 2005.

Dr. Adil Haider is Assistant Professor of Surgery at the Johns Hopkins Hospital. Dr. Haider completed his surgical residency in 2005 and his fellowship in Surgical Critical Care in 2006. He further completed an additional fellowship in Trauma and Emergency Surgery in June 2007 and joined the full-time faculty in July this year. 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. In addition, Dr. Haider, who also holds a Masters in Public Health, has recently published several high-profile manuscripts identifying ethnic and gender disparities in outcomes among critically injured patients.

Dr. Preeti John is the Trauma Fellow and a Clinical Instructor in the Department of Surgery at The Johns Hopkins School of Medicine. She is a diplomate of the American Board of Surgery & has an MPH degree from the Johns Hopkins University School of Public Health. Dr. John completed a combined fellowship in Surgical Critical Care/Trauma at UMDNJ, Newark (University of Medicine & Dentistry, New Jersey) in June 2007 and is now doing another fellowship in Trauma/Acute Care Surgery with a focus on teaching surgical and emergency medicine residents and students.

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. At Hopkins, Dr. Chang is the Acting Director for the Johns Hopkins Center for Surgical Trials and Outcomes Research, leading the effort to establish a new research center to support the clinical outcomes research activities in the Department of Surgery.

Level II
Johns Hopkins Bayview Medical Center Trauma Center

Located in Baltimore City, the trauma center at Johns Hopkins Bayview Medical Center entered 1,347 trauma patients from June 2006 to May 2007, into the Maryland Adult Trauma Registry. (See pages 62 to 71 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 2007, the center registered 1,347 patients in the Maryland Adult Trauma Registry, with outcomes data secured in the upper levels of expected outcomes in centers dedicated to the treatment of trauma victims.

JHBMC Trauma is designated as a Level II adult trauma center. The trauma team members and the hospital administrators have dedicated resources and made personal commitments to those areas necessary to provide a successful trauma program. They take pride in this achievement, have reinforced the center's strengths, and bolstered many other areas. Beginning June 2007, trauma service resources were formally consolidated under the care of Dr. Paul Freeswick and Dr. Rob Gibson, with the assistance of Michael Cooley, CRNP. All trauma inpatients are admitted or transferred to the care of this clinical team. Also, a trauma outpatient clinic has been developed with all follow-up visits scheduled there. The clinical trauma team feels this provides consistency and familiarity since patients are seen by the same team of providers.

JHBMC continues its reviews of cases that trigger audit filters. These reviews involve sub-specialists from JHBMC (that is, neurosurgeons, orthopedic surgeons, plastic and reconstructive surgeons) who are directly involved with trauma care. Review findings are tracked and trended in the newly acquired Outcomes Registry.

Our policy for trauma diversion continues to allow the trauma center to remain open to receive patients an average of 99% of available hours each month. In addition, Bayview has adopted the categorization of trauma patients to guide its response to the trauma patient. During the prehospital radio consultation, EMS providers will be asked, in addition to priority designation, the assigned category for each trauma patient.

The Trauma Service at Bayview continually recognizes the role an aging population has in the evolution of trauma. Given that the JHBMC campus is a world-renowned center for the diagnosis

and treatment of the geriatric patient, with the support of the Johns Hopkins Care Center, Bayview's trauma service and its gerontologists combined forces to address the special needs of the elderly trauma patient. This allows for formal medical oversight by the geriatrics and trauma services to provide optimum care to this growing population.

In summary, the JHBMC Trauma Service is a multi-disciplinary unit 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 Trauma Center at Prince George's Hospital Center continues to provide optimal trauma care for the steady trauma patient volumes they continue to receive. According to the Maryland Adult Trauma Registry, Prince George's Hospital Center received 3,115 trauma patients from June 2006 to May 2007. 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 Interim Trauma Program Manager. Deborah O'Brien, RN, is the Interim Assistant Department Manager.

The Prince George's Hospital Center (PGHC) serves 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.

Through ongoing Quality Management, the Trauma Service at PGHC strives to provide optimal quality of care to trauma patients. Quality management activities include daily patient rounds, monthly peer review, and Grand Rounds/Morbidity and Mortality Reviews. The Grand Rounds/Morbidity and Mortality Reviews are attended by RNs, PAs, medical residents, and ancillary departments, such as physical therapy, and provide a forum for a multi-disciplinary perspective on trauma care and outcome improvements.

PGHC has been active in trauma/injury prevention legislative initiatives. During the 2007 legislative session, Dr. Carnell Cooper provided testimony in support of the motorcycle and ATV helmet laws.

The annual education symposium, "Emerging Trends in Trauma, Orthopedics and Cardiology for the Primary Care Clinician" was held in December 2006. The program targeted the current care and treatment trends of trauma patients for physicians, nurses, and prehospital care providers.

As part of their 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 last year, the trauma service sponsored nearly 40 Ross medical students, providing them with extensive experience in trauma care.

This year, the Prince George's Hospital Center Foundation announced Sandy Waak, RN as the recipient of the First Annual 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 worked at Prince George's Hospital Center. The purpose 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.

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.

The hospital continues to improve its emergency preparedness plan through collaboration with regional partners and with grant funding opportunities to purchase necessary equipment for the management of patient surges and potential threats, such as biological and chemical disasters. The hospital is an active member of the Prince George's 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.

Over the past fiscal year, the hospital has participated in a regional (county-wide) tabletop disaster drill; conducted a biological functional and tabletop drill with Doctors Hospital, the Health Department, and other Dimensions facilities; and also participated in the Apothe-Cary Statewide Drill.

The Trauma Service received the funds that were raised at this year's Gala and Strata Celebration, sponsored by the Prince George's Hospital Center Foundation. The hospital is also excited to have been the recipient of several grants over the last year, making it possible for the hospital to purchase additional state-of-the-art trauma and disaster preparedness equipment.

Level II

Sinai Hospital Trauma Center

Located in Baltimore City, the Trauma Center at Sinai Hospital reported receiving 1,673 trauma patients from June 2006 to May 2007, according to the Maryland Adult Trauma Registry. (See pages 62 to 71 for additional patient data in various categories.) Thomas Genuit, MD, MBA, FACS, has served as the Trauma Director since 2003, and Patricia Lubbert, RN, TNCCI, continues to serve as program coordinator with the support of a full-time registrar and administrative support staff.

While the number of patients cared for by the Trauma Center at Sinai remained relatively stable compared to the previous year, the injury severity has continued to rise over the past five years. To meet this demand, the Trauma Center has undertaken several initiatives.

An institution-wide, multi-disciplinary Trauma Task Force critically evaluated all components of trauma care at Sinai. As a result, several care/patient flow improvements were made. These include additional operating room (OR) staffing dedicated to trauma care, a specific trauma/orthopedic emergency OR-room to "go live" by November 2007, consolidated institution-wide tracking of nurse trauma continuing education, and completion of Advanced Trauma Care for Nurses (ATCN) and Trauma Nursing Core Course (TNCC) by almost 100% of the emergency department's (ED) RNs. The trauma resuscitation areas in the ED were updated and standardized, new equipment (including 64-slice CT, high-resolution Ultrasound for First Access for Shock and Trauma [FAST], monitoring equipment, etc.) were purchased with a Maryland Health Care Commission Trauma Grant.

The Department of Surgery added Dr. Aaron Rabinovich (Indiana University) to the full-time trauma attending staff in August 2006 and renewed a "moonlighting" agreement with the R Adams Cowley Shock Trauma Center to provide a total complement of five dedicated Trauma/Critical Care surgeons at Sinai Hospital.

In addition, Sinai has hired a full-time trauma-dedicated orthopedic surgeon from the University of Maryland, a full-time pediatric surgeon from the University of California San Diego, and a full-time trauma-trained head and neck surgeon from the University of Maryland. Earlier this year, the hospital also opened its new Brain and Spine Institute, adding further capacities, expertise, and close collaboration with Neurology and Neurosurgery.

Trauma Education remained a major focus at Sinai this year. The Trauma Nursing Core Course (TNCC) was implemented at Sinai in August 2005. Presently 99% of Sinai's ED nurses have successfully completed training; six nurses were certified as TNCC instructors, one as course director, and one as faculty. To complement the education in adult trauma care, Sinai is currently implementing the Emergency Nursing Pediatric Course (ENPC) for all ED nurses. Sinai is hosting 4-6 TNCC courses per year that are open to all qualified nursing personnel. All physician providers involved in the acute care of the injured patient are certified in Advanced Trauma Life Support (ATLS).

As of July 1, 2006, Sinai Hospital was approved by the Accreditation Council for Graduate Medical Education and American Board of Surgery for an independent General Surgery Residency Program. Currently 9 residents (PGY I-IV) have joined the program with a planned increase to the full complement of 12 residents by July 2008. All residents will be certified in ATLS, Basic Life Support (BLS), Advanced Cardiac Life Support (ACLS), FAST, and Advanced Trauma Operative Management (ATOM) and will receive additional trauma training during their third-year rotation at the R Adams Cowley Shock Trauma Center (adults) and the Alfred I. DuPont Children's Hospital (pediatric).

In 2008 the hospital plans to begin a major structural addition to the hospital which will increase the ICU, OR, and other trauma-related patient care capacities.

Quality of care is of utmost importance to the Trauma Program at Sinai. Ongoing quality management is provided through weekly trauma case reviews by the Trauma Coordinator and Trauma Director and through monthly departmental morbidity and mortality case review meetings. In addition, the quality of care is continuously improved through close and direct collaboration between various multi-disciplinary departments, functional areas, and teams across the entire hospital. The hospital also participates in regional and national initiatives to improve patient care, including 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 Project. Within the State, the Trauma Center maintains active involvement in the Trauma Center Collaborative (TraumaNet) to advance all aspects of trauma care.

Sinai and its Trauma Center place a high value on maintaining a good relationship 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. The Trauma Center providers continue to actively participate in the education of EMS providers through student clerkships and EMS lectures.

Level II

Suburban Hospital

Located in Bethesda, the Suburban Hospital Trauma Center received 1,501 trauma patients from June 2006 through May 2007, according to the Maryland Adult Trauma Registry. (See pages 62 to 71 for additional patient data in various categories.) Dany Westerband, MD, FACS, serves as the Medical Director of Suburban Hospital's Trauma Services. Melissa Meyers, RN, BSN, recently joined the hospital as its new Trauma Program Director in June 2007, following Anne Kuzas, RN, who had served in this position with outstanding commitment and dedication for 30 years. The Trauma Program staff also includes Patricia Baker, RN, as its Trauma Case Reviewer and Michelle Hellmuth, as its full-time Trauma Administrative Coordinator.

The Suburban Hospital Trauma Center, serving Montgomery County and its fast-developing communities in Germantown and Gaithersburg, has seen a steady increase in the number of trauma patients over the past two years. In addition, Suburban has been a very efficient back-up trauma center to Frederick, Washington, and Prince George's counties, because of the implementation of a “Code C” protocol that effectively reduces the hospital's diversion time. Over this past fiscal year, Suburban has been successful in reducing hospital diversion time by 61 percent. The Code C protocol triggers a hospital-wide administrative and nursing response to expedite patient flow, avoiding hospital diversion and closure. Code C's success is greatly attributed to the strong support of the hospital administration committed to ensure that vital healthcare services remain available to the community at all times.

Suburban Hospital's partnership with the National Institutes of Health (NIH) and the National Naval Medical Center continues to evolve. This partnership, known as the Bethesda Hospitals' Emergency Preparedness Partnership, was created to refine established processes for handling large-scale terrorist events or natural disasters, and to identify areas for improvement in collaboration with local, state, and federal agencies. Additionally, the hospital has been a very active member of the Montgomery County Healthcare Collaborative on Emergency Preparedness (MCHCEP) whose members include all Montgomery County hospitals, as well as the Kaiser Permanente Health Plan, the Public Health Administration, and Homeland Security. In April 2007, partly due to these unique partnerships and a sophisticated internal disaster program, Suburban Hospital Healthcare System was the only trauma center on the East Coast to be recognized by the National Foundation for Trauma Care as one of the five “Highly Prepared” Trauma Centers in the nation.

Among other accomplishments, the cardiac surgery program and the NIH Heart Center at Suburban Hospital have been fully operational since the spring of 2006. Through a strong collaboration with the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health and Johns Hopkins Medicine, Suburban Hospital can now provide patients easy access to cardiac surgery and other advanced cardiovascular treatments available in very few medical centers. In the spring of 2007, Suburban Hospital-NIH Stroke Center received a MIEMSS designation as one of the 25 primary stroke centers in Maryland.

The Medical Director of Trauma Services and

the Trauma Program Director continue to actively participate in the Maryland Trauma and EMS System through memberships in the Trauma Center Network, the MIEMSS Trauma Quality Improvement Committee, the Region V EMS Advisory Council, the Statewide EMS Advisory Council, and the Maryland Division of the American Trauma Society. In addition, Suburban Hospital is an institutional member of the American Trauma Society and the National Foundation for Trauma Care.

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' Maryland Committee on Trauma.

Melissa Meyers, RN, BSN, who joined Suburban Hospital in June 2007 as its new Trauma Program Director, is already extensively involved in the preparation of the trauma center's upcoming verification in the spring of 2008. Ms. Meyers 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).

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. In May 2007, Dr. Westerband was a speaker at the “Safe Speed Montgomery” press conference sponsored by Delegate Bill Bronrott for the announcement of increased enforcement of speed limits in residential areas, in an effort to reduce the number of pedestrian and motor vehicle collisions in Montgomery County. During FY 2007, Suburban Hospital, partnering with Montgomery County law enforcement agencies, participated in the Montgomery County local high-schools' injury prevention program. In this program, a video entitled “Every 15 Minutes” shows Suburban's trauma team performing the resuscitation of an intoxicated teenage driver who was the victim of a serious motor vehicle crash. 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.

Several EMS activities during FY 2007 were also financially supported by the hospital administration. A four-hour seminar, "Update on Critical Issues in Trauma," was also held in Suburban Hospital's main auditorium in February 2007. This program was offered free of charge to the trauma care community, including medical and hospital staff and EMS personnel within the trauma center's regional area.

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 1,332 trauma patients from June 2006 to May 2007, according to the Maryland Adult Trauma Registry. (See pages 62 to 71 for additional patient data in various categories.) Un Y. Chin, MD, serves as the Trauma Director, and Lynn Foster, RN, BSN, as the Trauma Coordinator.

During FY 2007, work continued on the construction of a new critical care tower, Layfield Tower. 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. The helipad has been relocated to the roof of the Medical Center, but is projected to be placed on the roof of the Layfield Tower after construction is complete to allow for expeditious movement of patients. The projected completion for this expansion is March 2008.

PRMC continues to coordinate and participate in community-based injury initiatives. During the spring of 2007, a group of trauma nurses helped in assisting with mock-crash scenarios dur-

ing 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 several educational events. A multi-disciplinary group continues to coordinate and sponsor the annual "Topics in Trauma" conference. 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.

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.

Level III

Washington County Health Systems Trauma Center

Located in Hagerstown, the Washington County Hospital Trauma Center received 997 trauma patients from June 2006 to May 2007, according to the Maryland Adult Trauma Registry. (See pages 62 to 71 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, CEN, is the Manager of Trauma Services; 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 on the rise. Over 75% of the trauma patients treated at Washington County Hospital arrived by ground EMS.

The Trauma Center values its working relationship with the EMS providers throughout the region. The Trauma Center serves as a clinical site for paramedic programs in both Maryland and West Virginia. The trauma center staff also attends EMS jurisdiction meetings and the 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, the staff worked on safety events held in targeted neighborhoods, the Suns Baseball Stadium, and the Robinwood Outpatient Medical Center that focused 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 local National Night Out event, focusing on safe, family-centered activities.

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 already in place to continue this semi-annual event in upcoming years. Trauma Center staff continue to speak on 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. At the direction of Dr. Riggle, Director of Trauma Services, the W. L. Riggle Memorial Trauma Nurse Education Fund was established 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 708 patients from June 2006 to May 2007, according to the Maryland Adult Trauma Registry. (See pages 62 to 71 for additional patient data in various categories.) Juan Arrisueno, MD, serves as the Trauma Director; Chuck Barrick, RN, is the Trauma Nurse Coordinator; and Karen Haines is the Trauma Registrar.

With nearly 54 percent of its trauma cases attributable to motor vehicle and motorcycle crashes, the Western Maryland Health System (WMHS)-Memorial Trauma Center focuses much of its community injury prevention efforts on traffic safety and seatbelt use.

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. Their efforts also include programs on bicycle safety.

In addition, radio ads are aired in conjunction with major holidays to promote traffic safety and other related holiday safety issues. As part of this campaign, the Trauma Nurse Coordinator does live broadcast interviews about these topics on the morning talk shows on local radio stations.

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. The relationships between the WMHS and these agencies are put to the test in mock disasters that involve bringing school-age "patients" to the hospital.

Continuing education is another important component. The telemedicine link between the University of Maryland 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 a specialized track for nurses. This past year staff offered a case review of Maryland's inter-facility transfers, in addition to recognizing EMS volunteerism in the Allegany County area. Dana Bowman from the U.S. Army Golden Knights, a bilateral amputee, was the keynote speaker for the Miltenberger Seminar, which was again the largest regional continuing education EMS conference in the state.

Staff from the WMHS-Memorial Trauma Center worked with Maryland State Police (MSP) Aviation Trooper 5's team to provide education on helicopter safety to staff in the Emergency Department, ICU, and other areas. MSP is now involved in the 16-hour training that new nurses in the WMHS attend.

Adult Burns

Johns Hopkins Burn Center
Johns Hopkins Bayview Medical Center

The Johns Hopkins Burn Center manages more than 600 patients a year. 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).

Several processes to improve care for our patients have begun in our facility as well as in the community. To meet the requests and needs of our community hospitals and partners with instruction and an expert level of competency, the Johns Hopkins Burn Center (JHBC) has begun educational seminars in local emergency rooms for doctors, nurses, and clinical educators regarding the care of burn patients in times of crisis. Admission and transfer criteria are defined, along with primary and secondary care, and burn center referral criteria; all are clearly outlined in an educational

poster which may be displayed to staff for referral of care. National presentations on wound care and safety have been presented by the nursing staff.

Statistics and data have been collected regarding healthcare performance, and overall outcomes have been completed. As a result, quality care initiatives to improve patient care have been implemented, thereby reducing JHBC infection and mortality rates significantly. Staff satisfaction, as well as recruitment and retention, remain one of the highest in the facility. In November 2006, the National Database of Nursing Quality Indicators (NDNQI) survey was completed in our facility. One of the indicators was RN job satisfaction. The Burn Center RN staff data stated that the current nursing staff rated their nursing satisfaction among the highest in the country.

Data for this report reflect JHBC patients from June 1, 2006 through May 31, 2007. For this fiscal year, 615 patients were treated at JHBC.

Of these patients, 67% (415) were male, and 33% (200) were female. Ages range from 5 months to 95 years with a mean age of 39 years. Patients are admitted to the burn center for an average of 6 days (minimum 1 day; maximum 73 days).

Most patients are discharged home. Many require the assistance provided by home health care, a skilled nursing facility, or a rehabilitation center. Unfortunately some patients do not survive their burn injury, despite the burn center's emphasis on early debridement and grafting of burn wounds. JHBC has one of the lowest death rates of burn centers across the nation. Its death rate for admitted patients is 4.5% (18/399) and 3.4% (21/615) of all patients (admissions and those treated in the ED only). The final disposition distribution for admissions is presented below:

Patients Treated

Admissions	**399**
ICU level	111
IMC level	253
Med-Surg level	32
Pediatric	3
Non-admissions	**216**
Discharged w/follow-up	179
Discharged against med'l advice	14
Deceased	3
Transferred	20
Total	**615**

Final Disposition Distribution

Disposition	**Count**
Death	18
Home	292
Home w/Services	40
Psychiatric	4
Rehabilitation Center	11
Skilled Nursing Facility	7
Transfer, Acute Care Facility	5
Against Medical Advice	1
Other	2
Not Available	18
Total	**399**

For patients needing management of their burn wounds in the outpatient setting, the Burn Clinic managed 1308 patient visits this past fiscal year.

Statistics for Inpatient and ED patients

Mode of arrival to JHBC

Mode	**Count**
ALS	249
BLS	1
Comm. Ambulance	125
Comm. Helicopter	25
Fixed Wing	1
MSP	50
Not Recorded/Other	4
Private Vehicle	37
Walk	123
Total	**615**

Burn Wound Types

Type	**Count**
Chemical	37
Contact	43
Electrical	32
Explosion	6
Flame	243
Frostbite	2
Inhalation, smoke/CO	22
Other Burn	6
Readmission	9
Scald	190
Skin Disease	22
Sunburn	1
Unknown	2
Total	**615**

Overall, flame and scald burns account for 433 or 70% of patients seen in the ED or admitted to JHBC.

JHBC supports outside hospitals by consulting with physicians within the surrounding communities about burn patients seen in outlying hospitals. JHBC has received 172 patients in transfer from these hospitals.

JHBMC continues to focus on its community commitment via its burn education and outreach programs in schools. Under the direction of Dr. Stephen Milner, the Johns Hopkins Burn Center continues to advance the care of burn patients, particularly those suffering severe burn injury. This is accomplished by expert surgical and nursing care, along with cutting edge protocols, basic science research, and clinical trials.

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 2007, the Pediatric Trauma Center at the Johns Hopkins Children's Center treated as inpatients 126 children with burn injury. Under the direction of Stephen Milner, MD, The Johns Hopkins Burn Center cares for adults at the Bayview Campus and children under the age of 15 with burn injuries at the Children's Center in East Baltimore. Rick Redett, MD, serves as the Pediatric Director at the Children's Center Burn Program.

The Johns Hopkins Children's Center is the Pediatric Burn Referral Center for Maryland EMS Regions I, II, III, and IV. In FY 2007, 126 children under the age of 15 were admitted with 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 floor. Additionally, over 300 burned children were treated at the Pediatric Outpatient Burn Clinic. The summary data above describe the patients that were admitted to the hospital.

Johns Hopkins Children's Center
Pediatric Burn Patient Admissions
July 2007-June 2006

TBSA %	Count	Percentage
≥20	10	7.9%
10–19	17	13.5%
<10	92	73.0%
Unknown	7	5.6%
Total	126	100.0%
Gender		
Male	69	54.8%
Female	57	45.2%
Race		
W	45	35.7%
B	72	57.1%
H	5	4.0%
O	4	3.2%
Transport		
Ambo	40	31.7%
Heli	10	7.9%
Private	37	29.4%
Walk Ins	3	2.4%
Unknown	36	28.6%
Origin		
Scene	39	31.0%
Transfer	56	44.4%
Other	31	24.6%
Etiology		
Flame	12	9.5%
Scald	100	79.4%
Other	14	11.1%
	Average	**Range**
Age (years)	4	0-14
LOS (days)	3.5	0-51

Burns in children require special expertise and pose a unique set of medical and psychological challenges. In addition to reconstructive and plastic surgery, general surgery, critical care, infectious disease control, psychiatry, and pain management, the Children's Center offers Child Life support services and counseling for parents of all burn patients. The Children's Center also has a community-outreach program to promote fire safety and prevent burn injuries. The unique synergy of mul-

tiple pediatric sub-specialties under one roof at the Children's Center offers the best-tailored treatment for each burned child.

Follow-up care is offered three times a week in the burn clinic. Home nursing can be arranged for those that need additional outpatient care.

Approximately 80 percent of the burn-related injuries are due to scald burns. Pediatric burn nurses now go into schools to provide burn injury prevention. Nurses have attended Back to School Night for parents and have offered educational assemblies for elementary school children.

Pediatric Burns

Children's National Medical Center

In FY 2007, Children's National Medical Center, as a pediatric burn specialty referral center, treated as inpatients 80 children with burn injury who were residents of Maryland or who were injured in Maryland. Martin R. Eichelberger, MD is the Director of Emergency Trauma-Burn Services, Ananth Murthy, MD is the Associate Burn Director, Geraldine Pratsch, RN, MPH is the Trauma & Burn Program Manager, Sarah Storing, RN, BSN is the Trauma Coordinator, 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 will dedicate an entire clinical area to serve the child needing surgery, trauma, and/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, 80 children from Maryland have been admitted to the Burn Service, while 292 children have been treated on an outpatient basis for a total of 755 outpatient burn clinic visits, and 225 children were treated and discharged from the emergency department.

Children's National Medical Center
Pediatric Burn Patient Admissions
June 2006-May 2007

TBSA %	Count	Percentage
≥20	4	5%
10–19	21	26%
<10	55	69%
Total	80	100%
Gender		
Male	47	59%
Female	33	41%
Race		
W	8	10%
B	45	56%
H	14	18%
O	13	16%
Transport		
Ambo	28	35%
Heli	7	9%
Private	43	54%
Walk Ins	2	2%
Origin		
Scene	27	34%
Transfer	36	45%
Other	17	21%
Etiology		
Scald	59	74%
Contact	20	25%
Electrical	1	1%
	Average	**Range**
Age (years)	4yrs	0-14
LOS (days)	2.26	1-13 days

The summary data above describe the patients that were admitted to the hospital.

Working jointly with the Safe Kids District of Columbia, Safe Kids USA, the DC RISK WATCH® Champion Management Team, and the District of Columbia Injury Free Coalition for Children, 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.

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 2007, hyperbaric medicine treatments were given to 438 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 con-

tact 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.

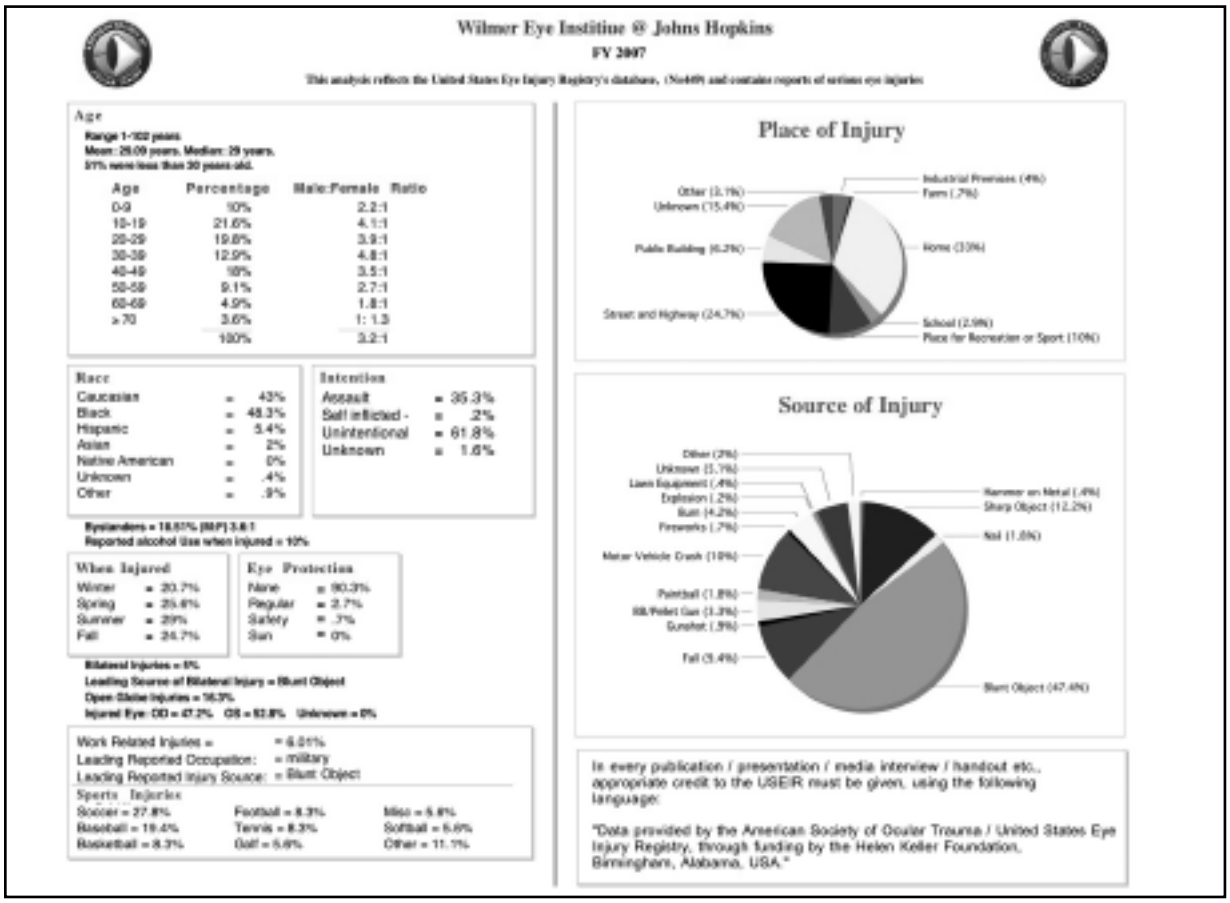
Physician and nursing members of the Hyperbaric Medicine Center actively lecture on hyperbaric medical education at regional and national levels and to local and regional EMS providers.

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 MichaelVaughn Emerson, MD; Shailaja Chopde, RN, is the Eye Trauma Coordinator.

The development of an eye trauma database for the Maryland Physicians Trauma Reimbursement Fund has been the major focus this fiscal year. Since Wilmer participates in the U.S. Eye Injury Registry, most of the data are already being collected except for 20 elements. Digital Innovations, Inc is developing a conversion program for verification of cases admitted and managed in the Wilmer Eye Institute by the state.

For FY 2007, the Wilmer Emergency Department logged 4,655 patient visits and reported 449 serious eye injuries to the U.S. Eye Injury Registry. Injuries occurred mostly in homes (33%), followed by street and highway (24.7%). Soccer has surpassed baseball for ocular sports injuries. Blunt injury continues to be the highest source of injury and has increased since last year, followed by sharp objects and falls. See below for the WEI ocular trauma statistics for FY 2007 as reported to U.S. Eye Injury Registry.



The table "MIEMSS Trauma Quality Improvement Indicators of Care for Ocular Trauma, January-June 2007" shows that prehospital providers met the standard of protecting the injured eye from further injury of damage with application of appropriate eye protection device or shield during transport to the Wilmer ER 100% of the time.

In collaboration with the Johns Hopkins School of Medicine Media Relations Office, "Tips to Prevent Eye Injuries during the 4th of July Holiday" was sent as a press release. Reporters from several newspapers followed up with articles on fireworks safety.

Eye Trauma Coordinator Shailaja Chopde, RN completed the Basic Disaster Life Support Course offered by the Maryland National Disaster Life Support Foundation. Dr. Michael P. Grant, Director of the Eye Trauma Center, and Victoria B. Navarro, Director of Nursing, were given appreciation and recognition awards by the American Society of Ocular Trauma in November 2006.

Wilmer faculty and nursing staff participated in educational activities in national ophthalmology symposia and meetings, as well as state and local area meetings and conferences. Among the topics were eye trauma and orbital and craniofacial reconstructive surgery.

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 2007, there were 449 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.

MIEMSS Trauma Quality Improvement Indicators of Care for Ocular Trauma
January-June 2007

Total number of eye trauma (structural or functional damage) patients seen in Wilmer Emergency Room (ER)	249	
Patients presented directly to Wilmer ER	17/249	6.8%
Patients referred from community hospitals/ physician offices	106/249	42.5%
Patients referred from Johns Hopkins Hospital (JHH) Adult and Pediatric ER (includes ambulance transport)	67/249	26.9%
JHH inpatients referred for consult	59/249	23.6%
Patients with systemic injuries referred to an adult/pediatric emergency room or appropriate specialty service such as neurology, neurosurgery, otolaryngology, general surgery, etc.	0/0	No cases
Patients with ocular chemical burns have eye irrigation initiated by prehospital provider in the field and during transport to an eye emergency room (direct ambulance transport to the Wilmer ER)	0/0	No cases
Eye(s) is protected from further injury or damage (i.e., application of appropriate eye protection device or shield during transport by prehospital provider to an eye emergency room) (direct ambulance transport to the Wilmer ER).	31/31	100%

Pediatric Trauma Center at the Johns Hopkins Children's Center

In FY 2007, the Pediatric Trauma Center at the Johns Hopkins Children's Center treated as inpatients 920 children under the age of 15 with multiple trauma and 126 with burn injury. 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 17 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 2007, life-threatening injuries related to motor vehicle crashes, pedestrian injuries, and falls accounted for more than 68 percent of the 920 admissions. Children with blunt injuries made up 90 percent of the patient population. Mortality continued to be less than 1 percent.

A new, 12-story, state-of-the-art pediatric hospital now under construction will adjoin a new adult cardiac and critical care tower and connect to the new David M. Rubenstein Child Health Building, which opened in 2006 and houses most of the pediatric specialty clinics as well as the Harriet Lane community clinic. The new children's hospital scheduled to open in early 2011 will have 205 beds and will include emergency, surgical, interventional, critical, and acute care for infants and children. The current Children's Center has 175 beds.

A new Children's Safety Center (CSC), located in the David M. Rubenstein Child Health Building, opened earlier this year with support from the Pediatric Trauma Service and the Center for Injury Prevention and Research at the Johns Hopkins Bloomberg School of Public Health. The CSC is a significant resource to children and families, providing education and injury prevention supplies, such as car seats and bike helmets, at a reduced cost.

Also 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 because of fires and burns, has become a citywide model. This year, 16 PSLG program graduates rejoined the group for a refresher course and a community smoke detector sweep in selected neighborhoods. These community residents completed their fire prevention training and successful community sweeps last year. The program will expand to West Baltimore this fall with new groups of participants that will be given fire prevention training and a chance to start community smoke detector sweeps in their neighborhoods. The program added a carbon monoxide training component to the refresher sessions with the PSLG graduates that will also be added to the fire prevention curriculum for all future training sessions. The PSLG provides the largest number (1,200) of smoke detector referrals to the Baltimore City Fire Department. Its prevention information efforts include the distribution of over 3,000 brochures, 1,200 calendars, and 50 posters to hospital clients and other community-based agencies.

The Pediatric Trauma Service also supports education for trauma personnel. The Hopkins Outreach for Pediatric Education (HOPE) office, managed by Rose Stinebert, continues to add quality education programs for prehospital providers, medical and nursing staff. The Pediatric Advanced Life Support (PALS) course is offered by the Johns Hopkins Children's Center Educational Initiative throughout Maryland. The Advanced Trauma Care for Nurses (ATCN) course is managed by the Pediatric Trauma Service and is held in conjunction with the Advanced Trauma Life Support (ATLS) class for physicians at the R Adams Cowley Shock Trauma Center.

Pediatric Trauma Service staff continue to be recognized for their hard work. This year two Johns Hopkins physicians in Pediatric Anesthesiology and Pediatric Critical Care were among the first recipients of grants from the Hartwell Foundation to support innovative, early-stage, biomedical research to benefit children. Kenneth Brady, assistant professor, won a $300,000 Hartwell Individual Biomedical Research Award, and postdoctoral fellow Jennifer Lee was named a Hartwell Fellow and awarded $100,000. They are working together to develop new tools that physicians can use to more effectively treat infants and children that have suffered traumatic head injury.

Pediatric Trauma Center
Children's National Medical Center

In FY 2007, Children's National Medical Center, as a pediatric specialty referral center, treated as inpatients 899 children with multiple trauma and 80 with burn injury who were residents of Maryland or who were injured in Maryland. Martin R. Eichelberger, MD is the Director of Emergency Trauma-Burn Services, Ananth Murthy, MD is the Associate Burn Director, Geraldine Pratsch, RN, MPH is the Trauma & Burn Program Manager, Sarah Storing, RN, BSN is the Trauma Coordinator, 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) 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. In November 2007, the newly constructed East Tower Pavilion for patient care will dedicate an entire clinical area to serve the child needing surgery, trauma and/or burn treatment.

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. In addition, the Trauma Nurse Core Curriculum (TNCC) is offered five times per year. Advances in Pediatric Emergency Medicine is also 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 (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 overall and a decrease of 70 percent from bicycle injuries, 67 percent from fire and burns, 52 percent from drowning, and 16 percent from motor vehicle crashes. Working through more than 450 state and local Safe Kids coalitions in the United States and 16 other countries, Safe Kids Worldwide (SKWW) 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 enforces laws and regulations, and conducts research to drive our programs and determine the efficacy of our efforts. (See www.safekids.org).

The Emergency Medical Services for Children (EMSC) National Resource Center, affiliated with CNMC, 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, inter-facility 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 supports the Federal EMSC program with many activities, such as the preparation of special reports, as well as planning and implementing the annual grantee meeting, the Partnership for Children stakeholder committee, and numerous webcasts. The EMSC National Resource Center maintains the EMSC program web site at http://www.mchb.hrsa.gov/emsc.

Perinatal Referral Centers

MIEMSS has worked closely with the Department of Health and Mental Hygiene (DHMH) regarding perinatal centers in Maryland. DHMH provides grant funds to support a full-time staff member to coordinate the perinatal programs at MIEMSS. (See page 34 for a complete list of perinatal centers.)

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 2006, the Maryland Poison Center (MPC) received 63,662 calls. While 33,006 of these calls involved a human exposure, 1,676 involved animal exposures, and the remaining 28,980 were requests for information where no exposure occurred. The majority of poison exposures (51%) 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. Safely managing these 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. Maryland EMS providers consulted with the MPC on 1,229 cases in 2006.

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 2006, the Maryland Poison Center was recertified as a regional poison center by the American Association of Poison Control Centers. The Maryland Poison Center ended the year by relocating to a new, larger office space on the University of Maryland, Baltimore campus. Its new address is 220 Arch Street, Baltimore, MD 21201.

In CY 2006, MPC specialists received 19,490 non-emergency requests to identify medications from the public, health professionals, and law enforcement, a 245% increase since 2001. In response to this rapidly growing number of drug identification requests, the MPC implemented a drug identification service. Grant funding was obtained to employ part-time substance abuse counselors to help manage these calls, referring callers to drug counseling opportunities when appropriate.

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 2006, the MPC provided speakers and/or materials for 88 programs in 16 Maryland counties and Baltimore City. Angel Bivens, BSPharm, MBA, CSPI, led classes and participated in health fairs that were attended by over 12,000 people. Several organizations partnered with the MPC to provide education to their patients, customers, clients, and students. These organizations included fire departments, hospitals, health departments, schools, police departments, childcare agencies, pharmacies, hospital perinatal education programs, CPR instructors, parish nurses, Red Cross, Head Start and Healthy Start pro-

grams. In all, over 34,000 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 143,000 additional pieces of materials were mailed to people and groups who requested them. Several media appearances were made by MPC staff to discuss various poison-related topics. In all, the poison center participated in 3 radio interviews and appeared in 7 television interviews.

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 2006, 48 programs were conducted at hospitals, fire departments, and state and regional conferences. These programs were attended by over 1,600 EMS providers, physicians, nurses, pharmacists, and physician assistants in 13 counties and Baltimore City. The MPC also provides professional education through publications. "Toxtidbits" is faxed monthly to every Maryland emergency department and emailed to over 3,100 health professionals. "Toxalert" was emailed or mailed to over 4,000 health care providers. Current and past issues of "Toxalert" and "Toxtidbits" can be found on the MPC's website at www.mdpoison.com.

The Maryland Poison Center provides on-site training for health professionals. In 2006, more than 100 EMS providers, paramedic students, physicians, and pharmacists visited the MPC to learn more about the assessment and treatment of poisoned patients.

Reason for Poisoning (CY 2006)

Circumstance	Number of Patients	Percentage
Unintentional	26,603	80.6
Intentional	5,204	15.8
Other & Unknown	1,199	3.6
TOTAL	33,006	100.0

Medical Outcome of Poisoning (CY 2006)

Medical Outcome	Number of Patients	Percentage
No Effect/Minor Effect	30,095	91.3
Moderate Effect	1,465	4.4
Major Effect	156	0.5
Death	38	0.1
Other & Unknown	1,205	3.7
TOTAL	33,006	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 2006)

Region	Number of Exposures	Percentage
Region I (Garrett, Allegany)	785	2.4
Region II (Washington, Frederick)	2,986	9.0
Region III (Carroll, Howard, Harford, Anne Arundel, Baltimore County, Baltimore City)	20,716	62.8
Region IV (Cecil, Kent, Queen Anne's, Talbot, Caroline, Dorchester, Wicomico, Worcester, Somerset)	3,670	11.1
Region V (Montgomery, Prince George's Charles, Calvert, St. Mary's)	3,586	10.9
Unknown County/ Other state	1,263	3.8
TOTAL	33,006	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 11,946 human exposures in Maryland were reported to the National Capital Poison Center in 2006.

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 2007, trauma centers in Maryland referred 1,652 trauma patients ages 15 and over to inpatient rehabilitation services. There was an increase of 120 patients referred for rehabilitation from FY 2006. 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 2006 TO MAY 2007)

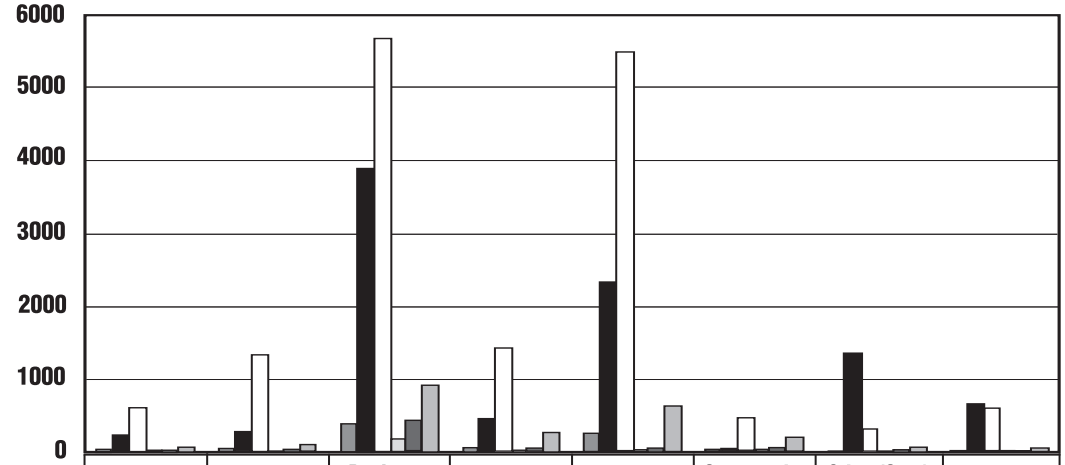
Source: Maryland Adult Trauma Registry

Rehabilitation Center	Number
Adventist Health Care	32
Genesis Long-Term Care Facilities	32
Good Samaritan Hospital of Maryland	23
Kennedy Krieger Institute	9
Kernan Hospital	574
Maryland General Hospital	93
NRH Regional Rehabilitation @ Irving Street, DC	19
Sinai Rehabilitation Center	12
University Specialty Center	20
Washington County Health System Rehabilitation Services	63

Note: Total patients ages 15 and over who went to a rehabilitation center = 1,652

Number of Maryland Certified/Licensed EMS Providers (Primary Affiliation)

(as of 6/30/07)

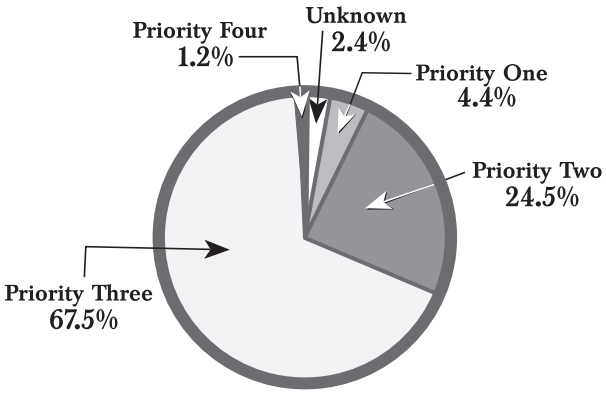


	Region I	Region II	Region III	Region IV	Region V	Commercial	Other (Govt)	Inactive
EMD	20	43	403	75	268	4	2	17
FR	228	276	3894	477	2348	11	1371	701
EMTB	594	1336	5665	1444	5492	505	337	620
CRT	9	4	187	15	5	10	0	4
CRT99	7	34	434	48	65	28	0	3
EMTP	61	100	921	282	652	221	89	38

Types of EMS Calls

PATIENT PRIORITY FOR INJURY CALLS

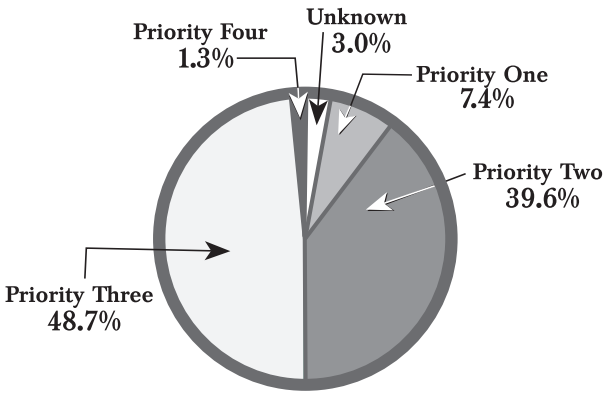
CY 2006



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

PATIENT PRIORITY FOR MEDICAL CALLS

CY 2006



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	1	3	23	0	1	2	0
Region II	22	36	21	36	2	2	1	0
Region III	172	15	40	179	8	1	0	0
Region IV	121	20	38	7	3	6	0	0
Region V	63	129	11	7	2	5	3	2
STATEWIDE TOTAL	410	201	113	252	15	15	6	2

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.

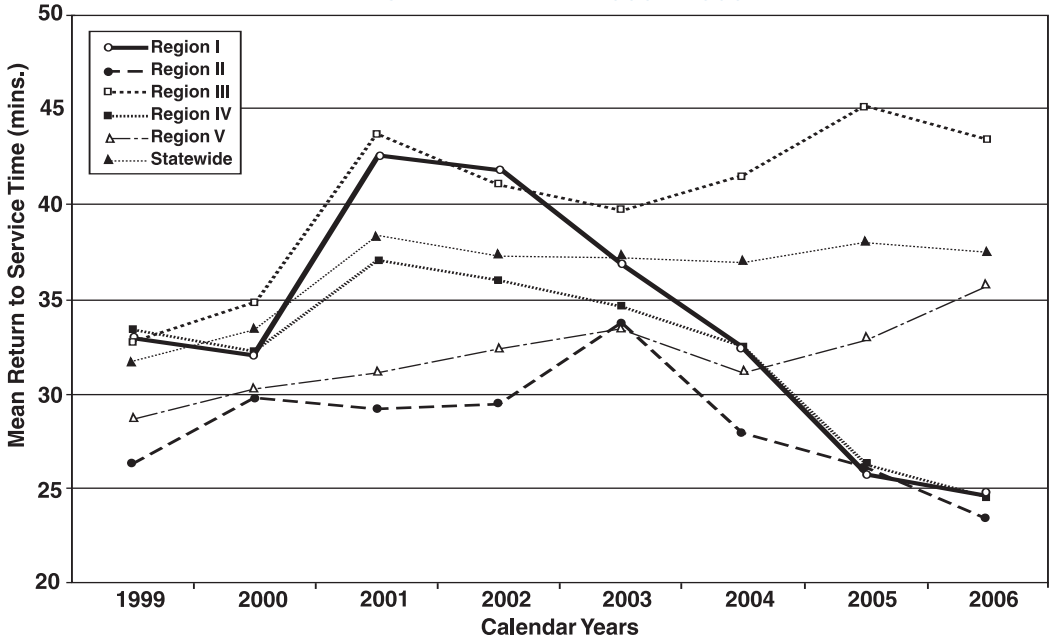
MIEMSS Grant Disbursements by Region

	50/50 Matching Equipment Funds	ALS Training Funds	Emergency Dispatch Programs	HRSA Bioterrorism Grants	DOT Highway Safety Grants	Total By Region
Region I	$21,456	$30,869	$4,460	$23,270	$37,933	$117,988
Region II	$44,064	$36,532	$4,460	$36,588	$20,001	$141,645
Region III	$123,998	$103,653	$13,380	$128,058	$45,467	$414,556
Region IV	$100,717	$70,758	$21,565	$104,715	$45,781	$343,536
Region V	$107,930	$87,900	$11,150	$91,470	$27,505	$325,955
Total	**$398,165**	**$329,712**	**$55,015**	**$384,101**	**$176,687**	**$1,343,680**

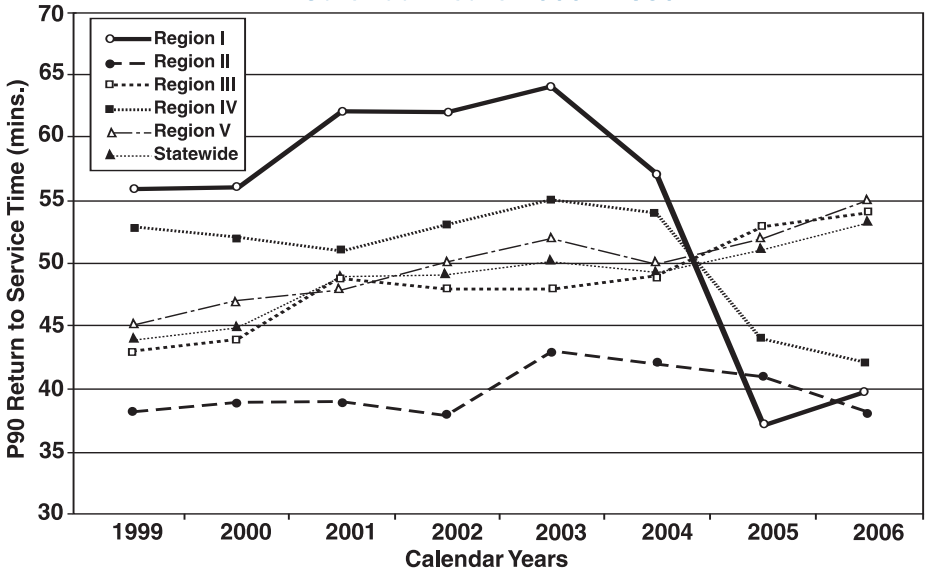
NOTE: Does not include Miscellaneous Grants described on page 25.

Public Safety EMS Units

Region/State EMS Units' Return To Service
Mean Time Analysis
Calendar Years 1999 - 2006



Region/State EMS Units' Return To Service
P90 Time Analysis
Calendar Years 1999 - 2006



Commercial Ambulance Services

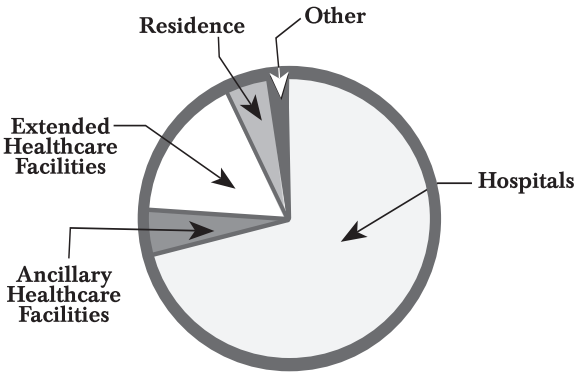
COMMERCIAL GROUND AMBULANCE VEHICLES (FY 2005 – FY 2007)

	FY 05	FY 06	FY 07
BLS	149	148	170
ALS	103	105	85
Neonatal	9	9	12
Specialty Care	0	0	17
TOTAL	**261**	**262**	**284**

LICENSED COMMERCIAL AMBULANCE VEHICLES (FY 2005 – FY 2007)

	FY 05	FY 06	FY 07
Ground	33	31	34
Air	2	3	3
TOTAL	**35**	**34**	**37**

COMMERCIAL (GROUND & AIR) ORIGIN LOCATION TYPES
CY 2006



Source: Commercial Maryland Ambulance Information System (CMAIS)

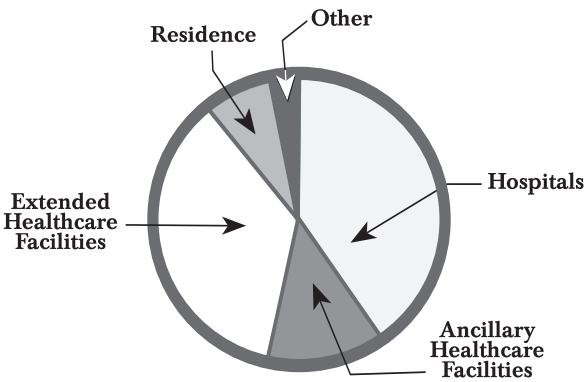
Notes:

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 (GROUND & AIR) DESTINATION LOCATION TYPES
CY 2006



Source: Commercial Maryland Ambulance Information System (CMAIS)

Notes:

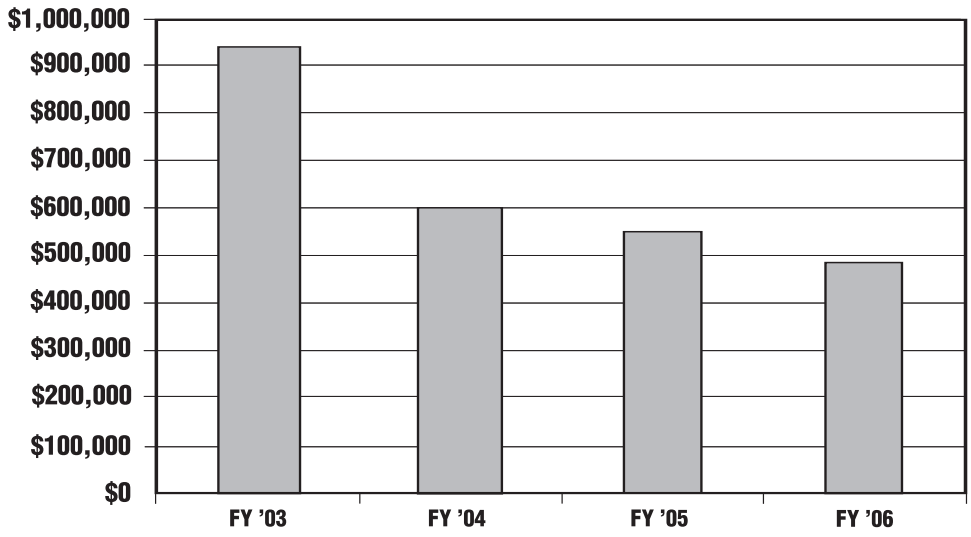
Hospitals = Hospitals & Hospital EDs, CCUs, & Perinatal Units

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

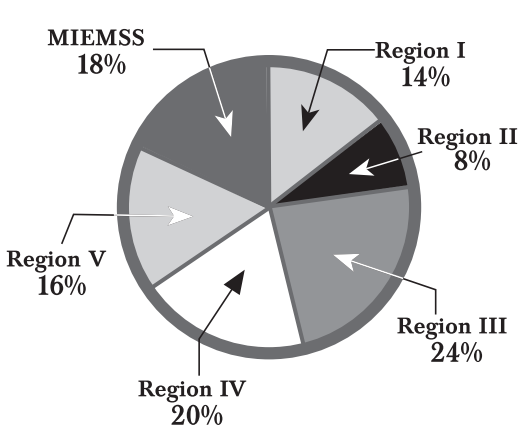
Extended Healthcare Facilities = Nursing Home, Adult Day Care, Rehab

Health Resources & Services Administration (HRSA) Bioterrorism Funding for Maryland EMS (Federal FY 2003 – FY 2006)

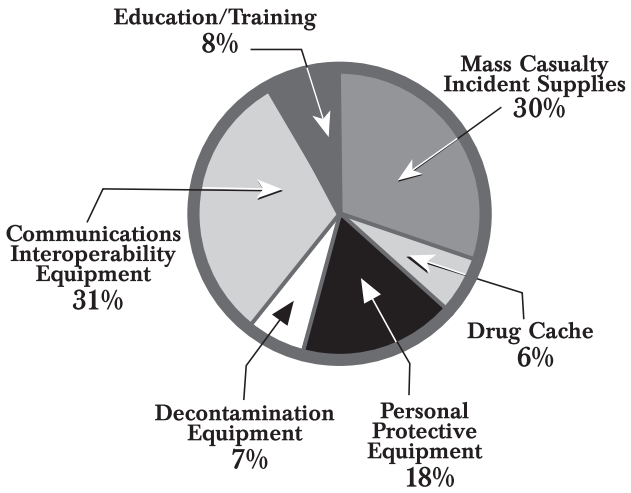
HRSA Bioterrorism Funding Totals
(Federal FY 2003 – FY 2006)



HRSA BIOTERRORISM FUNDING ALLOCATION BY MARYLAND EMS REGION
(Federal FY 2003 – FY 2006)



HRSA BIOTERRORISM FUNDING CATEGORIES
(Federal FY 2003 – FY 2006)



MARYLAND TRAUMA STATISTICS

AGE DISTRIBUTION OF PATIENTS: PATIENTS TREATED AT PEDIATRIC OR ADULT TRAUMA CENTERS (3-YEAR COMPARISON)

Source: Maryland StateTrauma Registry

Age Range	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
Under 1 year	139	181	227
1 to 4 years	507	497	596
5 to 9 years	591	594	542
10 to 14 years	838	909	876
15 to 24 years	5,136	5,532	5,806
25 to 44 years	6,447	6,760	6,972
45 to 64 years	3,668	4,033	4,327
65 + years	1,789	1,826	1,909
Unknown	19	28	21
TOTAL	19,134	20,360	21,276

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

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

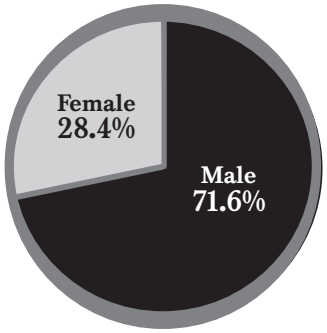
TOTAL CASES REPORTED BY TRAUMA CENTERS (3-YEAR COMPARISON)

Source: Maryland Adult Trauma Registry

Trauma Center	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
The Johns Hopkins Bayview Medical Center	1,294	1,526	1,347
Johns Hopkins Medical System	2,025	1,899	2,537
Peninsula Regional Medical Center	844	1,171	1,332
Prince George's Hospital Center	2,744	3,099	3,115
R Adams Cowley Shock Trauma Center	6,139	6,128	6,247
Sinai Hospital of Baltimore	1,596	1,748	1,673
Suburban Hospital	1,255	1,434	1,501
Washington County Hospital Association	947	943	997
Western Maryland Health System–Memorial Campus	652	669	708
TOTAL	17,496	18,617	19,457

GENDER OF PATIENTS: PRIMARY ADMISSIONS ONLY (June 2006 to May 2007)

Source: Maryland Adult 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 2006 TO MAY 2007)

Source: Maryland Adult Trauma Registry

County of Injury	Number
Allegany County	365
Anne Arundel County	948
Baltimore County	2,158
Calvert County	135
Caroline County	81
Carroll County	423
Cecil County	165
Charles County	263
Dorchester County	81
Frederick County	392
Garrett County	40
Harford County	444
Howard County	397
Kent County	46
Montgomery County	1,300
Prince George's County	787
Queen Anne's County	143
St. Mary's County	166
Somerset County	93
Talbot County	62
Washington County	581
Wicomico County	311
Worcester County	160
Baltimore City	5,093
Virginia	43
West Virginia	237
Pennsylvania	95
Washington, DC	46
Delaware	127
Other	1
Not Indicated	2,503
TOTAL	17,686

Note: Scene origin cases represent 90.9% of the total trauma cases treated statewide.

RESIDENCE OF PATIENTS BY COUNTY: SCENE ORIGIN CASES ONLY (JUNE 2006 TO MAY 2007)

Source: Maryland Adult Trauma Registry

County of Residence	Number
Allegany County	314
Anne Arundel County	936
Baltimore County	2,348
Calvert County	179
Caroline County	73
Carroll County	444
Cecil County	135
Charles County	291
Dorchester County	79
Frederick County	338
Garrett County	22
Harford County	488
Howard County	330
Kent County	44
Montgomery County	1,247
Prince George's County	2,009
Queen Anne's County	94
St. Mary's County	133
Somerset County	132
Talbot County	57
Washington County	486
Wicomico County	421
Worcester County	136
Baltimore City	4,830
Virginia	372
West Virginia	275
Pennsylvania	406
Washington, DC	336
Delaware	261
Other	390
Not Indicated	80
TOTAL	17,686

Note: Scene origin cases represent 90.9% of the total trauma cases treated statewide.

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

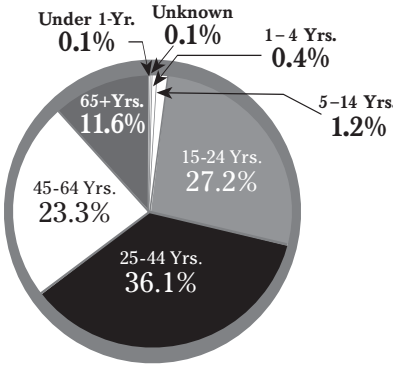
Source: Maryland Adult Trauma Registry

Protective Device	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
None	25.7%	22.9%	21.2%
Seatbelt	35.8%	32.1%	28.3%
Airbag & Seatbelt	15.7%	15.3%	16.5%
Airbag Only	3.8%	3.3%	3.3%
Infant/Child Seat	0.2%	0.2%	0.2%
Protective Helmet	10.2%	13.0%	10.9%
Padding/Protective Clothing	0.1%	0.1%	0.1%
Other Protective Device	0.1%	0.1%	0.0%
Unknown	8.4%	13.0%	19.5%
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 2006 to May 2007)

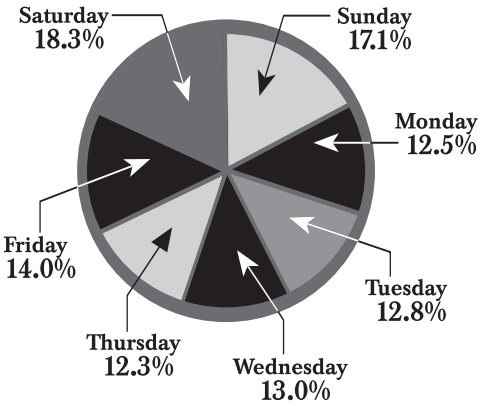
Source: Maryland Adult Trauma Registry



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 2006 to May 2007)

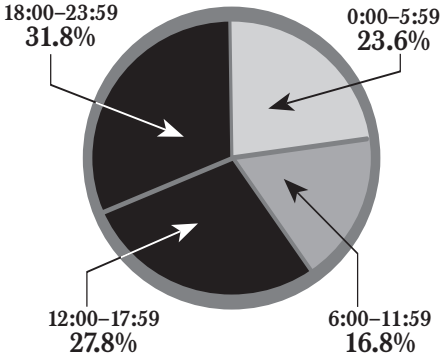
Source: Maryland Adult Trauma Registry



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 2006 to May 2007)

Source: Maryland Adult 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 2006 TO MAY 2007)

Source: Maryland Adult Trauma Registry

Modality Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMHS	TOTAL
Ground Ambulance	94.6%	89.0.%	71.6%	46.5%	89.5%	74.9%	82.2%	71.9%	72.2%	77.4%
Helicopter	0.2%	1.1%	19.3%	48.4%	0.0%	22.9%	11.9%	13.6%	19.6%	16.2%
Other	5.2%	9.9%	9.1%	5.1%	10.5%	2.2%	5.9%	14.5%	8.2%	6.4%
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 2006 TO MAY 2007)

Source: Maryland Adult Trauma Registry

Origin Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMHS	TOTAL
Scene of Injury	98.1%	94.3%	94.4%	98.4%	98.8%	80.7%	92.5%	95.2%	94.3%	91.1%
Hospital Transfer	0.0%	4.7%	1.8%	1.1%	0.4%	19.3%	3.7%	1.2%	3.4%	7.6%
Other	1.9%	1.0%	3.8%	0.5%	0.8%	0.0%	3.8%	3.6%	2.3%	1.3%
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 Adult Trauma Registry

Age	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
Under 1 year	0	0	0
1 to 4 years	4	1	0
5 to 14 years	7	10	7
15 to 24 years	192	186	191
25 to 44 years	214	228	219
45 to 64 years	131	134	161
65+ years	176	168	162
Unknown	8	9	10
TOTAL	732	736	750
Deaths Overall as a Percentage of the Total Injuries Treated	4.2%	4.0%	3.9%

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 Adult Trauma Registry

Age	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
Under 1 year	18	21	41
1 to 4 years	91	84	101
5 to 14 years	395	392	351
15 to 24 years	5,072	5,473	5,735
25 to 44 years	6,445	6,760	6,972
45 to 64 years	3,668	4,033	4,327
65+ years	1,789	1,826	1,909
Unknown	18	28	21
TOTAL	17,496	18,617	19,457

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 2006 TO MAY 2007)

Source: Maryland Adult Trauma Registry

	Number of Injured Patients		Number of Deaths	
Age	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	41	39	0	0
1 to 4 years	101	82	0	0
5 to 14 years	351	284	7	7
15 to 24 years	5,735	5,119	191	178
25 to 44 years	6,972	6,116	219	198
45 to 64 years	4,327	3,750	161	139
65+ years	1,909	1,690	162	153
Unknown	21	19	10	9
TOTAL	19,457	17,099	750	684

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 Adult Trauma Registry

Etiology	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
Motor Vehicle Crash	39.1%	36.4%	37.0%
Motorcycle Crash	5.3%	6.4%	5.7%
Pedestrian Incident	5.6%	5.3%	5.7%
Fall	19.9%	20.3%	20.0%
Gunshot Wound	8.5%	8.0%	8.7%
Stab Wound	7.0%	8.1%	7.0%
Other	14.6%	15.5%	15.9%
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.

BLOOD ALCOHOL CONTENT OF PATIENTS BY INJURY TYPE: PRIMARY ADMISSIONS ONLY (JUNE 2006 TO MAY 2007)

Source: Maryland Adult Trauma Registry

Blood Alcohol Content	Motor Vehicle Crash	Assault	Fall	Other	Total
Negative	59.3%	42.4%	53.0%	56.7%	54.0%
Positive	23.9%	30.5%	16.2%	13.7%	23.0%
Undetermined	16.8%	27.1%	30.8%	29.6%	23.0%
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 2006 TO MAY 2007)

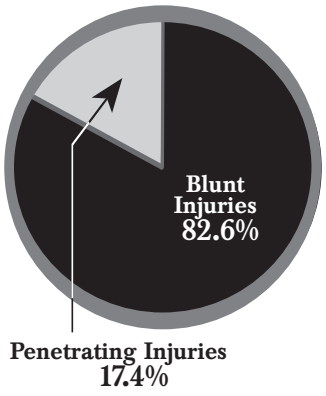
Source: Maryland Adult Trauma Registry

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound	Other	Total
Under 1 year	0.0%	0.0%	0.0%	0.4%	0.1%	0.0%	0.1%	0.1%
1 to 4 years	0.2%	0.1%	0.8%	0.7%	0.1%	0.0%	0.7%	0.4%
5 to 14 years	1.2%	0.3%	3.7%	1.1%	0.5%	0.2%	1.6%	1.2%
15 to 24 years	31.7%	22.7%	23.4%	10.4%	48.4%	38.0%	25.2%	27.3%
25 to 44 years	34.6%	49.4%	33.8%	25.1%	41.9%	46.1%	41.8%	36.1%
45 to 64 years	21.3%	26.0%	29.7%	30.7%	7.7%	14.4%	27.2%	23.2%
65+ years	10.9%	1.5%	8.2%	31.6%	0.6%	1.1%	3.4%	11.6%
Unknown	0.1%	0.0%	0.4%	0.0%	0.7%	0.2%	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 2006 to May 2007)

Source: Maryland Adult 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 2006 TO MAY 2007)

Source: Maryland Adult Trauma Registry

Etiology	Percentage
Motor Vehicle Crash	44.7%
Motorcycle Crash	6.9%
Pedestrian Incident	6.8%
Fall	24.0%
Other	16.9%
Unknown	0.7%
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 2006 TO MAY 2007)

Source: Maryland Adult Trauma Registry

Etiology	Percentage
Motor Vehicle Crash	0.3%
Gunshot Wound	49.8%
Stabbing	40.5%
Fall	0.8%
Other	5.0%
Unknown	3.6%
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 Adult Trauma Registry

Final Disposition	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
Inpatient Rehab Facility	11.3%	11.5%	11.9%
Skilled Nursing Facility	1.7%	1.7%	1.2%
Residential Facility	1.0%	1.2%	1.2%
Specialty Referral Center	3.8%	3.2%	4.1%
Home with Services	2.9%	2.7%	2.0%
Home	69.1%	70.0%	69.7%
Acute Care Hospital	1.9%	1.8%	1.8%
Against Medical Advice	2.0%	2.0%	2.2%
Morgue/Died	5.6%	5.4%	5.4%
Other	0.7%	0.5%	0.5%
TOTAL	100.0%	100.0%	100.0%

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

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

Source: Maryland Adult Trauma Registry

ISS	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
1 to 12	73.4%	73.2%	73.0%
13 to 19	10.7%	10.7%	10.5%
20 to 35	11.2%	11.9%	12.3%
36 to 75	4.7%	4.2%	4.2%
TOTAL	100.0%	100.0%	100.0%

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

INJURY SEVERITY SCORE (ISS) BY INJURY TYPE: PRIMARY ADMISSIONS ONLY (JUNE 2006 TO MAY 2007)

Source: Maryland Adult Trauma Registry

ISS	Blunt	Penetrating	Total
1 to 12	68.7%	73.0%	69.5%
13 to 19	16.6%	10.5%	15.5%
20 to 35	12.2%	12.3%	12.2%
36 to 75	2.5%	4.2%	2.8%
TOTAL	100.0%	100.0%	100.0%

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

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

Source: Maryland Adult Trauma Registry

ISS	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
1 to 12	67.9%	69.3%	68.7%
13 to 19	16.4%	16.6%	16.6%
20 to 35	12.9%	11.6%	12.2%
36 to 75	2.8%	2.5%	2.5%
TOTAL	100.0%	100.0%	100.0%

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

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

Source: Maryland Adult Trauma Registry

ISS	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
1 to 12	68.8%	69.9%	69.5%
13 to 19	15.5%	15.6%	15.5%
20 to 35	12.6%	11.7%	12.2%
36 to 75	3.1%	2.8%	2.8%
TOTAL	100.0%	100.0%	100.0%

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

MARYLAND PEDIATRIC TRAUMA STATISTICS

LEGEND CODE

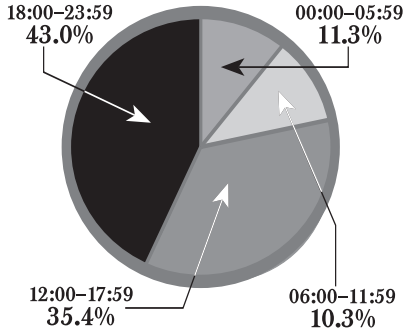
Children's National Medical Center	CNMC
Johns Hopkins Pediatric Trauma Center	JHP

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

Trauma Center	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
CNMC	757	844	899
JHP	881	899	920
TOTAL	1,638	1,743	1,819

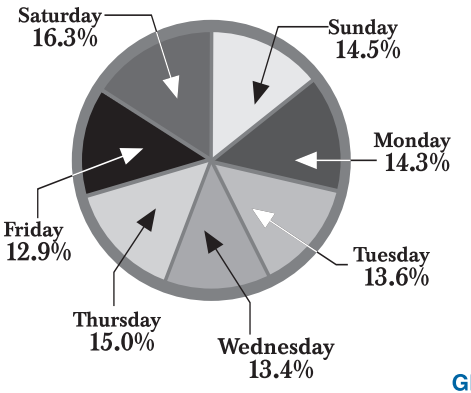
Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Pediatric Burn Center Reports.

EMERGENCY DEPARTMENT ARRIVALS BY TIME OF DAY: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2006 to May 2007)



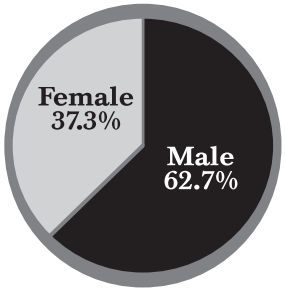
Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Pediatric Burn Center Reports.

EMERGENCY DEPARTMENT ARRIVALS BY DAY OF WEEK: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2006 to May 2007)



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 Pediatric Burn Center Reports.

GENDER PROFILE: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2006 to May 2007)



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 Pediatric Burn Center Reports.

OCCURRENCE OF INJURY BY COUNTY: SCENE ORIGIN CASES ONLY

Children Treated at Pediatric Trauma Centers (June 2006 to May 2007)

County of Injury	Number
Allegany County	1
Anne Arundel County	77
Baltimore County	103
Calvert County	21
Caroline County	2
Carroll County	32
Cecil County	22
Charles County	39
Dorchester County	6
Frederick County	25
Harford County	48
Howard County	26
Kent County	3
Montgomery County	94
Prince George's County	215
Queen Anne's County	16
St. Mary's County	27
Talbot County	5
Baltimore City	132
Pennsylvania	1
Washington, DC	23
Not Indicated	187
TOTAL	1,105

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 60.7% of the total cases treated at pediatric trauma centers. For children that were burn patients at each hospital, see Pediatric Burn Center Reports.

MODE OF PATIENT TRANSPORT BY CENTER

Children Treated at Pediatric Trauma Centers (June 2006 to May 2007)

Modality Type	CNMC	JHP	Total
Ground Ambulance	35.9%	62.1%	48.1%
Helicopter	20.6%	33.2%	26.4%
Other	43.5%	4.7%	25.5%
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 Pediatric Burn Center Reports.

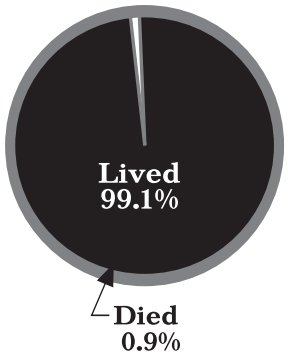
ORIGIN OF PATIENT TRANSPORT BY CENTER:

Children Treated at Pediatric Trauma Centers (June 2006 to May 2007)

Origin	CNMC	JHP	Total
Scene of Injury	49.3%	72.0%	60.7%
Hospital Transfer	41.5%	24.0%	32.7%
Other	9.2%	4.0%	6.6%
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 Pediatric Burn Center Reports.

OUTCOME PROFILE: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2006 to May 2007)



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 Pediatric Burn Center Reports.

FINAL DISPOSITION OF PATIENTS

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

Final Disposition	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
Inpatient Rehab Facility	1.7%	1.5%	2.3%
Skilled Nursing Facility	0.1%	0.0%	0.0%
Residential Facility	0.7%	0.8%	0.9%
Specialty Referral Center	0.5%	0.2%	0.3%
Home with Services	1.4%	0.9%	0.9%
Home	93.3%	94.3%	92.9%
Acute Care Hospital	0.4%	0.2%	0.2%
Against Medical Advice	0.0%	0.1%	0.1%
Morgue/Died	0.9%	0.9%	0.9%
Foster Care	0.4%	0.5%	0.9%
Other	0.6%	0.6%	0.6%
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 Pediatric Burn Center Reports.

ETIOLOGY OF INJURIES BY AGES

Children Treated at Pediatric Trauma Centers (June 2006 to May 2007)

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
Under 1 year	6.8%	0.0%	0.6%	16.9%	4.0%	2.6%	8.9%	10.2%
1 to 4 years	22.7%	6.5%	17.2%	35.1%	20.0%	10.3%	26.5%	27.2%
5 to 9 years	29.2%	29.0%	29.9%	26.4%	8.0%	20.5%	18.4%	24.6%
10 to 14 years	40.2%	61.3%	51.2%	20.5%	64.0%	58.9%	36.5%	34.2%
15+ years	1.1%	3.2%	1.1%	1.1%	4.0%	7.7%	9.7%	3.8%
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 Pediatric Burn Center Reports.

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

INJURY TYPE

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

Injury Type	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
Blunt	89.5%	89.1%	88.4%
Penetrating	3.5%	3.8%	3.6%
Near Drowning	0.6%	0.7%	0.9%
Hanging	0.0%	0.3%	0.0%
Ingestion	5.2%	4.8%	5.5%
Crush	0.1%	0.0%	0.0%
Snake Bite/Spider Bite	0.2%	0.2%	0.1%
Animal Bite/Human Bite	0.6%	0.9%	1.2%
Other	0.3%	0.2%	0.3%
TOTAL	100.0%	100.0%	100.0%

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

MECHANISM OF INJURY

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

Mechanism	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
Motor Vehicle Crash	24.6%	20.1%	19.6%
Motorcycle Crash	1.8%	3.0%	1.7%
Pedestrian Incident	11.7%	11.0%	9.7%
Gunshot Wound	1.6%	1.5%	1.4%
Stabbing*	1.9%	2.0%	2.2%
Fall	31.5%	34.4%	36.1%
Other	26.9%	28.0%	29.3%
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 Pediatric Burn Center Reports.

**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 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
Under 1 year	121	160	186
1 to 4 years	416	413	495
5 to 9 years	441	468	444
10 to 14 years	593	643	623
15+ years	66	59	71
Unknown	1	0	0
TOTAL	1,638	1,743	1,819

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 Pediatric Burn Center Reports.

NUMBER OF DEATHS BY AGE

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

Age	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
Under 1 year	0	3	3
1 to 4 years	5	3	8
5 to 9 years	3	4	3
10 to 14 years	6	5	3
15+ years	1	1	0
TOTAL	15	16	17

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 Pediatric Burn Center Reports.

NUMBER OF INJURIES AND DEATHS BY AGE

Children Treated at Pediatric Trauma Centers
(June 2006 to May 2007)

Age	Number of Injured Patients: Total	Number of Injured Patients: Maryland Residents	Number of Deaths: Total	Number of Deaths: Maryland Residents
Under 1 year	186	181	3	3
1 to 4 years	495	474	8	8
5 to 9 years	444	420	3	3
10 to 14 years	623	601	3	3
15+ years	71	70	0	0
TOTAL	1,819	1,746	17	17

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

RESIDENCE OF PATIENTS BY COUNTY: SCENE ORIGIN CASES ONLY

Children Treated at Pediatric Trauma Centers (June 2006 to May 2007)

County of Residence	Number
Anne Arundel County	88
Baltimore County	145
Calvert County	24
Caroline County	3
Carroll County	36
Cecil County	20
Charles County	36
Dorchester County	4
Frederick County	21
Harford County	54
Howard County	25
Kent County	5
Montgomery County	94
Prince George's County	221
Queen Anne's County	13
St. Mary's County	25
Somerset County	2
Talbot County	3
Washington County	2
Baltimore City	227
Virginia	7
Pennsylvania	11
Washington, DC	14
Delaware	3
Other	18
Not Indicated	4
TOTAL	1,105

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 60.7% of the total cases treated at pediatric trauma centers. For children that were burn patients at each hospital, see Pediatric Burn Center Reports.

CHILDREN WITH PROTECTIVE DEVICES AT TIME OF TRAUMA INCIDENT: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (3-YEAR COMPARISON)

Protective Device	June 2004 to May 2005	June 2005 to May 2006	June 2006 to May 2007
None	31.9%	34.4%	30.7%
Seatbelt	23.3%	17.4%	18.3%
Airbag & Seatbelt	1.5%	1.2%	2.8%
Airbag Only	0.4%	0.4%	0.0%
Infant/Child Seat	9.6%	12.4%	13.2%
Protective Helmet	11.1%	10.5%	8.2%
Padding/Protective Clothing	0.2%	1.0%	0.8%
Other Protective Device	0.0%	0.0%	0.8%
Unknown	22.0%	22.7%	25.2%
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 Pediatric Burn Center Reports.

ETIOLOGY OF INJURIES BY AGES

Children Treated at Pediatric Trauma Centers or Adult Trauma Centers (June 2006 to May 2007)

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
Under 1 year	6.6%	0.0%	0.4%	17.8%	5.6%	2.3%	9.0%	10.1%
1 to 4 years	21.4%	10.5%	15.4%	35.0%	16.6%	13.6%	27.8%	26.5%
5 to 9 years	27.3%	29.0%	29.5%	25.3%	5.6%	18.2%	19.4%	24.3%
10 to 14 years	44.7%	60.5%	54.7%	21.9%	72.2%	65.9%	43.8%	39.1%
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 Pediatric Burn Center Reports.

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

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

The National Study Center for Trauma and Emergency Medical Systems (NSC), at the University of Maryland School of Medicine, is the primary research center of the Maryland EMS System. The NSC collaborates with federal and state agencies, international organizations, academic institutions, private industry and other governmental groups on projects focusing on injury epidemiology, injury prevention, and improvements in the prehospital and in-hospital delivery and coordination of trauma care.

The NSC continues to grow in terms of research and training activities. During the past year Thomas M. Scalea, MD, was named Interim Director. During FY 2007, investigators at the National Study Center for Trauma and Emergency Medical Systems (NSC) had over 30 articles published in peer-reviewed journals and over 20 manuscripts accepted for publication. The NSC newsletter, entitled "Injury Watch," continues to be published on a quarterly basis. The NSC was awarded the Outstanding Innovation Award from the Impaired Driving Coalition in October 2006 and received an award for Outstanding Customer Service from the Maryland Office of Traffic and Safety at their annual meeting in October. Finally, the faculty has received numerous grants, as delineated below.

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 50 cases were enrolled into CIREN during the 2006-2007 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 program received news coverage broadcast in February from a Baltimore television station (WBAL). A data link was established with the OCME to allow surveillance of fatalities resulting from a motor vehicle crash for possible inclusion in the CIREN program. The CIREN team has begun to develop a biomechanics presentation for use in high schools in conjunction with the Baltimore County Traffic Safety Task Force.

The Maryland CODES (Crash Outcome Data Evaluation System) continues to serve as a contact point for state and local agencies to obtain data and analyses on various aspects of motor vehicle safety in the state. In addition to routine data requests, data provided by the Maryland CODES staff are used for portions of the Benchmark and Annual Reports compiled by the State's Highway Safety Office. NSC staff members serve on the Traffic Records Coordinating Committee, the State Highway Administration's Strategic Plan Update Committee, the national Traffic Records Advisory Committee, and Maryland's Partnership for a Safer Maryland. To illustrate the use of both high probability and imputed links in the CODES project, presentations were made at the Maryland Highway Safety Office annual and semi-annual meetings, the National Traffic Records Forum, the CODES Technical Assistance Meeting, and other state and local agencies.

As a result of partnerships developed through CODES, the NSC is collaborating with state agencies to make highway safety data available to the public, via the internet, in the form of "canned" reports and queries. Using the Critical Analysis Reporting Environment (CARE) software, created by the University of Alabama as a web-based program for data analysis, the 2004 Maryland Automated Accident Reporting System (MAARS) database will be the first data set prepared for access by Maryland's Highway Safety Community. Users will have the ability to run frequencies and cross tabulations on selected variables obtained from the crash report. Following the implementation of the MAARS reports, it is anticipated that additional CODES data sets will be made available through the CARE software. The number and type of variables available for analysis will be determined by the host agency of each individual database.

Other CODES-related projects include a longitudinal study of Maryland drivers receiving speeding tickets and an assessment of the effect of graduated licensing systems on risks to both teenage drivers and others sharing the road with them. Outreach and dissemination of study results regarding injuries sustained in motor vehicle crashes continue to be a focus for NSC investigators and research staff.

NSC investigators are focusing on motorcycle safety as well. The NSC was awarded funding from NHTSA to analyze CODES data to compare types of motorcycle crash injuries sustained by older versus younger motorcyclists and determine rider, vehicle, and environmental factors associated with these differences. In a study funded by NHTSA and Dynamic Science, Inc., a randomized controlled intervention trial to increase licensure rates of Maryland motorcycle owners was conducted. For this project, a study cohort was assembled (intervention and comparison groups) and educational materials to encourage licensure were developed and mailed following collaborative meetings with the Maryland Motor Vehicle Administration (MVA), and motorcycle safety and rider groups. The results of the study showed there were marked differences in crash characteristics and outcomes based on licensure-ownership status. Unlicensed non-owners had a 69 percent increased risk of dying in crashes and were twice as likely to have failed to wear a helmet compared with licensed owners. The proportion of single-vehicle nighttime crashes, which are associated with high blood alcohol concentrations, was higher among the unlicensed.

The NSC completed a contract from the Blue Ribbon Panel for Evaluation of Advanced Airbag Technology to conduct a comprehensive research project to assess the mortality and injury experience associated with changing frontal airbag designs. The study findings were presented in April this year.

Traumatic brain injury: The NSC concluded its contract from the U.S. Army to study mild traumatic brain injury and long-term outcomes in Shock Trauma patients with blunt trauma injuries. Patients were given a battery of tests, including an electronic balance test and various neuropsychological and cognitive measures, and follow-up tests were administered to determine which, if any, baseline measures predict those with persistent physical, cognitive, and behavioral problems. One-hundred-eighty subjects were recruited. The study showed that most symptoms had increased 3 to 10 days post-injury, but decreased within 3 months. Emotional and cognitive symptoms remained elevated. Approximately, 36% of patients reported four or more symptoms one year after injury. Balance problems were associated with noise sensitivity, which was significantly associated with subjects' inability to return to work or school at one year post-injury.

Occupational injuries: Supported by funds from the National Institute for Occupational Safety and Health (NIOSH), the NSC continued its surveillance of work-related injuries in Maryland. From the linkage of statewide data sources, it is estimated that, overall, approximately 7% of emergency department visits for injuries are work-related, as are 4% of hospital admissions. From the trauma registry, approximately 5% of patients have occupational injuries. Finally, 2% of injury fatalities are due to injuries incurred on the job.

Further analyses will provide insights into the usefulness of the various statewide databases to identify injuries related to work. One of the more difficult issues is that of motor vehicle-related injuries, which are frequently not identified as occupational. Findings from this study will be shared with the Maryland Department of Health and Mental Hygiene (DHMH) and Maryland Occupational Safety and Health (MOSH) in order to operationalize an ongoing surveillance of these injuries, in order to be able to identify high-risk occupations and prioritize prevention efforts.

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.

Substance abuse: A clinical trial of the usefulness of brief intervention for 497 alcohol-dependent trauma patients, funded by the National Institute of Alcohol and Alcohol Abuse, sought to determine if a personalized brief intervention would result in decreased drinking and conse-

quences (including injury episodes) from alcohol abuse. The study's results, published this year in the *Journal of Trauma*, demonstrated the feasibility of identifying patients with alcohol use problems and delivering an informal brief intervention tool in the hectic and busy environment of a trauma center.

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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Note: All names valid as of September 12, 2007.

The 2006-2007 MIEMSS Annual Report is dedicated to Chief John R. Frazier, who died April 6, 2007. Chief Frazier was a member of the original EMS Board who served for 12 years; he continued to remain active in EMS issues until his death.

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