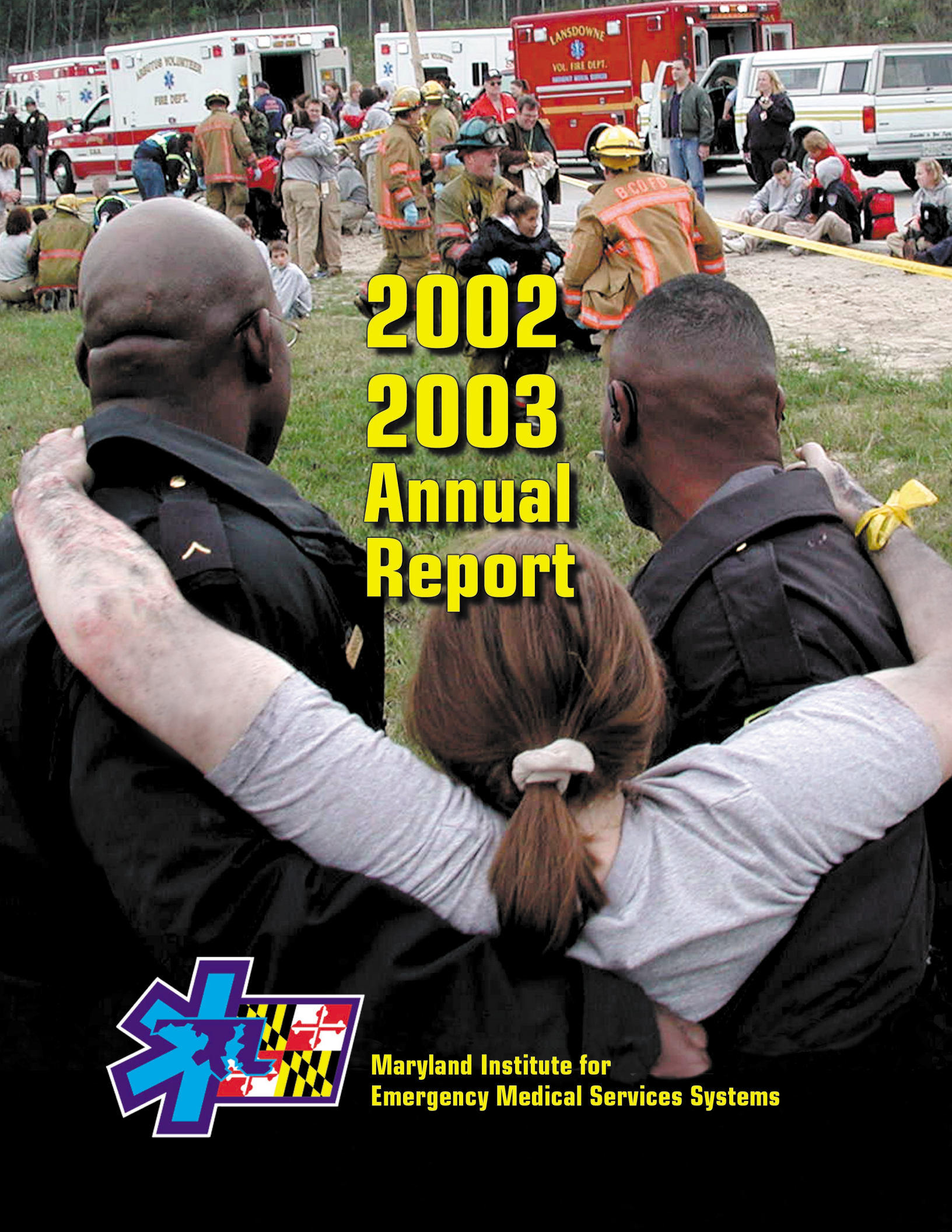


2002 2003 Annual Report

Maryland Institute for
Emergency Medical Services Systems

MIEMSS: MISSION/VISION/KEY GOALS

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.

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.

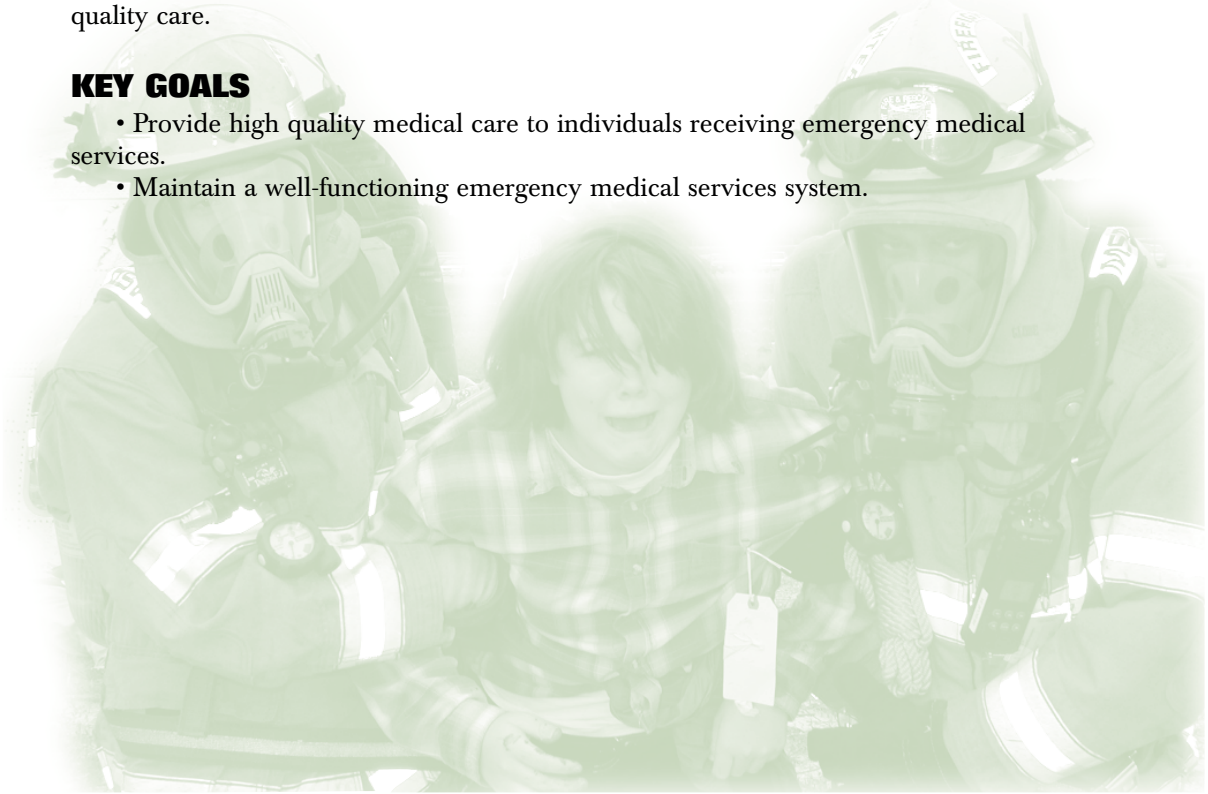
VISION

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.



2002–2003 ANNUAL REPORT

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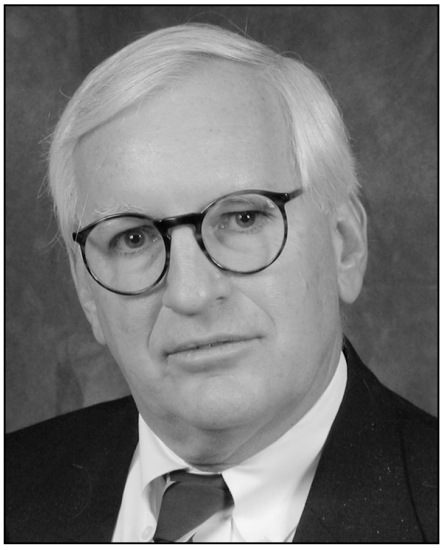
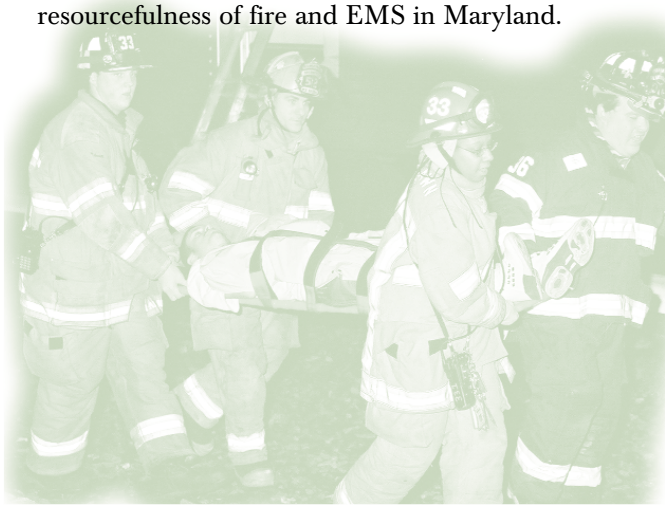
FROM THE EMS BOARD CHAIRPERSON



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

Tragedy has no zip code. Accidents strike anywhere. Mother Nature is indiscriminant when she is wreaking havoc. Emergency Medical Services (EMS), unlike Wal-Mart or McDonald's, cannot select demographics-driven locations for its base. Maryland's EMS system is only as strong as it is in the most remote area of the state. EMS must be prepared to respond at a moment's notice in Baltimore, Annapolis, Bel Air, Gaithersburg . . . or Finzel, Maryland.

Finzel, in Western Maryland, is so small that it has no mayor, no local police, no public paid work force, and no recognition in the U.S. Census. Yet, on top of fog-shrouded Big Savage Mountain in Garrett County on May 23, 2003, it was the scene of a mass collision involving 85 vehicles that tested the responsiveness and resourcefulness of fire and EMS in Maryland.



Visibility was nearly zero on the Appalachian ridge around 1:15 PM at marker 29 in the eastbound lane of I-68 when five cars were involved in a crash. The Eastern Garrett Volunteer Fire Department and the Frostburg Area Ambulance Service responded. At 2 PM, as patients were being treated and loaded into ambulances and vehicles were being moved out of the roadway, motorists in the westbound lane of I-68, slowing to see what was occurring at the wreck site, set off a second chain-reaction crash. The mass collision involved 40 separate collisions, 80 vehicles, and ultimately led to 70 injured patients and two deaths. Over 12 excruciatingly long minutes, cars and trucks plowed into each other. A tangle of damaged cars, trucks, and tractor-trailers was left in its wake. A 20-mile stretch of I-68 was closed in both directions, from LaVale to Grantsville.

There are countless stories of personal kindnesses, of a town too small to get even an honorable mention in the census, taking on a gargantuan task. Neighbors offered food and consolation to strangers; stranded families were provided homes to stay in; school buses appeared out of the mist to ferry motorists to the Finzel town hall where volunteers served up food and comfort.

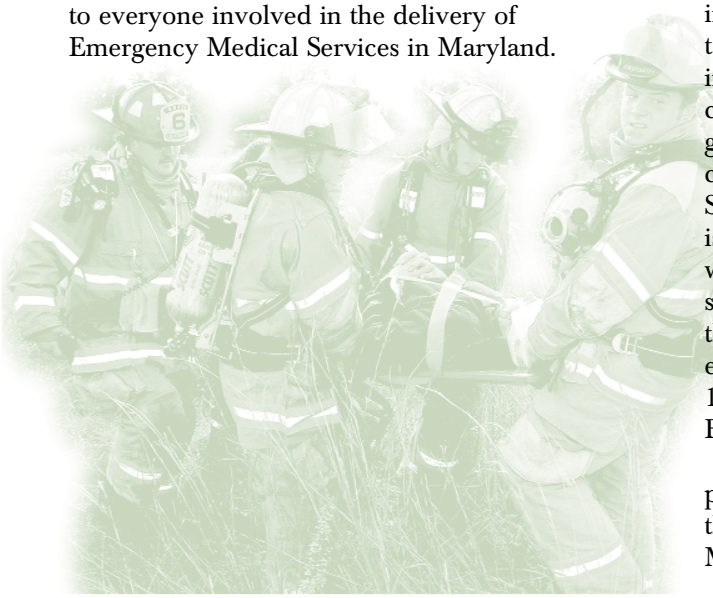
The incident was also remarkable for the broad range of EMS services that melded seamlessly in response. The system of care that MIEMSS has developed over decades worked effectively in one of the most rural areas of the state. Lessons learned from drills and educational programs dealing with chain-reaction crashes that have been offered to providers in recent years were implemented. Thirty ambulances, public and commercial, paid and volunteer, from Maryland, Pennsylvania, and West Virginia responded. The skills taught to first responders and emergency medical services technicians were tested. The Maryland State Police Crash Team reported to the scene. A Red Cross shelter was set up three miles from the incident. The extrication equipment used to free victims, paid for by Highway Safety grants secured through the Maryland State Highway Administration by MIEMSS and the Region I (Western Maryland) Advisory Council, worked flawlessly. Sacred Heart Hospital, Cumberland Memorial Hospital, and the R Adams Cowley Shock Trauma Center, all members of Maryland's system of hospital trauma care, received and treated patients from the incident. The 9-1-1 centers in Garrett and Allegany counties provided the communications coordination. MIEMSS communica-

tions channels linked those at the scene to the hospitals. The Critical Injury Stress Management Team offered stress management to responders, some of whom witnessed deaths only a few feet in front of them as cars crashed in the fog.

The "System" worked. Was it flawless? Most likely not, and those driving our EMS system always strive to be better, to be on the cutting edge. Representatives from responding fire, EMS, police, state highway, and the Red Cross have already met to discuss the positive and negative aspects of the response to the incident and will meet again to address areas of concern.

But, the entire scene was cleared of more than 70 patients within two hours. The Golden Hour was met for all serious trauma patients. The spirit of cooperation between fire and EMS was excellent at the scene. Beyond skills, providers demonstrated the spirit that drives our system and makes it the best in the world. Lives were saved, injuries were treated effectively and expeditiously. This was truly an example of the "cooperative excellence" that is the hallmark of Maryland's EMS system.

We are fortunate to have a system in place in Maryland that can respond to urban streets and alleys, to suburban malls and ball fields, to rural seashores and mountain vistas. The topography and demographics of Maryland offer a wide array of challenges to fire and EMS, and I am pleased to report that these challenges are being met every day by a cadre of dedicated people supported by a system steeped in tradition and success. Thanks to everyone involved in the delivery of Emergency Medical Services in Maryland.



MIEMSS

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

FROM THE EXECUTIVE DIRECTOR

The past year has been a challenge and the prospects for the near future are also challenging. The nationwide recession reached Maryland. Our country has been engaged in war and is still reeling from terrorist acts that touched our shores. The challenges for the fire and EMS services are great. Yet, because of the efforts of many over the past decade, I am confident we are better prepared to meet these challenges.

July marked the 10-year anniversary of the implementation of Maryland's EMS Law. Like today, the 1990s began with the nation at war and in the throes of a recession that threatened to claim Maryland EMS as a victim. Draconian budget cuts were proposed to the State's EMS agencies and to state support for local fire and EMS. Statewide, EMS was struggling with leadership issues, its place in state government, and its role within the EMS community. However, with the support of Maryland's fire and EMS community, the executive and legislative leadership responded, first creating the EMS Operations Fund in 1992, and then enacting House Bill 1222, the EMS Law, in 1993.

The EMS Operations Fund was enacted to provide a source of revenue dedicated solely to the Maryland Fire and Rescue Institute, the Maryland Institute for Emergency Medical

Services Systems, the Aviation Division of the Maryland State Police, the Shock Trauma Center, and State Aid to Local Fire, Rescue, and Ambulance Services (now known as the Amoss Fund). The Fund was expected to provide a stable funding resource for the state's EMS and fire-related organizations. In fact, each of the entities supported by the Fund has realized a modest growth over this decade that has strengthened fire and EMS services in Maryland.

The leadership structure created by the EMS Law was equally important to MIEMSS and the fire and EMS communities. The law clarified the legal authority and organizational framework for EMS in Maryland. The legislation established MIEMSS as an independent, executive-level state agency and created an EMS Board and Advisory Council to provide oversight, communication, participation, and leadership for the system. The law detailed MIEMSS' responsibilities and its role in support of emergency medical services and the EMS Board. The Board and Advisory Council sit atop a pyramid of subcommittees that promote effective, broad-based participation from the fire and EMS community and a process of "consensus building" that leads to "cooperative excellence." The Board and SEMSAC have been extremely effective advocates for EMS in Maryland, providing direction to MIEMSS.

Despite our significant advances, we still face both old and new challenges. A principal focus of MIEMSS is enhancing the use and value of the resources that we have to support local providers and the improvement of patient outcome. This is accomplished by collecting data and evaluating the quality of the care. Quality improvement integrates planning and leadership with data utilization and analysis in cooperation with customers and stakeholders. Over the years, and in conjunction with other EMS-related agencies, Maryland has amassed a wide variety of data. This database will be enhanced within the next year by the introduction of the Electronic Maryland Ambulance Information System (EMAIS). Our challenge is to utilize this database with an eye toward improving the effectiveness of the EMS system.

MIEMSS' responsibilities will continue to include the statewide EMS communications system, licensing or certifying over 30,000 EMS providers, system medical oversight, regional administration, hospital designation, and injury prevention and education. In the past decade, the EMS for Children Program, and more recently, Geriatric EMS, regulation of commercial ambulances, and participating in domestic preparedness efforts have increasingly become important priorities for MIEMSS.

Events of recent years have added new priorities for MIEMSS. The agency has an important role in the planning related to Weapons of Mass Destruction. With the Department of Health and Mental Hygiene, the agency developed the state's medical response plan. MIEMSS supports the health function at the state's Emergency Operations Center and has a trained cadre of Rapid Response Teams with defined responsibilities for multi-casualty events. Through our EMRC/SYSCOM communications center and the Facility Resource Emergency Database (FRED) that was created by MIEMSS staff, MIEMSS is the information repository for these events, providing statewide advisories of events, call-downs for emergency department availability, resource cataloging, syndromic surveillance, and patient tracking.

I invite you to read through our report to gain further, detailed insight into what we are accomplishing and where we are going.

We have come a long way in the past ten years. The laws that were enacted in the early 1990s have been invaluable to us in our efforts to meet our mission. But, more important are the people working within the framework of our system. I thank the fire and EMS community, both volunteer and career, for its partnership over the past decade. Fire and Emergency Medical Services in Maryland are remarkable for their integrated approach and dedicated personnel. The partnership between fire and EMS is strong, and its roots are firmly planted in each and every jurisdiction. Your support has been vital, and will be as important in the future. I thank you and pledge our continued efforts to strengthen and improve emergency medical services in the state of Maryland.

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.

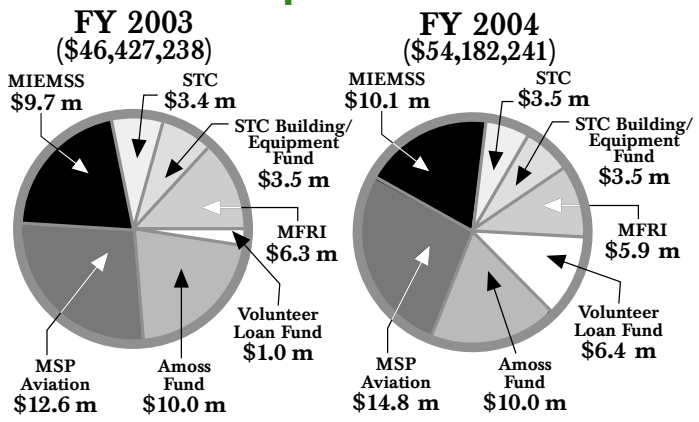
The human resources staff is responsible for recruitment, timekeeping, payroll-related services, benefits and retirement coordination, personnel evaluation processes, and other traditional personnel functions.

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

Most administrative, fleet, meeting, and office costs are centrally funded through the Administration's budget.

MIEMSS FY 2003 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 Division 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 2003 there were 5,011 patients transported by the Maryland State Police (MSP) Aviation Division. Of these patients, 4,759 (95%) were transported from the scene of injury at the request of the local fire services, and 252 (5%) were transported between hospitals to a higher level of care.

Types of calls included the following:

• Motor vehicle crashes	2,464
• Falls	689
• Pedestrians	211
• Gunshot wounds	125
• Assaults	104
• Burns	96
• Industrial accidents	80
• Stabbings	66
• Hand injuries	52
• Hyperbaric patients	17
• Eye injuries	10
• Drownings	8
• Electrocutions	6

Interfacility transports included the following types of patients:

• Trauma	107
• Medical	76
• Neonatal	69

In FY 2003, Maryland's EMS community commemorated the transport of the MSP Aviation Division's 100,000th patient. In continuous operation since March 19, 1970, the MSP program is the oldest existing med-evac program for the transport of civilians in the country.

FY 2003 saw the Aviation Division initiate participation in the new Pediatric Rapid Sequence Intubation (RSI) pilot protocol, in addition to maintaining participation in the current Adult RSI pilot. Designed to address the needs of patients with severe head injuries, these RSI pilot protocols allow MSP flight paramedics to use neuromuscular blocking agents in the field to provide endotracheal intubation for patients who are not breathing adequately.

Advanced scenario-based training was again utilized for division flight paramedics in joint training exercises with the U.S. Secret Service at the Secret Service training facility. These exercises allowed life-like simulation of patient care situations as would be faced by flight paramedics in the course of their normal duties.

FY 2003 also saw the continuation of efforts to computerize the documentation of patient care information. Once complete, this process will better allow for linkage with patient outcome information, thereby giving greater ability to evaluate how best to optimize patient care.

MIEMSS FY 2003 APPROPRIATION BY DEPARTMENT

Administrative Offices	
Executive Director, Legal Office	$591,827
Financial & Human Resources Administration	1,012,347
Planning/Program Development/Total Quality Management	253,289
Communications	
Equipment	972,745
Maintenance	1,111,026
EMRC/SYSCOM	1,006,338
Education/Public Information	
Licensure, & Certification	1,239,994
Public Information & Media Services	536,139
Emergency Health Services Program	93,500
Information Technology	1,099,592
Medical Services	
Office of Medical Director	558,669
Office of Hospital Programs	105,339
EMS-Children	154,888
Regional Administration	861,945
Commercial Ambulance Program	220,000
Grants	
EMS-Children	100,000
Perinatal Center Designation Program	75,000
TOTAL	$9,992,648

MIEMSS FY 2003 EXPENDITURE BY OBJECT CODE (INCLUDES SPECIAL, REIMBURSEABLE AND FEDERAL FUNDS)

FY 2003	Actual
Number of Positions	92.1
Salaries and Wages	$6,193,195
Technical/Special Fees	402,382
Communication	1,100,014
Travel	117,477
Fuel and Utilities	36,887
Motor Vehicle Operation and Maintenance	170,815
Contractual Services	1,295,409
Supplies and Materials	201,465
Equipment–Replacement	69,985
Equipment–Additional	448,827
Fixed Charges	68,466
Grants	941,451
Total Salary and Wages	$6,995,577
Total Operating Expenses	$4,450,796
Total Expenditure	$11,046,373

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 and procurement and contracts, including technology initiatives.

The Attorney General's Office reviewed and prosecuted 37 cases of alleged prohibited acts by EMS providers and applicants, litigated a freedom of information act claim, and successfully defended a procurement claim in connection with the Electronic Maryland Ambulance Information System (EMAIS) RFP.

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 implement changes to 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, and developing EMAIS to replace the current paper runsheet with a computer software application.

The Office also assisted in the interpretation and implementation of the Homeland Security Act of 2002 as it related to the smallpox vaccination initiative and the Smallpox Emergency Personnel Protection Act of 2003.

The Attorney General's Office presented several educational programs on the HIPAA Privacy regulations and data transaction set regulations. A presentation by the Office was videotaped and distributed, along with sample forms to be used in implementing the HIPAA privacy regulations. These will assist EMS units in education and training. Presentations were also made explaining the federal ambulance restocking safe harbor regulations, and a state regulation was written to assist in implementing the safe harbor regulation.

The Attorney's General's Office assisted in the administration of state and federal grants, and in licensing the MIEMSS Facility Resource Emergency Database program to Pennsylvania.

COMMUNICATIONS ENGINEERING SERVICES

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

The main highlight for MIEMSS Communications for FY 2003 was the integration of Frederick County EMS services into the Baltimore Emergency Medical Resource Center (EMRC). With this change, all Frederick EMS providers now have access to the entire network provided by SYSCOM and EMRC. This enhances the services by allowing rapid conferencing between the field provider and all of the fixed medical resources in the Baltimore–Washington region, as well as Frederick County's hospital.

MIEMSS Communications continued supporting the statewide radio infrastructure project with the installation of new towers at Kingsville (Baltimore County), Stoney Forest (Harford County), Hagerstown (Washington County), and Federalsburg (Caroline County). A new communications shelter was installed at the Dorchester County Bucktown site. Dorchester County provided the equipment to establish the last digital link between Baltimore and Ocean City.

A new digital microwave link was installed between the MIEMSS backbone to the Pikesville Maryland State Police (MSP) Headquarters. This will permit access to the MIEMSS helicopter cad system over a private and secure network.

Three regular Central Alarm Advisory Council meetings were held around the state–one in Queen Anne's County, one in Washington County, and one in Baltimore City.

A total of 120 mobile EMS radios were distributed throughout the state at a cost of $83,400. Funding in the amount of $315,000 was supplied for grants for Cardiac Monitor/Defibrillators and Automated External Defibrillators (AEDs).

A new wireless digital project was started to provide data connectivity between the various public safety entities in Maryland. The prototype system was deployed in Easton, Maryland (Talbot County). This system uses a small amount of the digital microwave capacity to link MIEMSS, the MSP, and the State Highway Administration to their respective facilities in Easton. Later, other state and local agencies will join this network.

MIEMSS Communications processed a total of 752 service reports for FY 2003. In addition, staff performed 90 ambulance radio inspections under the Volunteer Ambulance Inspection Program.

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) panel (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), AND THE EMS BOARD

• Incidents Reported to IRC	224
• IRC Investigations Initiated	200
• IRC Investigations Conducted	185
• IRC Investigations Continued	24
• IRC Complaints Forwarded to PRP	37
• Complaints Dismissed by PRP	2
• Complaints Forwarded to EMS Board	37

EMS Board Action

• Reprimands	3
• Probation	6
• Suspensions	6
• Revocations	6
• Remedial training	5
• Surrenders	0
• Evaluation	2
• Applications Denied	5
• Case Resolution Conferences	5
• Dismissed	2

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 received a continuation of its contract for the third year with the U.S. Public Health Service to develop and provide training and education for over 8,000 members of the National Disaster Medical System (NDMS). This year's budget is a little over $ 2 million, with emphasis on creating training for special response teams, including teams focused on surgical, veterinary, mortuary, and international responses to disasters. Headed by Rick Bissell, the EHS team now has over 50 courses completed and available for NDMS members nationwide.

Demand has increased for our students upon graduation, with an increasing shortage of qualified paramedics nationwide and rapidly growing employment for management and graduate students in the realm of homeland security. Numerous current students and recent graduates are now working for the Department of Homeland Security, the National Disaster Medical System, the Centers for Disease Control and Prevention, and related contractors such as Titan/RPI and Booze-Allen-Hamilton.

Undergraduate enrollment continues to increase, especially in the paramedic track. One reason for this is the opening of the EHS Living Learning Center, an academic residential community for EHS majors. The department also received Maryland accreditation from MIEMSS and continues to maintain national accreditation through CAAHEP.

To date, EHS has contracts with 26 educational institutions nationwide to provide critical care transport training utilizing the department's Critical Care Transport Course. In 2001, 634 students, and in the first half of 2002, 240 students,

attended Critical Care Transport courses. Sixty-five students have completed the Pediatric and Neonatal Critical Care Transport Course since its first offering in 2001.

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 prehospital, 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 Group (PEMAG), the state Pediatric Quality Improvement Committee, and the five Regional Pediatric EMS Advisory Committees. Federal EMSC grants are coordinated through the Maryland EMSC Program Office, involving statewide projects, specialized targeted issues, projects, and research initiatives at academic universities.

MIEMSS has again been awarded an EMSC State Partnership Grant from the Maternal Child Health Bureau of the Department of Health and Human Services in joint sponsorship with the National Highway Traffic Safety Administration (NHTSA). The 2000-2004 EMSC Partnership Grant has two major focus areas: (1) ABC's of KIDS: Preparing and Planning for the Needs of Children in Disasters and (2) Injury Prevention Initiatives for Children through the Introduction of the RISK WATCH® Curriculum from the National Fire Protection Association. The 2003-2006 EMSC Partnership Grant continues to build

EMS Based Injury Prevention Program for Children special projects were funded through the EMSC Partnership Grant for the fourth year. The following awards were made:

Applicant	Summary of Project	Target Area
Region I Frostburg Area Service	**Child Safety Seat (CSS) Checks for Allegany County area.** Continue to support the CPS resource within Frostburg with the purchase of CSS & materials for 2 seat checks.	Children 0-12 in Frostburg area and county
Region I Garrett County	**Pre-Incident Planning System (PIPS)** Establish the technical resources and hardware to implement the PIPS computer system for school preplanning.	School-age children in Garrett County
Region IV Shore Health Systems–Easton Maryland	**Hunting: A Safety and Family Tradition** Development of a safety poster focused on safe hunting practices for both land and water recreational/sport hunting.	Eastern Shore families
Region V Montgomery County DFRS	**Children Should Be Seen and Not Hurt** Bike helmet distribution in coordination with a safety event & new Boys & Girls Club in northern county in high-risk area.	School-age children in Montgomery County
Region V Region V Education Council	**Adapting RISK WATCH® for Preschool Children with SHCN** Adaptation of tools and toys for RISK WATCH at Wheatley Special Center serving 700 children, ages 2-6 with special needs.	Prince George's County Special School

on the integration of EMSC with new interagency collaborations with the Maryland chapter of the American Academy of Pediatrics and the Maryland State Department of Education.

This grant will provide for further integration of the Kids in Disasters initiatives with a review of existing programs, plans, and policies for inclusion of the needs of children and families and expanding the JUMPSTART triage training and disaster preplanning with schools. The Kids in Disasters project includes the following initiatives:

1. Pediatric Triage Training with JUMPSTART & START workshops with corresponding table-top exercises and scenarios focused on children. Educational opportunities will be expanded to include school and public health nurses, and scenarios will include children with special learning and health needs.
2. Moulage workshops have been developed to recruit and maintain a team of volunteers to assist with drills. The project has also established a moulage resource kit and moulage workshop-training document and pictorial files.
3. The Maryland Virtual Emergency Response Systems (MVERS) joint project with the Maryland State Police, MIEMSS Rapid Response Team, and school partners. The MVERS program provides worksheets for gathering information and the page-builder software on CD-ROM to store and recall the essential data in an organized format for all aspects of an emergency response. The program will improve and enhance the communication and coordinated response of public safety, public health, and educational professionals to critical incidents, both man-made and natural.

In October 2002, the Maryland EMSC program hosted the first Mid-Atlantic eight-state EMSC Regional Symposium in Columbia, Maryland through an EMSC Supplemental Grant from MCHB and NHTSA. This two-day symposium brought together interdisciplinary representatives from surrounding states to promote the dissemination of knowledge and programs developed from federal grant awards and to increase communication throughout the region. The Mid-Atlantic EMSC group grew from the existing Atlantic EMS Council that includes Virginia, West Virginia, the District of Columbia, Maryland, Delaware, Pennsylvania, and New Jersey. The EMSC group has recently expanded to include New York State. During June 2003, the Maryland EMSC and Public Information & Media Services offices collaborated with the District of Columbia EMSC Partnership Grant team for the second Mid-Atlantic EMSC Regional Symposium held in Washington, DC. The Maryland RISK WATCH®, Kids in Disasters, and School Health First Aid Guidelines were presented at these two symposiums.

The EMSC Program received a Maryland Department of Transportation Highway Safety Grant to initiate an assessment of hospital resources and knowledge on child passenger safety. The focus for the second year of the Hospital Child Passenger Safety (CPS) Project grant was to increase the educational opportunities for health care providers and to provide current and accurate child passenger safety information. During the past year, the project has conducted five regional workshops on CPS for Children with Special Health Care Needs and held two conferences on Safe Transport for All Children offered to clinicians, public safety, and child health advocates throughout the state. CPS resource packets were developed and delivered to every acute care hospital in the state by Certified Child Passenger Safety Technicians. Promotional materials were developed for occupant protection initiatives for all ages jointly with the MIEMSS Public Information & Media Services staff.

Maryland was awarded a RISK WATCH® Champion Award for 2003 from the National Fire Protection Association (NFPA). The Emergency Medical Services for Children (EMSC) program at MIEMSS is the lead agency coordinating this two-year initiative, along with other state partners from the Office of the Maryland State Fire Marshal, the Maryland State Police, and the Maryland Department of Education. Other partners in RISK WATCH® include Maryland SAFE KIDS, the Fire Prevention Committee of the Maryland State Firemen's Association, the State Highway Administration, the Maryland & National Capital Poison Centers, the Maryland Chapter of the American Trauma Society (ATS), and the Maryland Department of Natural Resources. During the first year of the Champion Award given to Maryland, five communities have committed to place the RISK WATCH® program into 20 classrooms during fall 2003. The five communities are Howard, Montgomery, and Prince George's counties, the special needs schools in Maryland, and parochial schools in Charles County. During the second year of the Champion project, the RISK WATCH® program will expand into 100 more classrooms in Maryland, with

implementation during the academic school year.

The EMSC Program staff and medical directors from PEMAG continued to support Prehospital Education for Prehospital Providers (PEPP) courses and coordinate the PEPP statewide 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 PEMAG and the Maryland chapter of the American Academy of Pediatrics' (AAP) Committee on Pediatric Emergency Medicine. Based upon the consensus process, the PEPP curriculum has been enhanced to include models that complement the Maryland EMS Medical Protocols and address those clinical skills that the Pediatric QIC and Pediatric Base Stations have identified as high risk and low volume. The Children with Special Health Care educational modules and equipment have also been integrated in the PEPP courses offered and supported by the EMSC Office and the Maryland AAP. Maryland Enhanced PEPP courses have been provided to more than 500 ALS and BLS providers, and 12 pediatric medical directors have completed the course and been approved by the national AAP. The first PEPP Refresher course was held at Winterfest 2003 in January for both ALS and BLS providers.

Prehospital continuing education programs were offered at several conferences throughout the state. Pyramid 2002 included a Moulage workshop and JUMPSTART training stations. Winterfest 2003 featured workshops on Child Abuse, Pediatric Respiratory Care, and JUMPSTART. The EMS Care 2003 state conference included a Maryland Enhanced BLS PEPP course, Pediatric Burns, Crash Reconstruction, JUMPSTART, and Pediatric Case Reviews. The Maryland Response to School Bus Incidents with Special Emphasis on Children with Special Needs was completed by the Region V Office and is available on CD-ROM for interdisciplinary training. The Moulage and School Bus programs were featured at the 2003 National EMSC Grantees meeting in Washington, DC.

The EMSC Program staff actively participates in national, state, and local SAFE KIDS coalitions; the Maryland division of the American Trauma Society; 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 PEMAG on injury prevention resources and initiatives.

EMRC/SYSCOM

Mission: To provide communication services to assist in the quality of care provided patients in Maryland's EMS System and coordinate the transport of critically ill or injured patients by med-evac helicopter.

In FY 2003, the Emergency Medical Resources Center (EMRC) handled 142,291 telephone calls and 108,970 radio calls. Of these 251,261 calls, 94,751 were communications involving a patient or an incident with multiple patients. During the same time frame, the Systems Communications Center (SYSCOM) handled 64,563 telephone calls and 4,529 radio calls. Of these 69,092 calls, 6,540 were related to requests for med-evac helicopters. However, not all requests resulted in the transport of a patient. Some requests were canceled by the requestor or were unable to be completed due to weather or other factors.

EMRC/SYSCOM continued participation in the National Disaster Medical System (NDMS). Utilizing FRED, the Facility Resource Emergency Database, EMRC/SYSCOM obtained bed status information for routine quarterly reports and in response to specific requests related to the war in Iraq.

FRED was also utilized by EMRC/SYSCOM in support of several drills, such as the REFLEX drill, which was the first region-wide drill conducted in Region III.

During the peak hospital alert season, December through March, the hospital alert poli-

cy/procedures were again modified. The EMRCs collected information on reasons for alerts and required specific names requesting the alerts.

EMS communications operations for Frederick County were incorporated into the EMRC. Access to EMRC for Frederick County units is available both by conventional EMS radio and the Frederick County 800Mhz system.

HOSPITAL PROGRAMS OFFICE

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.

The Hospital Programs staff continued to manage and coordinate quality monitoring activities for the trauma/specialty care system. Key components of the ongoing monitoring activities are the trauma registry data analysis, monthly meetings with the Maryland Trauma and Specialty Care Quality Improvement Committee, and case-specific follow-up on consumer complaints.

The office staff coordinated the designation process for the Neurotrauma Center and the re-verification process for seven of the nine trauma centers. These processes involved accepting and reviewing trauma center applications, obtaining an out-of-state review team, site visits to each of the centers, and writing the report of findings.

The office staff worked with several members of the MIEMSS administrative staff to support the work of the Legislative Trauma Funding Study Panel.

The Hospital Programs Office continued to provide support to the Maryland Traumatic Brain Injury Demonstration Project. This grant project is being coordinated through the Maryland Department of Health and Mental Hygiene (DHMH), which is the lead agency for traumatic brain injury in Maryland. DHMH is collaborating with the Mental Hygiene Administration and the Brain Injury Association of Maryland to implement project activities for training and outreach across the State.

The office was successful in obtaining a $40,000 grant from the Health Resources and Services Administration (HRSA) Trauma-EMS Systems State Planning Grant. The purpose of this

grant was to evaluate the use of the Severe Head Injury Treatment Standards in the nine adult trauma centers in Maryland. An evaluation tool was designed and tested, followed by a chart audit of a sample of severely head-injured patients at each of the adult trauma centers. The chart audits were conducted by an out-of-state team consisting of a neurosurgeon and trauma nurse. The data are currently being collated and analyzed.

A second year planning grant was submitted to HRSA with a request of $40,000 to evaluate access to trauma centers statewide, along with the appropriate triage of trauma patients to trauma centers.

INFORMATION TECHNOLOGY

Mission: To provide leadership, expertise, and coordination in information systems, data management, networking, and application development relating to emergency medical services systems.

Work continued on EMAIS (Electronic Maryland Ambulance Information System), designed to replace the current paper runsheet with a computer software application. Currently, commercial, paid, and volunteer EMS providers fill out more than 700,000 paper MAIS runsheets each year. EMAIS will save money, improve the quality of the data, and shorten the time to submit data to MIEMSS. MIEMSS published a Request for Proposal for a web-based accessible system in February 2002. The contract was awarded in October 2002. EMAIS is currently in beta testing and will be rolled out to the first of seven pilot program jurisdictions starting October 2003.

The County Hospital Alert Tracking System (CHATS) tracks six different alert types for the hospitals and jurisdictions of Region III and Region V. Those data help identify emergency department overcrowding as it occurs, so that ambulances may be redirected to less crowded

facilities, as needed. Participating hospitals and the public are able to view the status of the hospitals at all times via the MIEMSS external web page.

MIEMSS continues to use its web-based system called FRED (Facility Resource Emergency Database). This was developed in response to the 9/11 tragedy. During any disaster or emergency, MIEMSS would contact hospitals for a status of available beds. The time for the hospitals to respond would vary, depending on numerous factors, but it could take many hours for all hospitals to respond. FRED allows MIEMSS to send an alert to all hospitals requesting an update on their current status. This includes not only beds, but also staffing and medications, as well as information from the local jurisdictions regarding EMS staffing. FRED will reduce the time it takes to collect this data and make the process more efficient.

MIEMSS began actively pursuing its eGovernment goals in FY 2001 and continued to make progress in FY 2003. Thus far, CHATS system status is accessible via the MIEMSS web page. In addition, MIEMSS staff can access their email via the MIEMSS web page. EMS providers will also find copies of the protocols on-line and can access their individual continuing education reports. Hospitals can update their status via FRED. EMAIS will allow MIEMSS to begin moving its current paper data tracking system to an electronic web-based system

The Information Technology Department continued optical character recognition (OCR) scanning during FY 2003 to convert paper records to electronic images. By scanning and capturing images of prehospital care forms, it is possible to link the electronic images of records to the MAIS database. Linking images to database records will make available for review the text portions of the forms that are not otherwise captured electronically. As of June 2003, MIEMSS has successfully OCR-scanned over 1,550,000 MAIS forms.

MIEMSS continues to use its vast data resources to answer many questions regarding EMS care in Maryland. The main access package is a customer-defined system using Microsoft OLAP (On-Line Analytical Processing). This gives MIEMSS staff the flexibility of looking at the MAIS database from numerous perspectives in a user-friendly environment. As its database continues to grow with the addition of the EMAIS data, MIEMSS will be better prepared to answer even more questions about EMS in Maryland.

LICENSURE AND CERTIFICATION

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

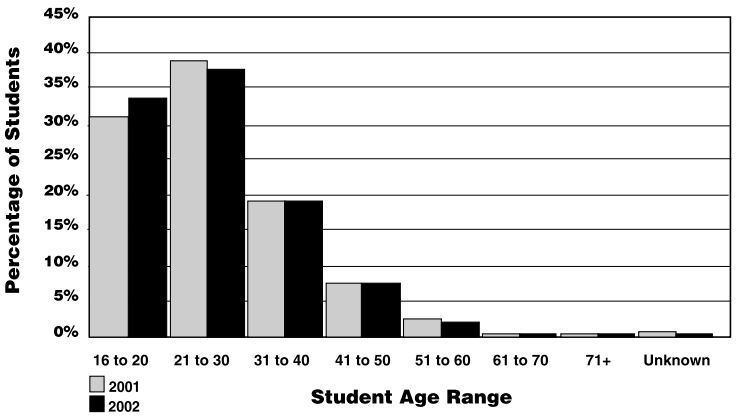
During FY 2003, the number of career, volunteer, and commercial prehospital providers in Maryland was 30,449, with the following breakdown:

• First Responders	11,034
• Emergency Medical Technicians-Basic	15,548
• Cardiac Rescue Technicians	490
• Cardiac Rescue Technicians-(I)	136
• Emergency Medical Technicians-Paramedic	2,332
• Emergency Medical Dispatchers	907

In cooperation with the Basic Life Support (BLS) Committee of the Statewide EMS Advisory Council (SEMSAC), the Office of Licensure & Certification designed, developed, and assisted with the implementation of the new enhanced 24-hour EMT-Basic refresher course. Through analysis of data and educational trends, the BLS Committee identified several topics to be covered in the EMT refresher course. The modified content includes specialized topics ranging from pediatrics to geriatrics, special medical devices, adult respiratory emergencies, documentation, and others. The intent of the new content is to provide existing EMTs with updates on current medical information and applicable new information based on the scope of practice for the Maryland EMT-Basic. The Maryland Fire & Rescue Institute (MFRI), in cooperation with MIEMSS, hosted several instructor rollouts of the new curriculum across the state in 2002. Implementation of the new curriculum took place in July 2002.

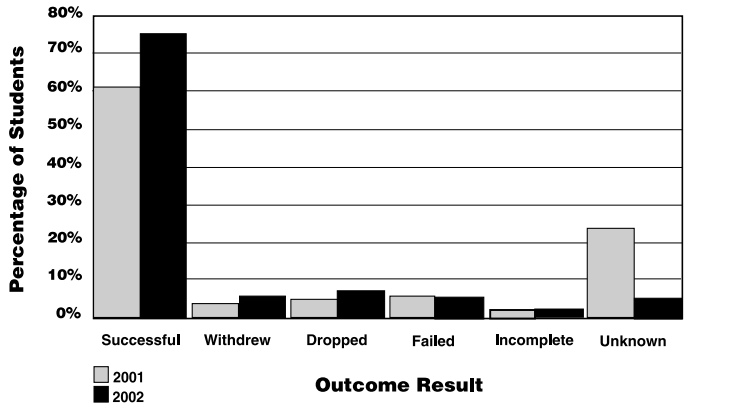
The Office of Licensure & Certification conducted several site visits for the advanced life support (ALS) education program approval process. As of June 2003, eight education programs are approved to offer ALS courses leading to licensure. Over 20 education programs are scheduled to complete the entire approval process by October 2004. The approval process, as outlined in COMAR 30.04, requires a comprehensive self-study of the educational program and a site visit

EMTB Student Age Distribution



A majority of EMTB students enrolled in EMTB courses are under the age of 30, as depicted by this chart. This information, used in conjunction with the outcome of each age group, will be insightful in determining how to best meet the educational needs of the largest age groups.

EMTB Student Outcome



In 2001, over 60% of students that enrolled in an EMTB class successfully completed it, compared to over 75% in 2002. With the high number of "unknown" outcomes in 2001, it is likely that the number of students who successfully completed the EMTB course is higher. A MESSA should be completed and turned in for every student to keep these statistics as accurate and complete as possible. In the future, these trends, incombination with the others overviewed above, will be compared and trends will be monitored. The decrease with the number of unknown outcomes is to be commended. To keep the improvement going, our goal is to have less than 2% of all EMTB students with "unknown" outcomes.

by outside educators and medical directors. The findings of the self-study and site visit are then submitted to the EMS Board for approval.

In the fall of 2002, the Office of Licensure and Certification worked in conjunction with the Commercial Ambulance Office and the Department of Emergency Health Services at the University of Maryland Baltimore County to design and develop components of a curriculum to educate existing paramedics with specialty care transports. The proposed course is scheduled to be reviewed and approved by the EMS Board in the fall of 2003.

During May and June 2003, five first responder instructor update courses were held for law enforcement instructors. The update courses, held around the State, provided nearly 100 instructors with the content and resources for including AED in all first responder courses. Effective July 1, 2003, all first responder basic and refresher courses include AED content. Given the prevalence of AEDs in the public, as well as the inclusion of AED content in all CPR courses since 2000, the addition to the first responder curriculum was well received.

In cooperation with MFRI and the MIEMSS Prehospital Education Quality Improvement Committee, the Office of Certification & Licensure analyzed two years of data from the Maryland Emergency Services Student Application (MESSA) and Registry (MESSR). Information obtained from the MESSR data includes student outcome, student demographics, State written and practical examination results, and more. The information can be broken down and analyzed by instructor, county, region, and course type. Information derived from the MESSR will be used to maximize the quality of EMS educational programs offered in Maryland. In addition, it will be used to better meet the educational needs of the all learners.

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.

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.

Throughout FY 2002/03, the Office of the Medical Director has been working with the Office of Information Technology on the development of the Electronic Maryland Ambulance Information System (EMAIS). The development process has included identifying data elements, designing screen layout, producing teaching materials, and working with the vendor to ensure the success of the program. Presentations providing an overview of the system's screen layouts and data points were conducted in jurisdictions across the state.

In addition, the Office of the Medical Director worked cooperatively with the Maryland Department of Health and Mental Hygiene (DHMH) to distribute funding through a rural health grant to jurisdictions that qualify and agree to participate in the EMAIS Pilot Program. To date, seven jurisdictions have received $28,000 to purchase computer hardware for EMS stations, fire stations, and hospitals. Washington County will be the first pilot test for the new EMAIS software using the enhanced hardware for completion of the data set, as well as using the hardware for accessing the Facility Resource Emergency Database (FRED) and the County Hospital Alerting and Tracking System (CHATS). Cecil County is anticipated to come online this fall as the second pilot county.

In February 2003, an update to the Maryland Medical Protocols for EMS providers was distributed to the jurisdictions. The new protocols were developed after extensive review by the Protocol Review Committee. Effective July 1, the new protocols included:

- A Chemical and Physical Restraint Protocol
- A protocol for the administration of MARK I Kits by BLS and ALS providers
- A Stroke Protocol
- An addition that would allow BLS providers to use glucometers
- An addition to the AED protocol that addresses the use of pediatric AED on patients from 1 to 8 years of age

A PowerPoint presentation of the new protocols was developed to assist the jurisdictions with the implementation of the new protocols. The new protocols and update materials are posted on the MIEMSS website.

In May a meeting was held with representatives from MIEMSS, the Maryland Hospital Association, and representatives from hospitals across the state to discuss the new Stroke Protocol and the designation of Acute Stroke Care Facilities. Consensus was reached and the Office of the Medical Director was tasked with the development of guidelines for "levels" of Stroke Care Facilities. Three levels of stroke care facilities are to be identified, with a Level I Center providing comprehensive care, a Level II Center providing initial emergency management including screen and fibrinolytic therapy, and a Level III Center that will screen the patient and arrange immediate transfer to a facility offering comprehensive or fibrinolytic therapy. A draft of the guidelines is to be developed for review by Fall 2003. In late June 2003, a memo from the Office of the Medical Directors was distributed to all EMS providers suspending the transport guideline in the new protocol until the designation process is completed.

The MIEMSS Rapid Response Team (RRT), coordinated in the Office of the Medical Director, was activated several times this year, primarily in response to severe weather. A tornado in Charles County and record snowfall in many parts of the state created several opportunities for the Team to utilize the agency's new Facility Resource Emergency Database. The increased threat of terrorism and subsequent war in Iraq prompted a deluge of preparation and planning forums. In addition to enhancements to the MIEMSS response plan, members of the RRT have assisted many local, state, and federal agencies with the development of and revisions to their mass casualty response plans. The revisions of response plans resulted in a record number of drills and exercises held at the local, state, and federal levels. Rapid Response Team personnel participated in the planning, executing, and evaluating of these exercises at the local, state, and federal levels.

The Office of the Medical Director has been working with the Region III Quality Improvement Committee to establish a mechanism to reduce the number of unrecognized esophageal intubations and to establish a mechanism for evaluating the "refusal of care" patients. The committee has

developed several recommendations for improved airway assessment and real-time evaluation of success. Several recommendations on refusal of care are already making their way into the protocol committee discussions.

Seven of the EMS operational programs have updated their current Quality Assurance and Quality Improvement plans. These updates were reviewed by the Regional Quality Improvement Committee and the State EMS Medical Director. These programs demonstrated great improvement in the delivery of quality medical care and oversight. Several EMS operational programs are currently pursuing extensive quality improvement projects.

The Medical Director's Office was integrally involved with the development of the new Chemical Stockpile Emergency Preparedness Program's (CSEPP) nationally recognized "All Hazards Training Program." This is a 368-slide PowerPoint presentation designed to educate physicians and EMS providers in the preparation, evaluation, and treatment of chemically/radiologically contaminated or biologically exposed individuals who may access the EMS/ healthcare system.

POLICY AND PLANNING

Mission: To develop effective policies and innovative strategies to enhance and improve the statewide emergency medical services system.

Yellow Alerts/Emergency Department Overcrowding

MIEMSS continues to monitor statewide alert activity via the County Hospital Alert Tracking System (CHATS) and provides monthly summary reports containing individual facility alert activity to all hospitals. Overall alert activity continues to increase annually and is particularly high during the flu and respiratory season. The 2002-2003 season was a relatively light season in comparison to previous years. Continuous online availability of hospital alert activity status is available at www.miemss.org/chats.

Lay Person Automated External Defibrillator Program

The Lay Person Automated External Defibrillator (AED) Program has continued to grow throughout Maryland. Under the program, non-health care facilities that meet certain requirements are permitted to have an AED on site to be used by trained lay persons in the event of a sudden cardiac arrest until EMS arrives. Currently, there are more than 300 approved facilities in the state. A list of AED facilities and program information can be viewed at www.miemss.org/AED.

The AED Task Force dealt with issues related to regulation revisions, as well as strategies for enhanced statewide placement of AEDs. The Task Force was also provided with progress reports from the Office of Epidemiology on the Cardiac Arrest Defibrillation Study.

MIEMSS, in partnership with EMS services in nine rural jurisdictions in Maryland, including Garrett, St. Mary's, Caroline, Dorchester, Kent, Somerset, Talbot, Wicomico, and Worcester counties, obtained funds through the federal Office of Rural Health Policy's FY 2002 Rural Access to Emergency Devices Grant Program that allowed placement of AEDs and training in CPR and AED use in federally designated rural communities. More than 80 AEDs were placed in EMS, public safety, and layperson sites. MIEMSS has received notice that funds will again be awarded from the Rural Access to Emergency Devices Grant Program in FY 2003. The FY 2003 partnership includes the following five additional partial counties by federally designated zip codes: Calvert, Washington, Frederick, Carroll, and Harford counties.

MIEMSS partnered with several agencies and the State Advisory Council on Heart Disease and Stroke in a public awareness campaign designed to educate citizens on the Chain of Survival. The campaign encourages learning CPR, how to use an AED, and developing public access defibrillation programs when appropriate. The awareness effort was kicked off at a meeting of the State Advisory Council on Heart Disease and Stroke with a proclamation from Governor Robert Ehrlich, Jr. that declared September 2003 "Partner with Us: Create a Heart Safe Community Month."

Geriatric Emergency Medical Services Advisory Committee

As part of an ongoing effort to maintain high-quality emergency medical care, MIEMSS has identified a need for geriatric-specific EMS educational programs, evaluation of geriatric emergency assessment guidelines and treatment protocols, and other relevant geriatric emergency manage-

ment issues. In order to incorporate a geriatric-specific component into the Maryland EMS System, MIEMSS has 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, and advisement on EMS geriatric educational curricula in the future.

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.

Do Not Resuscitate Program

MIEMSS continues studying various aspects of the EMS/Do Not Resuscitate (DNR) program. As part of a working group that was convened by the Attorney General as a result of Chapter 152 (House Bill 770) of the Laws of Maryland 2000, the group devised a comprehensively revised EMS/DNR and medical care order form. Use of the new, simpler form will become effective July 1, 2003. This new form will be easier for patients and their caregivers to read and use. The new form will be available on the MIEMSS web site and also available in printed form from MIEMSS. An updated educational program is also being developed.

Maryland Cardiac Arrest Public Defibrillation Study

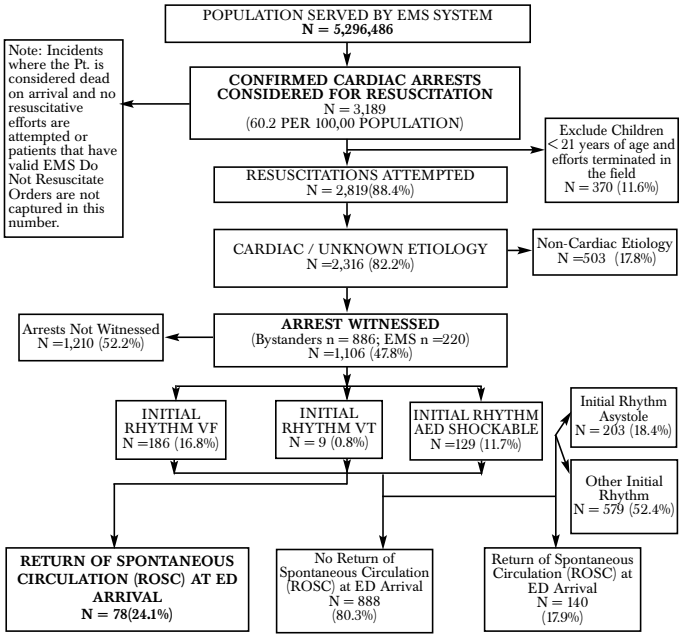
The Maryland Cardiac Arrest Public Defibrillation Study (M-CAPD) was begun in January 2001 by the Office of Epidemiology. This study has two main objectives: (1) to determine the impact of the Facility AED Program; and (2) to identify whether there is a need for the State to require that AEDs be placed in certain public locations. This study is ongoing.

Additional information about the study can be found on the M-CAPD website http://www.miemss.org/m-capd.htm.

Maryland Cardiac Arrest Surveillance System (M-CASS)

MIEMSS Office of Epidemiology established the Maryland Cardiac Arrest Surveillance System (M-CASS) in January 2001.The surveillance system has two main objectives: (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. The Utstein Style templates (Adult and Pediatric) are applied to the data to evaluate the Maryland System (see algorithm on this page). State annual reports for statewide data are available upon request.

Maryland Out-of-Hospital Cardiac Arrests for Adults 21 years and older, Utstein Style Template (M-CASS 2001)



Notes: (1) Percentages are calculated by the latest figure derived at each level of the algorithm rather than the total number of confirmed cardiac arrests. (2) Children less then 21 years of age were excluded early in the algorithm because of the different underlying etiology of sudden cardiac arrests in the pediatric population. The pediatric Utstein Style Template is applied to this population.

Weapons of Mass Destruction

The overall strategic approach by MIEMSS to Weapons of Mass Destruction (WMD) planning and preparedness has continued: by working to enhance and improve general disaster preparedness and response, an "all hazards" approach, the state will be better prepared for both a WMD incident and more routine disasters. In addition, planning and preparedness activities are based in everyday processes and routines to help ensure that those systems needed to respond to WMD will be better able to perform their tasks and functions should such an incident occur. Preparedness activities also continued inclusive of the major

agent categories: chemical, biological, radiological, and explosives/incendiaries.

MIEMSS' WMD preparedness activities focus on three complementary strategic directions: planning, coordination, and operational preparedness.

In planning, refinements to the "Maryland Health and Medical WMD Response Plan" continued to be developed, with a major revision to be released in the fall of 2003. The Plan covers the health and medical response spectrum, identifies best practices and responses, and enables coordination among the various public and private components of the health care system. Highlights include decontamination practices, personal protective equipment, incident management systems, and communications capabilities. The "2003 Maryland Hospital Disaster Preparedness Survey" was completed with the assistance of the MIEMSS Regional Offices with a 100% response rate. The Survey was first done in the fall of 2001, allows a comparison of hospital preparedness between 2001 and 2003, and incorporates additions to coordinate between Maryland, Virginia, and the District of Columbia.

In coordination, MIEMSS continued as an active participant in the Maryland Terrorism Forum, the Terrorism Forum Executive Committee, and the Terrorism Forum Steering Committee under the leadership of the Maryland Emergency Management Agency. In addition to policy issues, these groups determine funding priorities and distribution formulas for federal funds based on assessments of preparedness and needs. MIEMSS continued active participation in National Capital Region preparedness activities in bioterrorism, completed Strategic National Stockpile planning for hospitals, and worked with smallpox and Severe Acute Respiratory Syndrome (SARS) preparations.

In operational preparedness, activities include continuity of operations and response planning for MIEMSS through the establishment of an internal emergency operations group, continuing improvements to the Facility Resource Emergency Database (FRED), and implementing EMAIS (Electronic Maryland Ambulance Information System) enhancements. Technical assistance continues to be provided to individual Maryland hospitals to improve disaster preparedness. Finally, MIEMSS prepares and distributes advisories to hospitals and EMS through FRED and EMRC/SYSCOM when threat conditions change.

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 Public Information and Media Services Department provides education and information to Maryland's Emergency Medical Services providers and the general public through training modules and informative programs. The department develops, designs, and produces programs that are distributed statewide.

The department is responsible for the design and editorial content of the MIEMSS Annual Report, MIEMSS web page, and the Maryland EMS News. The newsletter is sent to 32,000 hospital and prehospital EMS personnel six times a year. This keeps emergency medical services personnel in touch with local, state, and national EMS issues. Recent topics include updates on infectious diseases and geriatric medical issues. These documents are also available on the MIEMSS web page. The annual EMS Week and Stars of Life Awards Ceremony were organized and planned. Press releases were distributed statewide and media coverage obtained on the award winners.

The department provides 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 programs. Design and production of printed, photographic, computer-assisted programs, and video materials assist the learning process.

Several training modules were produced during the past year. These included "The Prehospital Protocol Update," "Hospital Base Station," "Facility Resource Emergency Database (FRED) Training," and the update to the Moulage Program. These modules were produced on compact disc and include printed materials. The department provided satellite down-linking and taping of many informational programs on infection control and WMD/Bioterrorism issues. Video projects included the documentation of various disaster drill videos and several Public Service

Announcements (PSAs), including the Poison Center and Maryland's new Booster Seat law. A major video project on the dangers of impaired driving for high-school aged drivers was produced with the R Adams Cowley Shock Trauma Center. Working with the Maryland State Firemen's Association and the Governor's Office, the staff produced a PSA for volunteer recruitment; Governor Ehrlich delivered the message of the need for emergency personnel and the benefits of volunteering in Maryland's emergency services.

Statewide prevention initiatives were developed through partnerships with other state and local government agencies. Participation on the Occupant Protection Task Force, the Motorcycle Safety Task Force, the Pedestrian Safety Task Force, and the Impaired Drivers Coalition allowed these coalition teams to work collaboratively on multiple projects. Membership on the State Highway's Diversity in Traffic Safety Program raised the need for diversity in our public education efforts. Print and broadcast projects were produced in both Spanish and English. Projects were completed with representation of Maryland's growing diverse population.

QUALITY MANAGEMENT

Mission: To support MIEMSS and the EMS community in their continuous quality improvement initiatives and 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 a Juran-based program. Over the years MIEMSS has taken advantage of state supported resources, particularly those offered through the Continuous Quality Improvement and Managing for Results programs, in its efforts to improve upon its services and customer interactions.

Managing for Results (MFR)

Each state agency is required to submit a Managing for Results plan, along with its FY 2004 budget requests, to the Maryland Department of Budget and Management. This phased-in planning process was initiated in 1997 with the submission of MIEMSS Vision, Mission, and Principles statement through a customer-focus strategic planning process. MIEMSS has again met all requirements for state agencies; these include re-evaluation of key goals, subsequent objectives and strategies, development of associated action plans, and the establishment and monitoring of performance indicators.

MIEMSS has identified two strategic goals and seven associated objectives. Three 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.

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.

Performance Measures/Performance Indicators

	2002 Actual	2003 Actual	2004 Estimated	2005 Estimated
Outcome:				
1.1 Maintaining >95% statistical level of confidence	yes	yes	yes	yes
1.2 Statewide trauma center complication rate	11.9	12.3	11.0	10.0
1.3 % jurisdictions achieving % resuscitation rate	52	65	70	75
Quality:				
2.1 % jurisdictions with uniform EMD indicator	*	*	100	100
2.2 % jurisdictions with ≥90% protocol compliance	*	*	100	100
2.2 % EMS radio communications successfully completed	98	98	98	98
2.4 % seriously injured patients transported	86	86	87	88

** New measures for which data are not available.*

Objective 1.2 By 2005, maintain an overall inpatient complication rate of 10% or less for Maryland trauma centers.

Objective 1.3 Achieve 20% witnessed sudden V Fib / V Tach cardiac arrest resuscitation upon emergency department arrival in 80% of jurisdictions by 2003.

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

Objective 2.1 By 2003, all jurisdictions will use a uniform set of quality indicators for prioritized EMD services.

Objective 2.2 Before 2003, x% of jurisdictions will achieve or exceed 90% compliance with prehospital provider standards of care per the "Maryland Medical Protocols."

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 transporting seriously injured patients 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 offer 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. Regional councils have utilized this training for planning purposes and over 50 providers have attended workshops at Pyramid and EMS Care during the year. Emphasis this year was on the implementation and continued support of individual jurisdictional Quality Assurance/Quality Improvement plans.

EMS Surveillance Measures

Yellow Alert Demand: To assist hospitals statewide in planning and preparation for acute increases in emergency department services demand, MIEMSS maintains two tracking provisions on its web page. The first is concurrent information on all hospitals' alert status. This includes availability of cardiac monitor beds (red alert), emergency department beds (yellow alert), and trauma beds at designated centers (trauma bypass). Second, weekly updates to regional graphs are available. These graphs provide a daily percent of yellow alert demand. Trends are monitored before voluntary actions are taken on a regional basis.

Data Confidentiality

MIEMSS maintains or has access to eight confidential databases used in ensuring quality EMS care delivery. The Data Access Committee (DAC) was formed to ensure that all data and information requests were expedited efficiently and accurately, while ensuring patient and provider confidentiality at all times. Since January 2000, over 1000 requests have been tracked and facilitated.

REGIONAL PROGRAMS

Mission: To provide a liaison between the MIEMSS Central Office and the local EMS agencies, manage MIEMSS programs at the local level, work closely with the local governmental entities, training centers, emergency medical services/fire providers, and staff the Regional EMS Advisory Councils.

Region I

This past fiscal year the Region I Office worked on numerous grant proposals and the implementation of various projects. Working with the EMS Council's Transportation Committee, the Region I Office applied for four Highway Safety Grants. They were approved, with the award totaling $40,000. The monies were used for auto extrication, medical response equipment, paramedic training equipment, and scene safety equipment. It should be noted that previous Highway Safety Grant funding was used in purchasing the extrication equipment utilized in a multi-vehicle crash on Memorial Day 2003 that involved 85 vehicles. EMS and fire providers reported that the equip-

ment purchased with these grants was critical in their successful response to this disaster.

Other grant projects included the Rural AED Grant. This program placed 11 automated external defibrillators (AEDs) with fire, EMS, police, and community centers with the goal of improved access to defibrillation during cardiac arrest in the rural areas. The Region I Office also continued to work on the Rural Access Grant, which will provide computers for all EMS services in Allegany and Garrett counties.

The Region I Office was instrumental in the passage of the new Seal of Excellence Voluntary Ambulance Inspection Program Standards for the state. Activities involved formulation of the Seal of Excellence Committee's recommendations and presentations to the EMS Committee of the Maryland State Firemen's Association, the Statewide EMS Advisory Council (SEMSAC), and the EMS Executive Board. In Region I, the new Seal of Excellence standards were used for the inspection of Garrett County ambulance services during EMS Week.

Quality Assurance/Quality Improvement projects were a major emphasis for the Regional Office. The Region I Administrator staffed the MIEMSS Jurisdictional Quality Improvement Committee and the Region I Quality Improvement Committee. At the state level, efforts were centered on the first Quality Assurance/Quality Improvement Officers Summit. This was held during EMS Care and attracted 17 of the 22 jurisdictions in the state. At the Region I level, work continued on the endotrachial intubation study and response time studies for ambulance services. The response time study in Allegany County has resulted in a special task force organized by the Allegany County Fire and Rescue Board.

Training activities in Region I were highlighted with the first Miltenberger Emergency Services Seminar. This day-long program presented on May 31 was highly successful and offered training for fire, EMS, and nursing personnel. It is anticipated in FY 2004 that a Miltenberger lecture series, as well as a second seminar, will be conducted. Other training activities in Region I were a Disaster Planning Seminar conducted by Rick Meighen and a Moulage Workshop sponsored by the MIEMSS EMS for Children Program. There was also training on utilization of the County Hospital Alert Tracking System (CHATS) and Facility Resource Emergency Database (FRED) programs by John Donohue.

The Region I Office worked to resolve interstate response issues with West Virginia. As a result of the intervention, leaders from Maryland and West Virginia were able to resolve the possible duplication of Tri-Towns Ambulance Service having to meet multiple training operational standards.

The Region I Office continued to work on preparations for weapons of mass destruction (WMD) response. The office participates with Allegany and Garrett counties' WMD Committees and assisted in the completion of hospital disaster response surveys.

A new ambulance service was added in Region I during this reporting period. District 16 initiated service in July of 2002. Also during this period, the McCoole ambulance service stepped back to an ALS Engine designation.

Region II

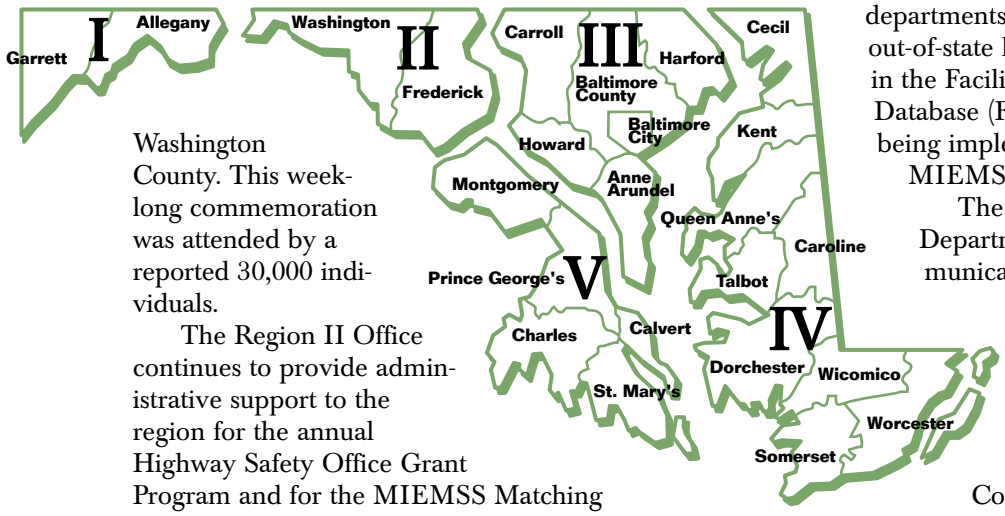
The Region II Office continues to be very active in the region's Quality Assurance and Quality Improvement programs and participates in all of the Jurisdictional Medical Review Committee meetings. Significant progress has been made in the development of quality review at the station level. A Regional Medical Review Committee has been established within the Regional EMS Council to discuss issues or initiatives that could affect or benefit the entire region.

The Region II Office coordinated and participated in the inspection of 84 EMS response vehicles, including both ALS and BLS ambulances, EMS, engines and special units, and ALS "chase cars." Both jurisdictions in Region II have adopted the MIEMSS/Maryland State Firemen's Association's Voluntary Ambulance Inspection Program as the standard for their annual inspection of vehicles providing EMS services.

This office remains active in participating with the local jurisdictions in the planning and conducting of mass casualty drills and events. Support was provided to the Hagerstown Community College for a multi-discipline drill involving their EMT-Paramedic students, their nursing students, and their Administration of Justice students. A mock emergency department overseen by Dr. Steve Kotch, the Washington County Jurisdictional Medical Director, utilized the nursing students to evaluate/treat the "patients" who received prehospital care from the EMT-P students. The justice students investigated the "crime scene," which was a simulated weapons of mass destruction explosion.

Another drill was planned involving a commuter train that was derailed by terrorists. Also, both the Frederick Memorial Hospital and the Washington County Hospital conducted several drills throughout the year to plan for weapons of mass destruction (WMD) events (involving HAZMAT and decontamination of patients), as well as their normal annual mass casualty management drills.

The Region II Office provided assistance and support, including communications equipment, monitor-defibrillators, automated external defibrillators (AEDs), and the recruitment of EMS providers to assist at the 140th Anniversary Commemoration of the Battle of Antietam held in Washington County. This week-long commemoration was attended by a reported 30,000 individuals.



The Region II Office continues to provide administrative support to the region for the annual Highway Safety Office Grant Program and for the MIEMSS Matching and Hardship Grant Program for the acquisition of monitor-defibrillators and AEDs. Every EMS, fire, and rescue company in Region II was provided with the appropriate instruction packets and applications. Region II was successful in having five grants approved. Frederick County was successful in upgrading all of their ambulances with new backboards and new suction machines (standardization of equipment) because of this grant process. Also, three monitor-defibrillators and three AEDs were also obtained through the MIEMSS Matching and Hardship Grant process.

Both community colleges in Region II now have very successful EMS training curriculums teaching both ALS and BLS certification courses, as well as several other medical/EMS related ancillary programs to benefit the EMS students. This office provides administrative and materials support to these programs as requested. The MIEMSS Region II Administrator also serves on the EMS Curriculum Advisory Board of the Hagerstown Community College. This year certification examinations were administered to 5 First Responder Basic (FRB) classes and 11 EMT-B classes in Region II. In addition, 27 EMT-P, 18 EMT-B, 8 FRB, and 1 CRT individual examinations were administered in the Region II Office.

To enhance pediatric education and training programs, a Prevention, Information, and Education Resource (PIER) Manual was delivered to every EMS, fire, and rescue company in Region II. This extremely comprehensive manual was developed by the MIEMSS Emergency Medical Services for Children Program staff and provided at no cost for distribution throughout Region II.

This office identified the training sites and recommended the appropriate jurisdictional and regional individuals, including health departments, 9-1-1 centers and adjoining out-of-state hospitals to undergo training in the Facility Resource Emergency Database (FRED) Program, which is being implemented statewide by MIEMSS.

The MIEMSS Communications Department upgraded the EMS communications network in Frederick County this year, in conjunction with Frederick County's total upgrade of their emergency communications system. Consequently, all Frederick County ambulance EMS consultations were routed through the MIEMSS EMRC. This office managed the changeover and created updated EMS radio channel guideline procedures and appropriate channel selection numbers to communicate with EMRC and accomplish their consultation with the appropriate hospitals. These placards were provided to every EMS unit in Region II.

The Region II Office provided updated EMS radios for the Camp David Presidential Retreat ambulances and instructed their medical staff on the Maryland EMS communications system and operating procedures. Also, the Region II Office instructed the medical staff on the Maryland Triage Program and provided them with the MIEMSS Triage Training Kit and Triage Tags. This office will assist them on conducting a mass casualty drill after their medical staff has completed training additional Camp David personnel.

The Region II Office provided reference materials and accurate information to the area's key EMS officials, the Mid-Maryland EMS

Advisory Council (MMEMSAC), and to the emergency services community pertaining to the construction of two controversial emergency communications towers that the state proposed to be constructed in Washington County. The Region II Office also coordinated several meetings held in the region between state communications personnel and regional/jurisdictional EMS officials and county government officials. As a result of these meetings, the Region II EMS Advisory Council (MMEMSAC) was able to develop a position paper that was sent to the Governor and officials on his staff and to appropriate legislators in the General Assembly.

The Region II Office arranged for free training for the staff of three Maryland Welcome Centers in its region on proper use of the AED. These staff members received appropriate certification through the American Heart Association. Each of these Welcome Centers was provided with an AED through the grant program sponsored and processed through MIEMSS.

This office worked with our Region II EMS jurisdictions to qualify appropriate areas and communities in this region to receive AEDs at no cost under the Rural Access to Emergency Devices (RAED) Federal Grant Program being managed via MIEMSS.

The Region II Office disseminated urgent Severe Acute Respiratory Syndrome (SARS) information and advisories to its health departments, hospitals, 9-1-1 centers, and jurisdictional EMS officials as it was received from MIEMSS headquarters. Critical advisories, such as the "Ground Emergency Transport Instructions and Precautions" that were developed by MIEMSS, were issued to every EMS, fire, and rescue company in Region II, as well as to the health departments, hospitals, and 9-1-1 centers.

Region III

The Region III Office continued its efforts to ensure the region is prepared for large-scale incidents. This year the staff concentrated on enhancing multiple jurisdiction response. A region-wide exercise named REFLEX (Regional Fall Exercise), originally scheduled for the fall but rescheduled due to sniper activity in the area, was conducted in June. Three scenarios were conducted, one each in Harford, Howard, and Carroll counties. Two other scenarios were also scheduled to be conducted in conjunction with the regional effort, but the Baltimore-Washington International Airport's Emergency Plan Exercise (EPLEX) proceeded as scheduled in October, and the Baltimore County Mass Transit subway exercise was rescheduled for May due to regulatory requirements and constraints from other partners. The Region III Office supported all five scenarios. Each scenario revealed that more effort is required on utilization of incident management systems, communication and resource notification, and triage systems operation. Region III staff also assisted in an exercise hosted by the University of Maryland Medical System with the US Air Force and the Maryland Stadium Authority.

Partially in response to the urging of the Region III Emergency Medical Advisory Council, the Fire Chiefs in the Baltimore area, in conjunction with the Baltimore Metropolitan Council, have begun meeting to address some of the issues that were brought to light in planning for the REFLEX exercise. An Incident Management Committee was established to standardize emergency operations plans with the national standards as the model and to automate notification and response of support resources. The Region III Office is a member of that committee. The work done by the fire departments is being tied into the work of other disciplines through the Baltimore Metropolitan Council through their Baltimore Regional Operations Committee and their Transportation Emergency Preparedness Committee. Region III staff are also involved with both those committees.

The Baltimore City Health Department requested assistance with conducting a multiple day exercise responding to the release of a biological agent. Region III staff served on the executive committee and several subcommittees for the planning of the exercise. A tabletop exercise was conducted in March to prepare hospitals for the exercise. The actual exercise was planned for

April but was postponed to July because of the start of the Iraqi War.

Dr. Bass appointed an Emergency Operations Group to coordinate many of the activities associated with emergency operations. John Donohue, Region III Administrator, was assigned to coordinate that group. The Emergency Operations Plan was updated, as were plans for "building evacuation" and "shelter in place." Additional communication resources were acquired and assigned to key individuals. The group is now acting as a clearinghouse for all emergency response and planning activities to ensure coordination between all individuals involved in various aspects of those efforts.

The Facility Resource Emergency Database (FRED) became operational in October 2002. Participation in FRED at the beginning of 2003 was minimal, but as training exercises occurred, more participants registered. FRED is an internet-based communication system to alert all components of the State's EMS system and catalog resources available for response to a large-scale incident. Several requests for the use of FRED by organizations outside of Maryland have been received. A memorandum of understanding was signed by MIEMSS and the Pennsylvania Department of Health to establish a back-up server for FRED in Harrisburg. They are also assisting in contracting with the software development company to reprogram FRED to include several comments on operation received to date. These enhancements will include regional alerting capabilities, text paging of key individuals, more flexibility of databases, and more organized information pages. Revisions are due in September 2003.

Additional funding was received through the EMS for Children Program to enhance efforts to establish a patient triage and tracking program. This computer program was used to track patients during a rock concert in Prince George's County in the past. These funds were planned to help network computers to improve operations and to revise the program. A request for support at another concert at Fed-EX Field is pending for early next fiscal year.

The Region III Office's commitment to education continues. The many educational institutions and academies in the region were beginning to experience a decrease in attendance in many of the upper level EMS courses and a duplication of efforts in responding to the educational needs of the EMS system. Representatives from these programs gathered to revitalize the Emergency Education Council of Region III. Here they hope to standardize skills verification processes, establish a regional training calendar, and share training resources. This cooperation will also play a lead role in planning for and coordinating EMS Care and other educational conferences. Battalion Chief Michael Robinson is the President of the Emergency Education Council of Region III, which now meets quarterly.

Title 30 requires that each EMS operational program establish a Quality Assurance Plan and a Medical Review Committee. The Regional EMS Advisory Council also hosted a TEAM EMS conference in which they identified their priorities of issues to be investigated in a quality improvement format. To organize all of these efforts, the Council identified a Quality Improvement Managers Committee, which consists of all the quality improvement managers from the EMS Operational Programs. Their two priorities are to investigate patterns of refusals of care and unrecognized esophageal intubations. They are meeting monthly and are supported by the Region III Office. Dr. Christina Johns is the Chairperson.

A program to improve the readiness of those in the Maryland Welcome Centers was completed this year. Money received from the Department of Transportation's Highway Safety Office was used to place automated external defibrillators (AEDs) at all the Welcome Centers around the state. Twelve centers, including highway rest stops and information booths, had no means to respond to victims of heart attacks who stopped there for assistance. Now all the welcome centers have AEDs, and each shift supervisor is trained in AED use and CPR. The Welcome Centers are now all registered public access defibrillation facilities.

Testing and ambulance inspections also continued throughout the year with the Region III Office conducting 110 written exams and 150 vehicle inspections.

Region IV

The Region IV Office coordinated with the region's nine counties in the development of emergency medical services quality assurance and quality improvement programs. The medical directors, jurisdictional representatives, and EMS organizations have been actively supporting this initiative to include intubation audits, continuous positive

airway pressure, and cardiac arrests and intervention. Dr. Deborah Davis, Regional Medical Director, hosted two jurisdictional medical directors meetings. This forum assists in the distribution of information between regional programs.

Wor-Wic Community College formally received provisional advanced life support (ALS) training center designation by MIEMSS after an on-site visitation was completed on December 16, 2002. The first Emergency Medical Technician Paramedic course application was submitted and approved by MIEMSS, with course completion being scheduled in 2003. The college is currently offering two ALS program choices–an Associate of Applied Sciences and a Certificate of Proficiency. Both programs follow the national certification and state protocol standards, which allow graduates to take the national and State of Maryland certification examinations.

The Region IV Office has actively partnered with the MIEMSS Communications Department by coordinating regional hospital visitations relevant to the expansion of the state's infrastructure project currently being developed and the Rural Quality Assurance Project. Cecil, Dorchester, and Somerset counties are all participating in this project.

The Region IV EMS Advisory Council prioritized and received funding for Maryland Department of Transportation Highway Safety Grants. In addition, matching grants from MIEMSS assisted with the placement of monitor/defibrillators and automated external defibrillators (AEDs) in EMS departments throughout the region. Seven counties within the region were eligible for funding and participated in the Rural Access AED program which placed additional AEDs in the region.

The Education Committee of the Region IV EMS Advisory Council prioritized and coordinated the distribution of training funds for initial training of ALS providers, as well as recertification training for ALS and BLS providers.

The Region IV Office worked closely with the region's health departments, hospitals, and offices of emergency management in the education and training of designated managers relevant to the implementation of the Facility Resource Emergency Database (FRED) project.

Chester River Hospital Center (formerly known as the Kent and Queen Anne's Hospital) at Chestertown opened a new emergency department. This has allowed the hospital to expand its services to the community.

The MIEMSS Region IV administrators inspected 29 prehospital emergency response vehicles, including advanced and basic life support ambulance, chase cars, and first responder units.

The Region IV Office staff assisted in planning and staffing two regional conferences. The Winterfest 2003 EMS Seminar was held January 25-26, 2003, at Tilghman Island, and the Peninsula Regional Medical Center Trauma Conference was held at the Ocean City Convention Center on September 20, 2002.

Region V

Pyramid 2002, the thirteenth annual Tri-County EMS Conference, was conducted in conjunction with the Emergency Education Council of Region V, Inc. Held at the Holiday Inn and Conference Center, Solomon's, Maryland, the October conference had 230 registrants. Among the skill workshops were EMS incident command, mass casualty tabletop exercises, and an interactive program on the changes to sensory and physical capabilities that come with aging. Plenary sessions were presented on the LaPlata Tornado, incident command for EMS, managing violent patients, and domestic violence. Pediatric offerings included case reviews and management of asthma.

In April 2003, 250 attended EMS CARE at the Greenbelt Marriott Hotel. The theme was "EMS for Every Season of Life" and focused on issues in both pediatric and geriatric emergency care. "Understanding Aging," "Altered Mental Status in the Elderly," "Geriatric Trauma" and "Legal Issues" all focused on the special needs of elderly patients. The new Geriatric Emergency Medical Services (GEMS) program was presented for the first time as a pre-conference program.

Following the events of September 11, 2001, Region V staff continue to be heavily involved in disaster preparation across the state. The office has provided assistance on mass casualty exercise planning and implementation through both presentations and guidance. Data collected from the exercises are used to improve the drills themselves and, more importantly, actual mass casualty response. Working in conjunction with the Emergency Education Council of Region V, Inc. and the Emergency Medical Services for Children (EMSC) Program, Region V staff have continued to train and support the Moulage Technician

Program. The Region V Associate Regional Administrator has also been active in the development and implementation of the Maryland Virtual Emergency Resource System, working with the Office of the Medical Director, the Maryland EMS for Children Program, the Maryland State Police, the Maryland Emergency Management Agency, and the Maryland Department of Education. The Region V Office worked closely with the Health Departments of Montgomery and Prince George's counties in coordinating weapons of mass destruction and bioterrorism planning for hospitals and health care facilities.

Region V continues to support a variety of education and prevention activities through the Region V EMS Advisory Council, county fire and rescue associations, the Prince George's County Safe Kids Coalition, and the EMSC RISK WATCH initiative. Charles County parochial schools, public schools in Prince George's and Montgomery counties (including special needs schools in Prince George's County), will participate in the National Fire Protection Association Risk Watch Programs as part of the State Champion Grant.

Shock Trauma mini-grants distributed by the Region V EMS Advisory Council provided pediatric training equipment for use in Southern Maryland, as well as an Officers Quality Improvement Seminar in Montgomery County.

The Region V EMS Advisory Council has strongly supported the development of Quality Councils in each county and supported quality management education and implementation. Each county has an operational Quality Assurance/ Quality Improvement Plan, and the EMS Advisory Council seeks input from these groups in developing new initiatives. For example, this year's emphasis on geriatric issues in EMS Care grew out of this process.

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:

144 BLS vehicles licensed
112 ALS vehicles licensed
8 neonatal vehicles licensed
33 ground ambulance services licensed
3 air ambulance services licensed
13 temporary upgrades authorized
18 complaints received and investigated
127 routine compliance inspections performed

Number of commercial ambulance transports:

Total ground ambulance transports: 217,100

BLS	189,007
ALS	27,256
Neonatal	837

Total commercial air transports: 2,810

The State Office of Commercial Ambulance Licensing and Regulation (SOCALR) faced significant challenges in FY 2003, its 10th year of operation. While the number of transports performed in the state increased 4% (from 210,837 in FY 2002 to 219,910 in FY 2003), the number of ambulances increased less than 1%. Therefore, the licensing revenue upon which SOCALR depends remained essentially flat.

Furthermore, SOCALR itself underwent a significant leadership change. Cheryl Bowen, RN, retired from the Director's position after ably guiding SOCALR through the critical industry contraction between FY 1999 and FY 2001. Her influence continued to be felt, however, as her two staff members organized and carried on SOCALR's mission in exemplary form. Despite the dual challenges of reduced staffing and budgetary constraints, the SOCALR team performed more than 50% the number of previous years' compliance checks. Of these, 31% (n=39) resulted in notices of non-compliance and 9% (n=12) resulted in vehicle license suspensions. Importantly, SOCALR's core services continued unabated as evidenced by the operating statistics presented above.

The fiscal year concluded with a new Director, John Young, RN, joining the team. Now fully staffed at three FTEs and with the key involvement of several part-time inspectors, SOCALR is poised to focus on a tripartite paradigm of leadership, education, and regulation. Challenges to be met in the coming year include improving the effectiveness of core licensing operations, implementing air ambulance and specialty care transport regulations, and integrating commercial services into disaster planning.

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 Hospital, Cumberland
Peninsula Regional Medical Center, Salisbury

SPECIALTY REFERRAL CENTERS

Burns

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

Eye Trauma

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

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
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

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	

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 6,025 trauma patients from June 2002 to May 2003, according to the Maryland Trauma Registry. (See pages 43 to 48 for 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 50 groups. Case reviews open to prehospital care providers were held quarterly. One hundred and ten EMS providers participated in ALS Skills Labs that were offered 10 times. In the Observation Program, 208 EMS providers observed in the Trauma Resuscitation Unit, and 82 EMS providers in Critical Care. In addition, 97 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 that affect 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. A Research Education Program continues for residents and fellows who rotate through Shock Trauma.

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

- Actively investigated the use of intravenous fluid and ideal target blood pressure during the evaluation of seriously injured patients
- Collaborated with diagnostic and interventional radiology to define optimal strategy for non-operative management of solid visceral injuries
- Actively investigated optimal resuscitation strategy and alternative therapies in geriatric patients
- Collaborated with orthopedic surgeons to find optimal timing for fracture fixation that involves multiple injuries
- Conducted ongoing investigations of methods for providing organ support in patients whose organs had failed
- Used airway pressure release ventilation in patients with respiratory failure
- Collaborated with neurosurgeons to develop a noninvasive monitor to assess head injuries in trauma patients

• Investigated the etiology of and the ideal therapy for soft tissue infection

In addition, Shock Trauma serves as a test-bed for new technology. Most recently, a new full-body x-ray technology Statscan is being evaluated. It is currently the only Statscan in the U.S.

The Shock Trauma Center provides the leadership for the American Trauma Society, Maryland Division through its president, Robbi Hartsock, RN. Active in all regions in Maryland, the American Trauma Society has sponsored and participated in 100 safety fairs, fire department and hospital open houses, conferences, and conventions and has distributed safety literature to thousands of Maryland's adults and children over the last year.

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, surgeons, social workers, psychiatrists, nurses, epidemiologists, and physicians who plan care for these patients.

The Shock Trauma Center also hosted in the "Mentoring Male Teens in the Hood" program. Forty males, ages 8-18 years old, visited Shock Trauma to interact with role models from the STC/VIP staff, tour the facility, and participate in small group sessions to reinforce the importance of staying away from a life of crime. The purpose of this program is to teach young boys to be honest, respectful, and to model positive behavior.

The Shock Trauma Center took part in a Progressive Life Program geared for youths who are court-ordered by the juvenile justice system to participate in the program to help them reframe their behavior.

As part of the community outreach initiative, Shock Trauma also held a "Minds of the Future" program four times this year with 600 high-school students participating.

The High Risk Adolescent Trauma Prevention Program (HRATPP) is an educational program designed to provide information on the consequences of drinking, taking drugs, and driving so that the participants can make informed decisions about these high-risk behaviors. During FY 2003, 500 high-risk adolescents attended 62 on-site HRATPP programs. In addition, 7 groups from Students Against Destructive Decisions (SADD) brought participants from the metropolitan and Eastern Shore high schools to attend HRATPP programs at the Shock Trauma Center.

HRATPP staff participated in 36 classes and countywide school-related summits. HRATPP conducted related tour programs and taught 42 classes in the community for 1,000 extremely high-risk adolescents. The HRATPP provided educational displays at various community sites, including schools, community fairs, and conferences reaching thousands of people. The Trauma Prevention staff participated in 20 school-wide assemblies and health classes reaching thousands of students. They also participated in the Candlelight Vigil for 3-D Month (National Drinking, Driving, Drugged Campaign) and developed a 3-D event held at the University of Maryland Baltimore Campus Student Union, reaching more than 500 people. In addition, they are involved in many of the activities of Baltimore County SADD groups in the elementary, middle, and high schools.

In conjunction with Anne Arundel and Harford county courts and the Office of Parole and Probation, the HRATPP staff conducted 11 on-site educational programs for over 400 adult offenders who have driven while intoxicated during this fiscal year.

Positive Alternatives to Dangerous and Destructive Decisions (PADDD) is a not-for-profit corporation founded by STC nurses Debbie Yohn and Laurel Stiff in 1997. The company serves Maryland by providing adult education for court-ordered clients who were involved in drunk driving, speeding, distracted driving, and/or red light running. An ongoing relationship with the R Adams Cowley Shock Trauma Center provides access to speakers, slides, and new content for the presentations.

During FY 2002, PADDD provided six classes in Harford County and expanded into Howard County. In FY 2003 PADDD provided nine educational programs to more than 400 participants

and 80 guests. PADDD also gathers research information for the National Study Center and works with MIEMSS on videos for trauma prevention. PADDD has been awarded a grant by the Maryland Highway Safety Office of the State Highway Administration for FY 2004.

Level I

The Johns Hopkins Hospital, Adult Trauma Center

Located in Baltimore City, the Johns Hopkins Hospital Adult Trauma Center reported receiving 2,101 trauma patients from June 2002 to May 2003, according to the Maryland Trauma Registry. (See pages 43 to 48 for patient data in various categories.) Edward Cornwell, MD, serves as the Director of the Johns Hopkins Adult Trauma Center and Judy Phillips, RN, BS, as its Trauma Nurse Coordinator.

The Johns Hopkins Adult Trauma Center, housed in the "#1 Hospital in America" according to the *U.S. News & World Report*, receives more than 2000 adult trauma patients per year. In 1998 the Adult Trauma Center implemented a 24-hour a day in-house trauma attending surgeon commitment and has quickly demonstrated improved survival, triage time, and length of stay among critically injured patients (*Archives of Surgery,* 2003).

The Johns Hopkins Hospital's Division of Adult Trauma has a strong commitment to trauma prevention, particularly in the area of youth violence. During the past fiscal year, the Adult Trauma Center continued its involvement in several important trauma prevention endeavors. The Hopkins Injury Prevention and Community Outreach Collaborative (HIPCOC), which was established by Dr. Edward Cornwell, the director of the Adult Trauma Center, in 2000, is a multidisciplinary group of clinicians, hospital, and community affairs professionals, public health professionals, and members of the community who are interested in pursuing violence prevention through educational and outreach activities. During this past fiscal year, HIPCOC continued to conduct several ongoing prevention programs, including: the dissemination of videos aimed at adolescents depicting the true consequences of gun violence; hospital tours to visit the survivors of interpersonal violence; and slide presentations by health care professionals graphically demonstrating the anatomic damage that results from interpersonal violence. In addition, as part of the HIPCOC initiative and with a grant from the American Trauma Society, the Division of Adult Trauma completed a "readiness to change" study for injured patients ages 15 to 24 who have positive toxicology screens for drugs or alcohol. The results of this study will be presented as a poster at the annual meeting of the American Association for the Surgery of Trauma (AAST) in September 2003.

As part of his many trauma prevention activities, Dr. Cornwell continued his membership on the Board of Directors of the Police Athletic League (PAL), the American Trauma Society, and the New Song Community Learning Center in the Sandtown neighborhood of West Baltimore. Dr. Cornwell also continued to serve as the sponsor of the Fort Worthington PAL center.

In the area of clinical research, the Division of Adult Trauma:

• Studied the impact of an enhanced trauma program commitment on the process and outcome of care. The results of this study were published in the *Archives of Surgery* (2003).

– Retrospectively studied the significance of early leukocytosis in trauma patients. The results of this study were accepted for publication by *Current Surgery* (2003).

– Studied the demographics and community characteristics of the trauma patients as determinants for an injury prevention outreach program. The results of this study were presented as a poster at annual meeting of the Pacific Coast Surgical Association, February 2002, and were accepted for publication in the *Archives of Surgery* (2003).

During the past fiscal year, the Division of Adult Trauma continued to be actively involved within the trauma community at both the state and national levels. Dr. Cornwell assumed the position of president of TraumaNet in November 2002. Judy Phillips, the trauma nurse coordinator, became the secretary of TraumaNet. Both Dr. Cornwell and Ms. Phillips were active participants in TraumaNet's legislative initiatives.

The Division of Adult Trauma continued to provide educational and community outreach activities within and outside of the hospital setting. During the past year, Dr. Cornwell participated in numerous grand rounds presentations throughout the state. He also presented educational offerings to diverse groups, including area school children, college students, EMS personnel, trauma clinicians, church congregations, and rotary clubs. Within the hospital, the Adult Trauma Education Committee continued to present quarterly trauma continuing education seminars for nurses, technicians, ancillary staff, and EMS personnel.

Level II

Johns Hopkins Bayview Medical Center Trauma Center

Located in Baltimore City, the Trauma Center at the Johns Hopkins Bayview Medical Center reported receiving 1,144 trauma patients from June 2002 to May 2003, according to the Maryland Trauma Registry. (See pages 43 to 48 for patient data in various categories.) Paul Freeswick, MD, FACS, serves as the center's Trauma Director, Myra Jo Beach, RN, MBA, as its Director of Surgical Nursing, and Robert Dice, RN, MS, as its Trauma Coordinator.

Paul Freeswick, MD, FACS continues as the Director of Trauma. Dr. Freeswick has been an attending trauma surgeon at Bayview for four years. He previously was on staff in the trauma division at the University of Pittsburgh Medical Center–Presbyterian in Pittsburgh, Pennsylvania.

During FY 2003, the adult trauma service at the Johns Hopkins Bayview Medical Center (JHBMC) treated 1,144 patients, with a survival rate of 98 percent.

In addition, the adult trauma service at JHBMC strives to minimize the use of trauma bypass, remaining open for all critically or seriously injured trauma patients. It is experiencing rapid internal growth in the areas of surgery, orthopedics, and geriatric medicine.

An institutional member of the American Trauma Society, the JHBMC trauma service supports the functions of the local Maryland Division.

This past December, the trauma center held its first Emergency Medical Services Reception, serving as host to members of the EMS community that serve Bayview as well as to representatives of agencies such as the Maryland State Police Aviation Section, the Office of the State Fire Marshal, and the Maryland Institute for Emergency Medical Services Systems. The reception is planned as an annual event. In addition, "Trauma/EMS/Burn Grand Rounds" seminars are being planned to begin in Fall 2003.

The Trauma Center, the Baltimore Regional Burn Center at JHBMC, and the Emergency Department/Department of Emergency Medicine continue to support the local EMS jurisdictions by distributing the pocket version of the Maryland EMS Protocols. Several EMS providers have voiced their appreciation about this program–now in its fourth year.

In preparation for the periodic trauma designation survey, the leadership team revised and expanded the trauma center's trauma team and patient reception protocols to enhance delivery of care to trauma and burn patients received by JHBMC.

Level II

Prince George's Hospital Center

Located in Cheverly, the Trauma Center at Prince George's Hospital Center reported receiving 2,356 trauma patients from June 2002 to May 2003, according to the Maryland Trauma Registry. (See pages 43 to 48 for patient data in various categories.) Philip R. Militello, MD, served as the Trauma Director during this time. Sandra Waak RN, CEN, served as the Assistant Nurse Manager for the Trauma Service and has also been filling in for the Trauma Services Manager position, vacated in November.

The Prince George's Hospital Center (PGHC) continues to serve as the primary adult trauma center for the counties of Prince George's, Calvert, Charles, St. Mary's, southern Anne Arundel, as well as parts of Montgomery and Howard counties and the eastern part of Washington, DC. Approximately 30 percent of last year's trauma patients arrived via helicopter. Three flight agencies routinely use the rooftop helipad: the Maryland State Police, United States Park Police, and MedStar.

Because of its unique proximity to Washington, DC, PGHC is also a designated trauma center for the White House Medical Team, as well as Operation Capitol. Renovations to the ground-level helipad have been made in order to accommodate the larger helicopters from the military, should the need arise.

Prince George's Hospital Center continues their affiliation with the R Adams Cowley Shock Trauma Center in Baltimore and regularly rotates a team of senior trauma fellows through PGHC as part of their fellowship training. This serves to enhance their clinical experiences and provides PGHC with additional resources for its growing trauma program. One of the trauma fellows prepared a presentation on "The Non-Operative Management of Penetrating Torso Trauma" for a Canadian Medical Conference.

PGHC continues to host its award-winning trauma prevention experience– the Shock Mentor Program–which provides a unique educational

experience to students within the Prince George's County high schools in cooperation with the Concerned Black Men Organization. The Trauma Center also actively participates in hosting the "Reality" program with the Prince George's County Juvenile Justice System. In addition, PGHC has provided interventions for troubled teenagers for the past two years on the Judge Hatchett television program.

Nursing leadership in the Trauma Center has transitioned from Connie Stone, Director of Emergency/Trauma Services and Mike Walls, Trauma Services Manager, to Jackie Anderson, Director Emergency/Trauma Services and Sandra Waak as Acting Department Manager, Trauma Services. In addition, the Trauma Services Office staffing has increased to include a Trauma Registry Associate and an Assistant Nurse Manager position.

Level II

Sinai Hospital Trauma Center

Located in Baltimore City, Sinai Hospital Trauma Center reported receiving 1,060 trauma patients from June 2002 to May 2003, according to the Maryland Trauma Registry. (See pages 43 to 48 for patient data in various categories.) Adrian Barbul, MD, FACS serves as the Trauma Director, and Jocelyn Farrar, RN, MS, CCRN, ACNP, as the Trauma Coordinator.

The Trauma Division's ongoing commitment to injury prevention was demonstrated by active involvement in community outreach and trauma prevention endeavors. Continued efforts to reduce geriatric injury resulted in the presentation of ongoing fall and injury prevention activities. In conjunction with the Lifebridge Community Health Education Department, the Trauma Division presented the American Trauma Society's Traumaroo injury prevention programs to children at local elementary schools and health fairs. Sinai's Family Violence Program continued its efforts to break the cycle of violence by providing counseling, resources, referrals, and training of health care providers.

Performance Improvement activities enhanced the care provided to the trauma patient. Focused multi-disciplinary performance improvement initiatives resulted in the reduction in complication rates, enhancement of triage and transfer processes, and development of improved trauma documentation records.

Emergency medicine and trauma staff were actively engaged in EMS educational activities. Continuing education courses and case reviews were offered to the EMS community. In addition, preceptorship of paramedics was provided in Sinai's ER7.

During FY 2003, the Trauma Division continued to be actively involved at the state level. Ms. Farrar and Dr. Barbul continued the leadership of the TraumaNet Research Committee. This multidisciplinary committee is exploring outcomes of geriatric trauma patients cared for at trauma centers versus those cared for in community hospital settings. Ms. Farrar assumed the role of the Chairperson of the MIEMSS Quality Improvement Committee for Trauma. In addition, Dr. Barbul continues his research in nutrition and wound healing.

Level II

Suburban Hospital

Located in Bethesda, the Suburban Hospital Trauma Center received 1,370 trauma patients from June 2002 to May 2003, according to the Maryland Trauma Registry. (See pages 43 to 48 for patient data in various categories.) Daniel Powers, MD, FACS, serves as the Medical Director of Suburban Hospital's Trauma Services and Anne Kuzas, RN, as its Trauma Nurse Coordinator/Program Manager.

During FY 2003, Suburban Hospital treated an increasing number of trauma patients. Initially this increase was related to the temporary closure of the Washington County Hospital Trauma Service; however, an increase in the number of trauma service patients has continued even after Washington County's trauma program was reopened. Suburban Hospital welcomed a trauma center survey team in June to review the trauma program.

Last fiscal year Suburban Hospital implemented a Picture Archiving and Communication System (PACS) to bring its physician community "radiology at e-speed." The goal of the cost-effective technology was to speed diagnoses, reduce time to treatment, and improve patient care. In FY 2003, PACS was expanded to include additional departments within the hospital, as well as remote access for authorized users. Suburban's trauma staff is adept at utilizing the system and is pleased with its ability to view patient images with such ease and speed in multiple locations throughout

the hospital. Ongoing enhancements are being applied to this system as further technological advances continue to be made.

The trauma center's bypass hours have continued to remain within the thresholds that were set when the trauma bypass policy was developed and implemented. Each event continues to be evaluated on a daily basis for policy compliance as well as the identification of additional opportunities for improvement. The ability to maintain ongoing improvement enables Suburban's Trauma Center to be more available to serve the trauma care needs of citizens within its immediate community and serve as a backup trauma center as needed within the statewide trauma system.

The Medical Director of Trauma Services and the Trauma Nurse Coordinator/Program Manager continue to actively participate in the Maryland EMS System through memberships in the TraumaNet, the MIEMSS Quality Improvement Committee for Trauma, the Region V EMS Advisory Council, the Statewide EMS Advisory Council, and the Maryland Division of the American Trauma Society. Suburban is an institutional member of the American Trauma Society. Its staff have also participated in local public service partnerships at media events to educate the public in the surrounding community about "pedestrian safety" and "drinking, drug, and driving" awareness.

Two four-hour seminars, "Update on Critical Issues in Trauma," were held in the fall and spring. These seminars were offered free of charge to the trauma care community within the regional area, including medical and hospital staff and the EMS community. Emergency department nurses provided an injury prevention program, ENCARE (Emergency Nurses Cancel Alcohol-Related Emergencies), as well as alcohol poisoning lectures in community high schools.

Level III

Peninsula Regional Medical Center Trauma Center

Located in Salisbury, the Peninsula Regional Medical Center (PRMC) Trauma Center reported receiving 846 trauma patients from June 2002 to May 2003, according to the Maryland Trauma Registry. (See pages 43 to 48 for patient data in various categories.) Un Y. Chin, MD, serves as the Trauma Director, and Lisa Hohl, RN, BSN, CCRN, as the Trauma Nurse Coordinator.

Under the direction of Dr. Un Y. Chin, Peninsula Regional Medical Center successfully applied for re-designation as a Level III trauma center. The application was submitted in January 2003, and a site visit completed in May 2003; results of the re-designation survey are pending.

Peninsula Regional Medical Center continues to coordinate and participate in community-based injury prevention initiatives. Peninsula Regional Medical Center was awarded a child passenger safety inspection site grant from the Society for Healthcare Strategy and Market Development. With this grant, Peninsula will sponsor five child passenger safety check-point events throughout the Lower Shore. A child passenger safety seat giveaway program has been implemented for anyone receiving services at the medical center who may need a safety seat for transporting a child home safely. Additional injury prevention efforts continue with the Maryland Division of the American Trauma Society, the Lower Shore Safe Kids Coalition, the Worcester County Injury Prevention Committees, and the Ocean City Pedestrian Task Force.

Peninsula Regional Medical Center continued to assist in planning, coordinating, and sponsoring several educational conferences:

- It coordinated and sponsored the 13th annual "Topics in Trauma" conference, with topics ranging from prehospital care to advanced inpatient trauma care. The EMS track continues to grow, with participation from local as well as regional EMS providers.
- It collaboratively worked with the Brain Injury Association of Maryland and Healthsouth Chesapeake Rehabilitation Center to plan and implement a seminar "Living with Brain Injury: Challenges and Creative Solutions." This one-day course was geared to professionals who work with survivors of brain injury to increase awareness of brain injury and its aftermath and to identify appropriate brain injury treatments, services, and support systems.

Peninsula Regional Medical Center has improved radiographic capability with the purchase of a GE Light Speed CT scanner. The scanner is a 16-slicer, making the timeframe for completing scans 4 times faster than the other onsite scanner. The new scanner is capable of scanning an unenhanced CT of the brain in 30 seconds and an abdominal CT in 3 minutes. This capability improves the throughput and quality for diagnosing injuries in the trauma patient.

Peninsula Regional continues to work collaboratively with Wor-Wic Community College in providing continuing education for prehospital

providers, as well as curriculum management and coordination of the EMT-B to the EMT-P programs.
• Survival Spanish Class for Paramedics and EMTs was held for EMS providers so they would be able to communicate better with the vastly growing Hispanic population.
• Wor-Wic continues to coordinate the didactic portion of the EMT-P program, while Peninsula continues to be one of the sites for the clinical portion of the program. Peninsula's EMS Nurse Liaison functions as the clinical instructor and supervisor. This gives the EMT the opportunity to practice needed skills in an acute care setting.
• Numerous skills classes are offered for area EMS providers by paramedic instructors. This instructor group consists of 12 local NREMT-Ps who currently serve as career paramedics in different EMS companies/Maryland State Police Aviation Division throughout the Lower Shore.

Level III

Washington County Health Systems Trauma Center

Located in Hagerstown, the Washington County Health Systems Trauma Center reported receiving 486 trauma patients from October 2002 through May 2003, according to the Maryland Trauma Registry. (See pages 43 to 48 for 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, and Joan Fortney, RN, BSN is the Manager of Trauma Services.

Washington County Hospital closed its Trauma Service on June 1, 2002. After lengthy negotiations, the Trauma Service was opened on October 2, 2002 as a Level III Center. As in the past, the Trauma Center has provided trauma services to residents of Washington and Frederick counties, Southern Pennsylvania, and the Eastern Panhandle of West Virginia.

Throughout the year, the Trauma Center staff have been active in community education events. They have participated in community health fairs, served as speakers about safety issues, and participated in the Stop Red Light Running initiative. Trauma Center representatives have also been working with community members to plan the second Citizen's Emergency Preparedness Day and a Bike Safety Rodeo for later in the year.

The trauma staff continue to provide trauma-related education to physicians and other staff members on a regular basis. Extensive planning is underway for the annual Trauma Seminar, in coordination with Hagerstown Community College for October 2003. Trauma Center representatives have also presented case studies to area EMS providers.

To celebrate the outstanding contributions and dedication of the trauma center staff throughout the hospital, the Trauma Service organized Trauma Team Recognition Day. Members of the trauma team were invited to a reception. Displays about trauma services and water safety were set up in the hospital lobby. Employees and staff learned about the multi-disciplinary approach to providing trauma services.

In May 2003, the Trauma Center underwent Level III re-designation by the Maryland Institute for Emergency Medical Services Systems. While the official report is pending, the Trauma Center looks forward to continuing to provide trauma care to residents of the tri-state area.

Level III

Western Maryland Health System—Memorial Trauma Center

Located in Cumberland, the Western Maryland Health System–Memorial Trauma Center reported receiving 515 patients from June 2002 until May 2003, according to the Maryland Trauma Registry. (See pages 43 to 48 for patient data in various categories.) Juan Arrisueno, MD, serves as the Trauma Director, and Melissa Meyers, RN, was the Trauma Nurse Coordinator during the FY 2003 annual report period.

Emergency medical services in Western Maryland were in the national spotlight on Memorial Day weekend when 85 cars crashed in fog and rain on Interstate-68 at Big Savage Mountain in Garrett County. Local EMS personnel transported nearly 70 patients to the two Cumberland hospitals for treatment within a two-hour period. The Western Maryland Health System (WMHS)–Memorial Trauma Center received 22 Priority 1 patients, and the less seriously injured patients were taken to Sacred Heart Hospital for treatment. Thanks to years of emergency preparedness drills and a tremendous response from WMHS staff and physicians,

patients were assessed and treated quickly and efficiently.

Vehicle crashes account for the major source of trauma in Western Maryland, and the WMHS–Memorial Trauma Center continues to focus on traffic safety and other injury prevention programs in the community. WMHS works cooperatively with the Allegany County Health Department, local law enforcement agencies, and other organizations to promote child passenger safety issues and to host child safety seat checks in the community. Radio ads promoting traffic safety are used around national holidays as a reminder for those who are traveling.

Physicians, nurses, EMS personnel, and other healthcare providers take advantage of the telemedicine link between the WMHS–Memorial Trauma Center and the University of Maryland Shock Trauma Center to hone their skills by participating in Shock Trauma's Grand Rounds. Nearly 100 Cumberland healthcare professionals attended a case study involving an organ donation patient from WMHS whose organs were placed in two individuals with positive outcomes.
Trauma patients also benefit from the technological enhancements made through this year's acquisition of a spiral CT scanner, which is faster, provides arterial studies, and has 3-D capabilities.

Baltimore Regional Burn Center Johns Hopkins Bayview Medical Center

The Baltimore Regional Burn Center manages more than 300 patients a year. For every inpatient, there are approximately 4 patients seen as outpatients throughout the state. The outpatient burn clinic averages about 1300 visits a year. Cleon Goodwin, MD, FACS was the Medical Director.

During FY 2003, the Baltimore Region Burn Center (BRBC) treated 341 inpatients. Follow-up was in the outpatient burn clinic. This resulted in more than 1300 outpatient visits. As the trend toward greater outpatient management continues, these statistics will probably change. Patients were admitted from all 22 counties in Maryland, as well as the surrounding states of Virginia, West Virginia, Delaware, and Washington, DC. This year the BRBC had an outpatient from Bermuda, which was arranged through the Office of International Relations. (See charts on pages 34-35 for other statistics.)

This has been en exciting year for the BRBC. The effects of community education and prevention are now being seen, and the Center has been able to "right size" into a very busy 10-bed, combined intensive care and step-down unit. It still maintains its assignment of 5 beds in the pediatrics unit for children with burns.

The Center has also managed to add another outpatient clinic session to aid with the increasing demands for outpatient care. The BRBC continues to use home care services, which are provided through the Hopkins Home Health Care Group as needed.

The BRBC has incorporated a wound care team to provide continuity for the essential daily dressings needed in burn care management.

The BRBC maintains its commitment to both professional and community education. The Burn Foundation concentrates its many efforts in prevention education in the school systems. The Center commits many hours to lecturing and speaking to the professional community as well. The Center maintains its practice of providing educational opportunities for nurses, physicians, medical students, nurse practitioners, physician assistants, burn technicians, and paramedic students. It is a well respected clinical site for EMT-I and EMT-P students. During FY 2003, more than 170 paramedic students were at the BRBC for clinical rotations. The Metropolitan Fire Fighters Fund continues its special relationship with the BRBC.

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 13-bed intermediate/rehab care unit, and the Skin Bank for Burn Injuries. Between 275 and 300 adult burn patients are admitted each year.

ADMISSIONS TO BALTIMORE REGIONAL BURN CENTER BY MODE OF TRANSPORT (FY 2003)

Arrival Mode	Patients	Percentage
EMS ground	177	51.9%
EMS aeromedical	43	12.6%
Commercial, ground	59	17.3%
Commercial, aeromedical	9	2.6%
POV/walk-in	48	14.1%
Other	5	1.5%
Total	341	100%

ADMISSIONS TO BALTIMORE REGIONAL BURN CENTER BY INJURY TYPE (FY 2003)

Injury Type	Patients	Percentage
Flame	158	46.3%
Scald	98	28.7%
Electrical	14	4.1%
Contact w/hot surface	4	1.2%
Chemical	15	4.4%
Skin disease/TENS	22	6.5%
Frostbite	1	0.3%
Inhalation (smoke/chemicals)	9	2.6%
Late effects	18	5.3%
Other/unknown	2	0.6%
Total	341	100.00%

BALTIMORE REGIONAL BURN CENTER STATISTICAL SUMMARY (FY 2003)

Admissions	341
• Adults	290 (85%)
• Children	51 (15%)
Average Age	39.35 years
Average Total Burn Surface Area	13.67%
Average Length of Stay	11.34 days
Mortality	28 (8.2%)

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.

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 study of hand surgery and the training of orthopaedic, plastic, and general surgeons in the field of upper extremity surgery. 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.

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

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

The Curtis National Hand Center is one of the largest training centers for hand surgery. The Center's relationships with Johns Hopkins Hospital, Georgetown University, Walter Reed Army Medical Center, and Union Memorial Hospital continue to provide extraordinary training because of the volume and variety of the pathology. The surgeons of the National Hand Center have contributed some of the most important publications concerning the care of the injured hand and upper extremity, and continue to lecture worldwide about the topic of hand trauma.

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

Among other upcoming projects is the physical reorganization of the trauma intake facility to introduce even better processes for the injured patient. The value of the association of The Curtis National Hand Center and MIEMSS is clear and strong. Maryland maintains the nation's premier network of institutions and physicians for trauma care in part because of the unique capabilities and availability of the specialty trauma centers. One of the country's most important resources in the care of hand and upper extremity trauma is also one of the critical components in Maryland's strong network of advanced trauma centers.

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 Systems 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 2003, the types of emergent cases treated included: carbon monoxide poisoning/smoke inhalation; arterial gas embolism; decompression sickness (the bends), clostridial myonecrosis; group A beta hemolytic strep fasciitis/myositis; necrotizing fasciitis; compromised skin grafts and flaps; crush injuries; and exceptional blood loss anemia.

The types of non-emergent cases treated included: non-healing diabetic extremity wounds; refractory osteomyelitis; osteoradionecrosis; and radiation cystitis/enteritis.

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

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

Researchers from the Department of Hyperbaric Medicine, in collaboration with the Department of Anesthesiology, are actively continuing pre-clinical investigations exploring the neuroprotective effects of hyperbaric oxygen following cardiac arrest and brain injury. Additionally, departmental researchers, in collaboration with the Division of Plastic Surgery, are exploring the ability of hyperbaric oxygen to promote the "acceptance" of tissue flaps following surgery or trauma.

Maryland Eye Trauma System
The Wilmer Eye Institute at Johns Hopkins

The Eye Trauma Center at the Wilmer Eye Institute, 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. Joseph B. Harlan, MD, is the Director of the Center; the Associate Director for FY 2004 is Albert S. Jun, MD, PhD. Amy Liu, RN, BSN, is Nurse Manager (Acting) of the Wilmer Emergency Room/Wilmer Eye Care Pavilion.

During FY 2003, Dr. Peter J. McDonnell succeeded Dr. Morton F. Goldberg as the sixth Functional Unit Director of the Wilmer Eye Institute and Chairman of the Department of Ophthalmology, Johns Hopkins Medicine. Both served as Assistant Chief of Service/Director of Ocular Trauma (Goldberg, 1967; McDonnell, 1987). Dr. McDonnell also spent his internship in Emergency Medicine at Johns Hopkins Hospital and has authored several publications on corneal wound healing.

The Wilmer Emergency Room (WER) logged 5,832 patient visits in FY 2003. Serious eye injuries are reported to the US Eye Injury Registry (USEIR). (See tables and graphic for the USEIR data analysis of Maryland serious eye injuries, from 1999-2002.)

In 2001, Baltimore City passed the first legislation in the country mandating protective gear, which includes face guards on batting helmets and soft-core baseballs to reduce facial fractures (in particular, fractures of the orbit), for youth baseball. From 1999-2001, WEI reported to the USEIR 41.2 % (n=7) serious eye injuries from baseball; these types of injuries dropped to 0% in 2002. A similar bill on approved gear and equipment in youth baseball was introduced to the 2003 Maryland General Assembly. USEIR data on baseball eye injury were presented by Dr. Stuart R. Dankner, pediatric ophthalmologist, faculty member of the WEI and Chairman of the Eye Safety Committee, Maryland Society for Sight, in his testimony to support this bill which will be re-introduced to the Assembly in 2004.

The WER physicians and nurses are active participants in the Johns Hopkins Disaster Plan,

Operation Red: Chemical Plan. The nursing staff assembled an eye irrigation cart to initiate treatment for victims of chemical eye burns. The cart includes the recommended PPE (protective personal equipment) to protect staff from chemical agent contamination.

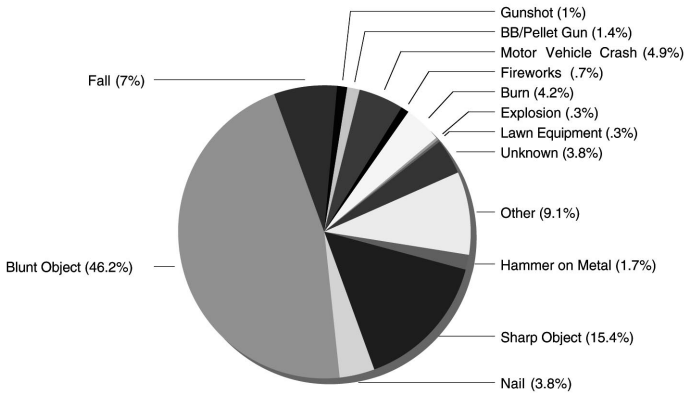
WEI collaborated with the Johns Hopkins Office of Compliance on how the WER is meeting regulatory requirements of EMTALA or the Emergency Medical Treatment and Active Labor Act (anti-dumping law). An ocular triage leveling system (believed to be the first of its kind nationally) was developed. Triage level 1 with zero wait time consists of three eye conditions, two of which are eye trauma: chemical eye injury and protruding object from the eye (possible intra-ocular foreign body). It was also defined that for a specialty eye emergency room, an ocular screening exam by the ophthalmic nurse, a QMP (qualified medical personnel), determines if an emergency ocular condition exists. Definitive ophthalmic diagnosis is made by the physician.

WEI developed the MIEMSS Quality Improvement Indicators of Care for Ocular Trauma, which was reviewed by Mary Beachley, RN, MSN, MIEMSS Director of Hospital Programs. Both the Ocular Triage Leveling System and Ocular Trauma Indicators of Care will be published in the web site of the US Eye Injury Registry.

Victoria B. Navarro, RN, MAS, MSN, Director of Nursing, was appointed as a member of the Funding Sources Research Committee, American Society of Ocular Trauma (ASOT) and US Eye Injury Registry (USEIR).

During FY 2003, the WEI faculty made 12 presentations on ocular trauma.

SOURCE OF INJURY



Statistics for Serious Eye Injuries

Note: Selected Data 1999-2002 from Maryland via the United States Eye Injury Registry (N=286) which contains reports of serious eye injuries according to the USEIR criteria. Data provided by the United States Eye Injury Registry, through funding by the Helen Keller Foundation, Birmingham, Alabama, USA.

The above Note applies to statistics for Age, Eye Protection, Work Related Injuries, Sports Injuries, Source and Place of Injuries.

AGE

Range 2-93 years
Mean: 29.09 years. Median: 30 years.
48% were less than 30 years old.

Age	Percentage
0-9	9.2%
10-19	23.6%
20-29	16.2%
30-39	20.4%
40-49	15.5%
50-59	4.9%
60-69	3.2%
≥70	7%

EYE PROTECTION

None	85.1%
Regular	2.2%
Safety	3%
Sun	0%

WORK RELATED INJURIES = 11.89%

Leading Reported Occupation:
Construction/Contractor
Leading Reported Injury Source:
Blunt Object

SPORTS INJURIES = 3.58%

Baseball	41.2%
Basketball	14.7%
Soccer	14.7%
Softball	14.7%
Other	14.7%

PLACE OF INJURY

Home	35.3%
Street and Highway	27.0%
Place for Recreation or Sport	7.9%
Industrial Premises	7.6%
School	4.0%
Public Building	2.2%
Other	5.8%
Unknown	10.4%

Maryland Eye Trauma System
Suburban Hospital Eye Trauma Center

Suburban Hospital has served as a state-designated Eye Trauma Center since July 2001 with a dedicated, fully equipped eye trauma room for the evaluation and treatment of eye trauma patients. Leonard Parver, MD, serves as the Medical Director and Anne Kuzas, as its Trauma Nurse Coordinator/Program Manager. Dr. Benjamin Rubin, who is affiliated with the National Eye Institute, serves as the Clinical Director of the Eye Trauma Research Program.

The Suburban Hospital Eye Trauma Center treated 62 eye trauma patients during FY 2003. Of these 62 cases, 87% were due to blunt injuries, 8% were due to penetrating injuries, and 5% were due to other causes such as chemical exposures.

The Eye Trauma Center continued to be active with the community outreach program through participation in multiple educational and community outreach activities through school events, after-school programs, health fairs, seminars, and work sites. Prevention measures, eye safety, and visual assessment are program components.

Eye Trauma Patient Statistics

GENDER	FY 01	FY 02	FY 03
Male	61%	71%	85%
Female	39%	29%	15%

Neurotrauma Center
R Adams Cowley Shock Trauma Center

The Neurotrauma Center at the R Adams Cowley Shock Trauma Center, 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.

More than 500 neurosurgical procedures were performed for a variety of acute complex head and spinal cord injuries. Patients with epidural hematomas, intracerebral hematomas, subdural hematomas, and subarachnoid hemorrhages received care based on the latest treatment protocols. The Neurotrauma Center also provided state-of-the-art care for patients with complex spinal column injuries.

Pediatric Trauma Center at the Johns Hopkins Children's Center

In FY 2003, 978 children (ages newborn to 14 years) were treated at the Pediatric Trauma Center at the Johns Hopkins Children's Center, located in Baltimore City. Charles N. Paidas, MD, is the Director, and Susan Ziegfeld, MSN, CCRN, CPNP, serves as the Trauma Nurse Coordinator.

The Pediatric Trauma Service (PTS) at the Johns Hopkins Children's Center is the Level 1 pediatric trauma facility for the state of Maryland. The PTS is an advocate in the care of critically ill and injured children and is actively involved in the prevention of pediatric injuries at the local, state, and national levels. The PTS integrates patient care with ongoing National Institutes of Health (NIH)-funded laboratory and clinical research and collaborates with other departments and the community to provide childhood injury prevention activities. Charles N. Paidas, MD, Director of the Pediatric Trauma Center, serves as the American College of Surgeons State Chair for the Committee on Trauma. In addition, he is a voting member of the Maryland Pediatric Emergency Medical Advisory Group (PEMAG). Moreover, Dr. Paidas is co-chairman of the Pediatric Advanced Life Support Course (PALS) and has brought this course to Greece to assist in training physicians and health care providers abroad.

Susan Ziegfeld, MSN, CCRN, CPNP, Trauma Nurse Coordinator, serves on the Maryland Trauma and Specialty Care Quality Improvement Committee and on the Maryland Trauma Registry, Education and Injury Prevention Committee. She is serving as Course Director, in collaboration with the Air Force and R Adams Cowley Shock Trauma Center, to train nurses in Advanced Trauma Life Support.

Vinita Misra Knight, MPH, Pediatric Trauma Program Coordinator, serves on the Maryland Trauma and Specialty Care Quality Improvement Committee, the Maryland Trauma Registry, Education and Injury Prevention Committee, and the Pediatric Quality Improvement Committee of the Maryland EMS Quality Leadership Council. Mary Pasquariello, Pediatric Trauma Registrar, oversees all aspects of data collection and management. Both Ms. Knight and Ms. Pasquariello are certified as car safety seat technicians and certified by the American Trauma Society as Specialists in Trauma Registry.

All members of the Pediatric Trauma Service actively participate in prehospital provider follow-up and education. Elizabeth Berg, RN, BSN, Nursing Outreach Coordinator for the Hopkins Outreach for Pediatric Education (HOPE), has served in numerous capacities throughout the EMS system to enhance the care of critically ill and injured children. HOPE has continued to provide quality educational programs for all prehospital providers. More than 340 participants have completed the PALS course during the past year.

The Pediatric Trauma Service is involved in several other research initiatives, including a traumatic brain injury study funded by the Centers for Disease Control, pelvic fractures, child physical abuse, spinal injury, motor vehicle crashes, and incidents involving all-terrain vehicles. In addition, the Pediatric Trauma Service of the Children's Center received funding from the Robert Wood Johnson Foundation, in November 2002, for Hopkins to become the 27th local site, of the Injury Free Coalition for Kids (IFCK). IFCK is a national network of community-based hospitals and community advocates, focused on the prevention and reduction of injuries to children. In March 2003, the IFCK of Baltimore appointed Mahseeyahu Ben Selassie, MSW, MPH, as the Project Administrator. The Baltimore Coalition's program will gather information and input from community residents on injuries to children in their neighborhoods. Combined with the data from pediatric trauma records, IFCK will train parents, residents, neighbors, and caregivers to become safety leaders and teachers in their communities. The coalition has been meeting on a regular basis for program planning and held its first successful focus group session in July.

Pediatric Trauma Center
Children's National Medical Center

In FY 2003, Children's National Medical Center, as a pediatric specialty referral center, treated 919 children with multiple trauma and burns who were residents of Maryland or who were injured in Maryland. Martin R. Eichelberger, MD, is the Director of Emergency Trauma-Burn Services and Kim Rogoza, RN, MSN, CPNP is the Trauma-Burn Coordinator.

The Children's National Medical Center (CNMC) was re-verified by the American College of Surgeons in June 2000 as a Level I Pediatric Trauma Center. CNMC serves the pediatric community of Region V, which includes Montgomery, Prince George's, Calvert, Charles, and St. Mary's

counties, by caring for children with multiple trauma and burns.

CNMC provides pediatric emergency and trauma education to physicians, nurses, and prehospital providers. The EMT-B course is offered twice a year. Ten courses in Pediatric Advanced Life Support (PALS) are offered annually. Four courses in the Pediatric Education for Prehospital Professionals (PEPP) were taught in 2003. The Center for Prehospital Pediatrics has produced a model protocol for EMS to care for children with special needs. The Trauma Nurse Core Curriculum (TNCC) is offered annually. Advances in Pediatric Emergency Medicine is also offered annually to community physicians.

Since its inception in 1987, the National SAFE KIDS Campaign (NSKC), a subsidiary of CNMC, has contributed to the decrease of childhood fatalities by: 10% from motor crashes, 34% from drowning, 53% from non-helmeted bike riders, and 56% from residential fires. The campaign interacts with more than 300 state and local SAFE KIDS coalitions in 50 states and 2 jurisdictions and 16 foreign countries to bring the prevention of unintentional injury to the grass roots level. In addition, the NSKC provides critical safety devices to those who cannot afford them, advocates for new and stronger safety legislation, and conducts primary research to identify who is most affected by injury and why (see www.safekids.org).

CNMC houses the Emergency Medical Services for Children (EMSC) National Resource Center and supports programs that enhance the quality of medical and trauma care those children receive. Since 1984, EMSC has provided 82 new and continuing grantees with technical assistance and support for 14 Partnerships for Children Consortium members. EMSC joined the American College of Emergency Physicians for another successful and highly visible national observance of EMS week (May19-25). During these challenging times, the EMSC initiative is focused on an increasing national awareness of the

need to have an emergency response system that is fully prepared for catastrophic emergencies (see www.ems-c.org).

CNMC is part of the Crash Injury Research and Engineering Network (CIREN), funded by the National Highway Traffic Safety Administration/USDOT. It is the only pediatric center of seven centers nationwide investigating the bio-mechanics of vehicle crashes and the anatomic and physiologic impact on children. This information is used by pediatric professional organizations, child restraint manufacturers, and other child passenger safety groups to design prevention programs, make technological improvements to restraints and vehicles, and develop advocacy and policy recommendations (see www-nrd.nhtsa.dot.gov/departments/nrd-50/ciren/CIREN.html).

CNMC is one of 40 pediatric centers participating in the Partnership for Development and Dissemination of Outcome Measures for Injured Children: A Multi-Center Study of Burn Injury Assessment and Outcomes, coordinated by the American Pediatric Surgical Association (APSA). The objective is to obtain patient-based clinical data that allow for a comparison among burn treatments used in current practice. The data include clinical assessment and management; patient parameters of pain and anxiety, appearance, behavior, and parental issues such as expectations and stress. The data will be analyzed to determine which clinical management strategies appear to optimize outcome. Currently, Children's is the leading pediatric user of TransCyteTM, a bio-engineered skin equivalent, on partial thickness burns, which has reduced inpatient length of stay from 2 weeks to 2 days (www.eapsa.org).

Perinatal Referral Centers

This year MIEMSS completed the designation process for the perinatal referral centers, by conducting on-site reviews of four Level III+ applicants. All received full designation as Level III+ Perinatal Referral Centers. To date, MIEMSS has designated a total of 12 Level III+ Perinatal Referral Centers. (See page 26 for a complete list of perinatal 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.

Poison Consultation Center Maryland Poison Center

The Maryland Poison Center (MPC) is a certified regional poison center that provides emergency poison information by telephone 24 hours a day to the general public and health professionals in the state. A division of the University of Maryland School of Pharmacy, MPC is designated by the Maryland Department of Health and Mental Hygiene as the state's regional poison center. 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 2002, the Maryland Poison Center (MPC) received 59,056 calls. While 34,942 of these calls involved a human exposure, 2,187 involved animal exposures, and the remaining 21,927 were requests for information where no exposure occurred. The majority of poison exposures (54.6%) 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-five percent of the cases reported to the MPC were managed at a non-health care 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.

All of the poison specialists who work in the MPC are pharmacists, and nurses are required to be 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. Specialists must re-test every seven years to maintain their status.

The MPC continues to provide educational programs and materials to the public and health professionals. Programs for schools, parent groups, workplaces, and other community organizations were conducted throughout Maryland in 2002. Over 1000 paramedics, nurses, physicians, and pharmacists attended professional education programs provided by the MPC. The MPC also serves as a training site for a variety of health professionals.

The Poison Control Center Enhancement and Awareness Act was signed into federal law in February 2000 to help stabilize the funding of poison centers and to assist in poison prevention education. This law also mandated the establishment of a nationwide toll-free phone number 1-800-222-1222 that will automatically direct callers to their regional poison center no matter where they are in the U.S. The MPC implemented this national telephone number in June 2001.

During the past year, education and outreach remained a strong focus for the MPC. It received a federal grant award of $179,150 to help support its education and outreach programs. New educational materials were developed and distributed throughout the state in 2002. These materials are important tools to assist in teaching people about poison prevention and increasing awareness of the services of the MPC. In addition, Angel Bivens joined the MPC education team as a full-time public health educator. Previously she was a certified specialist in poison information at the MPC for seven years. The MPC also contracted with a local advertising and public relations firm, MGH, to assist with outreach and awareness.

The faculty of the MPC worked with the Department of Health and Mental Hygiene and the Maryland State Board of Pharmacy to develop and implement bioterrorism response training programs for pharmacists throughout the state. Five training sessions were conducted to help pharmacists to be able to respond should there be another biologic agent release.

Research and professional education on the management of poisoning patients is critical to improving patient care and not only in Maryland. During the past calendar year, the faculty of the MPC have been engaged in several research projects and have published eight journal articles and three book chapters to increase awareness of the most appropriate management of poisoning patients.

In addition, the MPC implemented a new data collection system. With the new system, the MPC can submit data in near real-time to a nationwide poison center surveillance system. The goal is to assist with nationwide monitoring for possible biologic or chemical weapons exposures or other toxic outbreaks.

Cause of Poisoning (CY 2002)

Circumstance	Number of Patients	Percentage
Unintentional	28,800	82.43
Intentional	5,293	15.15
Other & Unknown	845	2.42
TOTAL	34,938	100.00

Medical Outcome (CY 2002)

Medical Outcome	Number of Patients	Percentage
No Effect/Minor Effect	32,294	92.55
Moderate Effect	1,295	3.71
Major Effect	128	0.37
Death	41	0.12
Other & Unknown	1,134	3.25
TOTAL	34,892	100.00

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

Location of Exposure by Region (CY 2002)

Region	Number of Exposures	Percentage
Region I (Garrett, Allegany)	716	2.05
Region II (Washington, Frederick)	2,547	7.29
Region III (Carroll, Howard, Harford, Anne Arundel, Baltimore County, Baltimore City)	21,701	62.10
Region IV (Cecil, Kent, Queen Anne's, Talbot, Caroline, Dorchester, Wicomico, Worcester)	3,226	9.23
Region V (Montgomery, Prince George's Charles, Calvert, St. Mary's)	5,661	16.20
UnknownCounty/ Other state	1,092	3.13
TOTAL	34,942	100.0

REHABILITATION

The vision of MIEMSS is the elimination of preventable deaths and disabilities due to sudden illness or injury though 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.

In Maryland we are fortunate to have an extensive number 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 2003, trauma centers in Maryland referred 1,099 trauma patients ages 15 and over to inpatient rehabilitation services. The eleven rehabilitation facilities receiving the most patients are listed on this page.

TOP ELEVEN DESTINATIONS OF TRAUMA PATIENTS WHO WENT TO INPATIENT REHABILITATION FACILITIES: (JUNE 2002 TO MAY 2003)

Source: Maryland Adult Trauma Registry

Rehabilitation Center	Number of patients
Deaton Hospital and Medical Center of Christ Lutheran Church	37
Genesis Long–Term Care Facilities	17
Good Samaritan Hospital of Maryland	14
Health South Chesapeake Rehabilitation Center, Salisbury, Maryland	22
Kernan Hospital	356
Kessler Adventist Rehabilitation Facilities	18
Maryland General Hospital	57
NRH Regional Rehabilitation @ Irving Street, DC	29
Peninsula Regional Medical Center, Transitional Care Unit	15
Sinai Rehabilitation Center	15
Washington County Health System, Comprehensive Inpatient Rehab Services	31

Note: Total patients ages 15 and over who went to a rehabilitation center = 1099

MARYLAND TRAUMA STATISTICS

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

Source: Maryland Adult Trauma Registry

Age Range	June 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
Under 1 year	179	170	171
1 to 4 years	537	541	633
5 to 9 years	618	567	627
10 to 14 years	766	856	828
15 to 24 years	4,360	4,722	4,684
25 to 44 years	6,007	6,268	6,152
45 to 64 years	2,726	2,951	3,134
65 + years	1,503	1,527	1,552
Unknown	18	37	19
TOTAL	16,714	17,639	17,800

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002.

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–Cumberland Memorial Trauma Center	WMHS

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

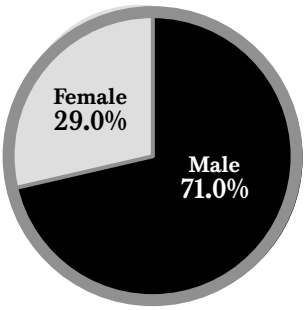
Source: Maryland Adult Trauma Registry

Trauma Center	June 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
The Johns Hopkins Bayview Medical Center	1,385	1,318	1,144
Johns Hopkins Medical System	1,978	1,976	2,101
Peninsula Regional Medical Center	794	851	846
Prince George's Hospital Center	2,000	2,506	2,356
R Adams Cowley Shock Trauma Center	5,828	6,101	6,025
Sinai Hospital of Baltimore	785	775	1,060
Suburban Hospital	1,070	1,252	1,370
Washington County Hospital Association	745	699	486
Western Maryland Health System–Cumberland Memorial Trauma Center	526	485	515
TOTAL	15,111	15,963	15,903

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002.

GENDER OF PATIENTS: PRIMARY ADMISSIONS ONLY (June 2002 to May 2003)

Source: Maryland Adult Trauma Registry



Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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 2002 TO MAY 2003)

Source: Maryland Adult Trauma Registry

County of Injury	Number
Allegany County	227
Anne Arundel County	817
Baltimore County	1,726
Calvert County	109
Caroline County	74
Carroll County	350
Cecil County	225
Charles County	144
Dorchester County	88
Frederick County	242
Garrett County	46
Harford County	406
Howard County	393
Kent County	55
Montgomery County	1,372
Prince George's County	1,675
Queen Anne's County	134
St. Mary's County	93
Somerset County	51
Talbot County	50
Washington County	365
Wicomico County	283
Worcester County	166
Baltimore City	4,191
Virginia	46
West Virginia	184
Pennsylvania	79
Washington, DC	142
Delaware	110
Other	1
Not Indicated	351
TOTAL	14,195

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. Scene origin represents 89.3% ot the total trauma cases treated statewide.

RESIDENCE OF PATIENTS BY COUNTY: SCENE ORIGIN CASES ONLY (JUNE 2002 TO MAY 2003)

Source: Maryland Adult Trauma Registry

County of Residence	Number
Allegany County	182
Anne Arundel County	829
Baltimore County	1,762
Calvert County	118
Caroline County	76
Carroll County	348
Cecil County	166
Charles County	157
Dorchester County	84
Frederick County	208
Garrett County	37
Harford County	433
Howard County	273
Kent County	49
Montgomery County	1,172
Prince George's County	1,536
Queen Anne's County	94
St. Mary's County	112
Somerset County	56
Talbot County	45
Washington County	280
Wicomico County	253
Worcester County	108
Baltimore City	4,044
Virginia	316
West Virginia	226
Pennsylvania	275
Washington, DC	301
Delaware	178
Other	380
Not Indicated	97
TOTAL	14,195

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. Scene origin cases represent 89.3% of the total trauma cases treated statewide.

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

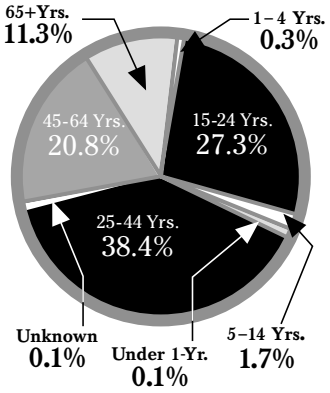
Source: Maryland Adult Trauma Registry

Protective Device	June 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
None	29.3%	31.1%	28.1%
Seatbelt	40.6%	37.6%	38.3%
Airbag & Seatbelt	10.9%	11.4%	14.3%
Airbag Only	2.9%	3.0%	2.8%
Infant/Child Seat	0.2%	0.2%	0.1%
Protective Helmet	7.5%	8.3%	8.0%
Padding/Protective Clothing	0.0%	0.1%	0.0%
Other Protective Device	0.2%	0.4%	0.2%
Unknown	8.4%	7.9%	8.2%
TOTAL	100.0%	100.0%	100.0%

Note: Washington County Hosptial Association did not receive trauma patients from June 1, 2002 through October 1, 2002. 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 2002 to May 2003)

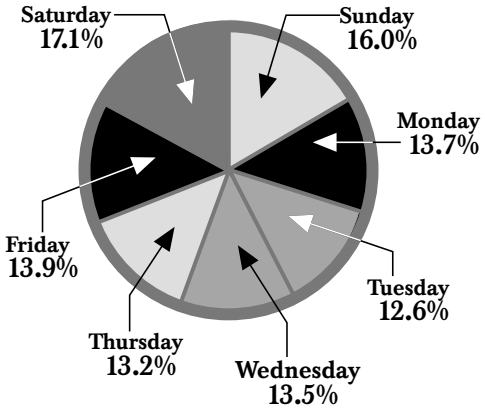
Source: Maryland Adult Trauma Registry



Notes: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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 2002 to May 2003)

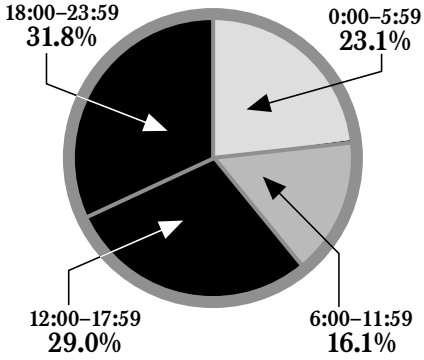
Source: Maryland Adult Trauma Registry



Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emeregency department arrival.

EMERGENCY DEPARTMENT ARRIVALS BY TIME OF DAY: PRIMARY ADMISSIONS ONLY (June 2002 to May 2003)

Source: Maryland Adult Trauma Registry



Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emeregency department arrival.

MODE OF PATIENT TRANSPORT TO TRAUMA CENTERS (JUNE 2002 TO MAY 2003)

Source: Maryland Adult Trauma Registry

Modality Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMHS	TOTAL
Gound Ambulance	86.5%	81.2%	61.0%	63.4%	92.4%	55.8%	75.8%	73.6%	58.5%	67.6%
Helicopter	0.2%	1.9%	30.9%	30.6%	0.0%	43.0%	21.7%	14.3%	29.2%	26.0%
Other	13.3%	16.9%	8.1%	6.0%	7.6%	1.2%	2.5%	12.1%	12.3%	6.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002.

ORIGIN OF PATIENT TRANSPORT TO TRAUMA CENTERS (JUNE 2002 TO MAY 2003)

Source: Maryland Adult Trauma Registry

Origin Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMHS	TOTAL
Scene of Injury	94.9%	81.5%	97.3%	97.2%	99.3%	84.3%	96.0%	90.6%	93.4%	89.7%
Hospital Transfer	0.1%	2.6%	2.6%	1.1%	0.6%	15.7%	2.8%	5.6%	5.8%	7.3%
Other	5.0%	15.9%	0.1%	1.7%	0.1%	0.0%	1.2%	3.8%	0.8%	3.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002.

NUMBER OF DEATHS BY AGE (3-YEAR COMPARISON)

Source: Maryland Adult Trauma Registry

Age	June 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
Under 1 year	0	2	1
1 to 4 years	4	4	0
5 to 14 years	12	8	11
15 to 24 years	152	153	158
25 to 44 years	177	192	174
45 to 64 years	98	103	110
65+ years	162	155	173
Unknown	9	16	8
TOTAL	614	633	635
Deaths Overall as a Percentage of the Total Injuries Treated	4.1%	4.0%	4.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. 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 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
Under 1 year	37	24	18
1 to 4 years	108	88	60
5 to 14 years	407	404	344
15 to 24 years	4,305	4,667	4,625
25 to 44 years	6,007	6,268	6,151
45 to 64 years	2,726	2,951	3,134
65+ years	1,503	1,527	1,552
Unknown	18	34	19
TOTAL	15,111	15,963	15,903

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. 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 2002 TO MAY 2003)

Source: Maryland Adult Trauma Registry

	Number of Injured Patients		Number of Deaths	
Age	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	18	16	1	1
1 to 4 years	60	46	0	0
5 to 14 years	344	291	11	9
15 to 24 years	4,625	4,099	158	139
25 to 44 years	6,151	5,339	174	145
45 to 64 years	3,134	2,714	110	95
65+ years	1,552	1,362	173	149
Unknown	19	14	8	8
TOTAL	15,903	13,881	635	546

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. 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 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
Motor Vehicle Crash	41.7%	42.1%	40.9%
Motorcycle Crash	4.0%	4.6%	4.4%
Pedestrian Incident	6.0%	5.9%	5.7%
Fall	17.3%	17.6%	17.9%
Gunshot Wound	7.7%	7.7%	8.0%
Stab Wound	6.6%	7.3%	8.1%
Other	16.7%	14.8%	15.0%
TOTAL	100.0%	100.0%	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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 2002 TO MAY 2003)

Source: Maryland Adult Trauma Registry

Blood Alcohol Content	Motor Vehicle Crash	Assault	Fall	Other	Total
Negative	52.4%	36.8%	43.3%	46.0%	46.7%
Positive	22.1%	34.4%	15.7%	10.4%	22.9%
Undetermined	25.5%	28.8%	41.0%	43.6%	30.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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 2002 TO MAY 2003)

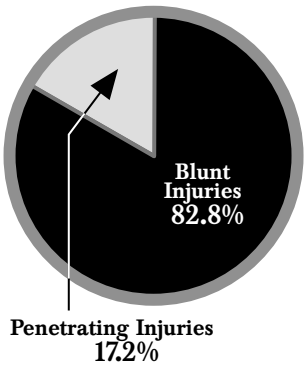
Source: Maryland Adult Trauma Registry

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound	Other	Total
Under 1 year	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.3%	0.1%
1 to 4 years	0.2%	0.0%	0.5%	0.5%	0.0%	0.0%	0.6%	0.3%
5 to 14 years	1.4%	0.4%	5.9%	1.4%	0.9%	0.7%	2.9%	1.7%
15 to 24 years	30.1%	26.7%	20.6%	11.1%	49.3%	38.4%	24.1%	27.4%
25 to 44 years	37.0%	48.2%	38.5%	28.3%	39.5%	46.5%	45.1%	38.2%
45 to 64 years	20.4%	22.7%	25.5%	27.7%	8.4%	13.0%	22.5%	20.9%
65+ years	10.8%	2.0%	8.8%	30.6%	1.2%	1.2%	4.4%	11.3%
Unknown	0.1%	0.0%	0.2%	0.0%	0.7%	0.2%	0.1%	0.1%
TOTAL	100.0%	100.0%	100.0%	100.0	100.0%	100.0%	100.0%	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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 2002 to May 2003)

Source: Maryland Adult Trauma Registry



Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emeregency department arrival.

ETIOLOGY DISTRIBUTION FOR PATIENTS WITH BLUNT INJURIES: PRIMARY ADMISSIONS ONLY (JUNE 2002 TO MAY 2003)

Source: Maryland Adult Trauma Registry

Etiology	Percentage
Motor Vehicle Crash	49.6%
Motorcycle Crash	5.3%
Pedestrian Incident	6.9%
Fall	21.6%
Other	15.9%
Unknown	0.7%
TOTAL	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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 2002 TO MAY 2003)

Source: Maryland Adult Trauma Registry

Etiology	Percentage
Motor Vehicle Crash	0.6%
Pedestrian Incident	0.1%
Gunshot Wound	46.8%
Stabbing	47.3%
Fall	0.6%
Other	4.0%
Unknown	0.6%
TOTAL	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
Inpatient Rehab Facility	9.6%	9.3%	9.3%
Skilled Nursing Facility	2.0%	1.9%	1.6%
Residential Facility	1.0%	1.2%	1.3%
Specialty Referral Center	2.5%	2.8%	3.4%
Home with Services	5.6%	4.3%	4.3%
Home	69.3%	70.6%	70.1%
Acute Care Hospital	2.5%	2.4%	2.5%
Against Medical Advice	1.8%	1.7%	1.6%
Morgue/Died	5.4%	5.3%	5.4%
Other	0.3%	0.5%	0.5%
TOTAL	100.0%	100.0%	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
1 to 12	73.7%	73.7%	72.0%
13 to 19	10.9%	10.5%	12.3%
20 to 35	11.9%	11.5%	12.6%
36 to 75	3.5%	4.3%	3.1%
TOTAL	100.0%	100.0%	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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 2002 TO MAY 2003)

Source: Maryland Adult Trauma Registry

ISS	Blunt	Penetrating	Total
1 to 12	70.1%	72.0%	70.4%
13 to 19	15.6%	12.3%	15.1%
20 to 35	11.9%	12.6%	12.0%
36 to 75	2.4%	3.1%	2.5%
TOTAL	100.0%	100.0%	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
1 to 12	71.3%	70.0%	70.1%
13 to 19	15.7%	15.7%	15.6%
20 to 35	10.4%	11.7%	11.9%
36 to 75	2.6%	2.6%	2.4%
TOTAL	100.0%	100.0%	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
1 to 12	71.6%	70.6%	70.4%
13 to 19	14.9%	14.9%	15.1%
20 to 35	10.7%	11.6%	12.0%
36 to 75	2.8%	2.9%	2.5%
TOTAL	100.0%	100.0%	100.0%

Note: Washington County Hospital Association did not receive trauma patients from June 1, 2002 through October 1, 2002. "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

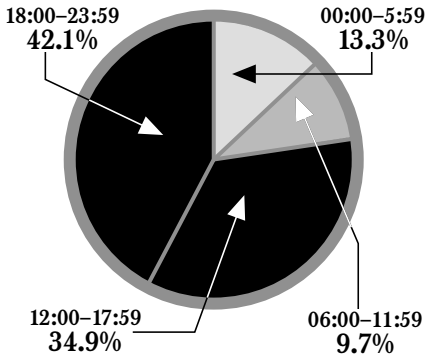
Children's National Medical Center	CNMC
Johns Hopkins Pediatric Trauma Center	JHP

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

Trauma Center	June 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
CNMC	833	864	919
JHP	770	812	978
TOTAL	1,603	1,676	1,892

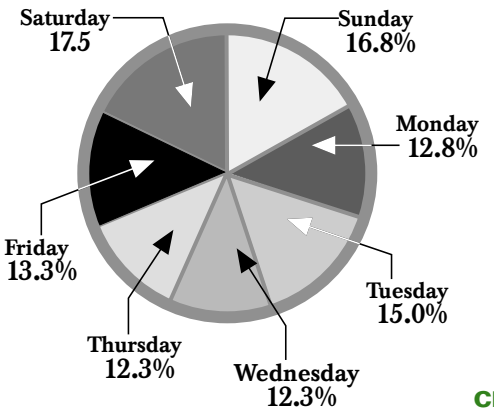
Note: For children that were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland.

EMERGENCY DEPARTMENT ARRIVALS BY TIME OF DAY: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2002 to May 2003)



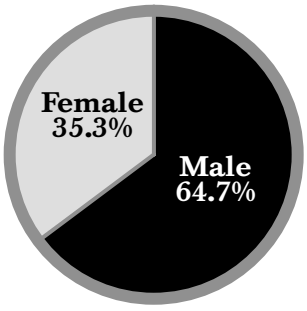
Note: For children that were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland.

EMERGENCY DEPARTMENT ARRIVALS BY DAY OF WEEK: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2002 to May 2003)



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.

GENDER PROFILE: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2002 to May 2003)



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.

OCCURRENCE OF INJURY BY COUNTY: SCENE ORIGIN CASES ONLY

Children Treated at Pediatric Trauma Centers (June 2002 to May 2003)

County of Injury	Number
Anne Arundel County	78
Baltimore County	97
Calvert County	12
Caroline County	5
Carroll County	37
Cecil County	31
Charles County	27
Dorchester County	2
Frederick County	19
Harford County	55
Howard County	32
Kent County	5
Montgomery County	114
Prince George's County	215
Queen Anne's County	15
St. Mary's County	30
Somerset County	1
Talbot County	6
Washington County	8
Baltimore City	172
Virginia	0
Pennsylvania	2
Washington, DC	24
Delaware	0
Other	1
Not Indicated	168
TOTAL	1,156

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 60.9% of the total cases treated at pediatric trauma centers.

MODE OF PATIENT TRANSPORT BY CENTER

Children Treated at Pediatric Trauma Centers (June 2002 to May 2003)

Modality Type	CNMC	JHP	Total
Ground Ambulance	29.8%	49.6%	40.3%
Helicopter	28.5%	33.0%	30.9%
Other	41.7%	17.4%	28.8%
TOTAL	100.0%	100.0%	100.0%

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

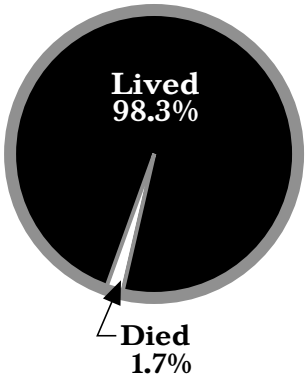
ORIGIN OF PATIENT TRANSPORT BY CENTER

Children Treated at Pediatric Trauma Centers (June 2002 to May 2003)

Origin	CNMC	JHP	Total
Scene of Injury	55.8%	65.9%	61.0%
Hospital Transfer	40.8%	25.7%	33.0%
Other	3.4%	8.4%	6.0%
TOTAL	100.0%	100.0%	100.0%

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

OUTCOME PROFILE: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2002 to May 2003)



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.

FINAL DISPOSITION OF PATIENTS:

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

Final Disposition	June 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
Inpatient Rehab Facility	2.3%	1.7%	1.7%
Skilled Nursing Facility	0.1%	0.0%	0.1%
Residential Facility	0.1%	0.1%	0.2%
Specialty Referral Center	0.3%	0.6%	0.6%
Home with Services	2.3%	2.5%	1.4%
Home	92.3%	92.1%	92.2%
Acute Care Hospital	0.2%	0.4%	1.1%
Against Medical Advice	0.2%	0.1%	0.1%
Morgue/Died	1.9%	2.0%	1.7%
Foster Care	0.1%	0.3%	0.7%
Other	0.2%	0.2%	0.2%
TOTAL	100.0%	100.0%	100.0%

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

ETIOLOGY OF INJURIES BY AGES

Children Treated at Pediatric Trauma Centers (June 2002 to May 2003)

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
Under 1 year	4.0%	0.0%	0.6%	11.8%	0.0%	0.0%	9.9%	8.1%
1 to 4 years	22.1%	5.6%	16.9%	36.6%	12.0%	25.8%	34.3%	30.4%
5 to 9 years	38.7%	33.3%	44.5%	26.6%	12.0%	16.1%	21.3%	28.3%
10 to 14 years	33.9%	61.1%	38.0%	23.1%	68.0%	54.9%	28.8%	30.1%
15+ years	1.3%	0.0%	0.0%	1.9%	8.0%	3.2%	5.7%	3.1%
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.

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

INJURY TYPE

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

Injury Type	June 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
Blunt	78.5%	80.3%	77.8%
Penetrating	2.8%	2.8%	3.0%
Burn	8.5%	6.0%	6.6%
Near Drowning	1.6%	1.6%	1.5%
Hanging	0.3%	0.1%	0.2%
Inhalation	0.4%	0.7%	1.0%
Ingestion	6.8%	7.2%	7.9%
Crush	0.0%	0.1%	0.0%
Snake Bite/Spider Bite	0.1%	0.1%	0.3%
Animal Bite/Human Bite	0.7%	1.0%	1.4%
Other	0.3%	0.1%	0.3%
TOTAL	100.0%	100.0%	100.0%

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

MECHANISM OF INJURY

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

Mechanism	June 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
Motor Vehicle Crash	18.7%	21.6%	19.7%
Motorcycle Crash	1.4%	1.5%	1.0%
Pedestrian Incident	13.7%	10.7%	8.8%
Gunshot Wound	1.0%	1.4%	1.3%
Stabbing*	1.6%	1.5%	1.6%
Fall	27.1%	28.7%	30.5%
Other	36.5%	34.6%	37.1%
TOTAL	100.0%	100.0%	100.0%

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

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

NUMBER OF INJURIES BY AGE

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

Age	June 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
Under 1 year	142	146	153
1 to 4 years	429	453	573
5 to 9 years	491	450	540
10 to 14 years	486	569	571
15+ years	55	55	60
Unknown	0	3	0
TOTAL	1,603	1,676	1,897

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.

NUMBER OF DEATHS BY AGE

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

Age	June 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
Under 1 year	3	3	6
1 to 4 years	11	15	11
5 to 9 years	10	6	9
10 to 14 years	5	9	6
15+ years	2	0	1
Unknown	0	1	0
TOTAL	31	34	33

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.

NUMBER OF INJURIES AND DEATHS BY AGE

Children Treated at Pediatric Trauma Centers
(June 2002 to May 2003)

	Number of Injured Patients		Number of Deaths	
Age	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	153	147	6	4
1 to 4 years	573	547	11	10
5 to 9 years	540	503	9	9
10 to 14 years	571	544	6	5
15+ years	60	59	1	1
TOTAL	1,897	1,800	33	29

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.

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

Protective Device	June 2000 to May 2001	June 2001 to May 2002	June 2002 to May 2003
None	33.1%	33.6%	36.1%
Seatbelt	17.6%	18.9%	18.6%
Airbag & Seatbelt	1.3%	1.7%	0.8%
Airbag Only	0.2%	0.4%	0.6%
Infant/Child Seat	8.5%	11.3%	9.7%
Protective Helmet	8.5%	6.9%	7.9%
Padding/Protective Clothing	0.0%	0.2%	0.2%
Other Protective Device	0.2%	0.0%	0.2%
Unknown	30.6%	27.0%	25.9%
TOTAL	100.0%	100.0%	100.0%

Note: Children were involved in motor vehicle, motorcycle, bicycle, and sports-related incidents only. 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.

RESIDENCE OF INJURY BY COUNTY: SCENE ORIGIN CASES ONLY

Children Treated at Pediatric Trauma Centers (June 2002 to May 2003)

County of Injury	Number
Anne Arundel County	92
Baltimore County	117
Calvert County	15
Caroline County	5
Carroll County	43
Cecil County	33
Charles County	33
Dorchester County	3
Frederick County	26
Harford County	50
Howard County	19
Kent County	0
Montgomery County	129
Prince George's County	248
Queen Anne's County	16
St. Mary's County	32
Somerset County	1
Talbot County	2
Washington County	5
Baltimore City	219
Virginia	5
Pennsylvania	9
Washington, DC	9
Delaware	4
Other	41
Not Indicated	0
TOTAL	1,156

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 60.9% of the total cases treated at pediatric trauma centers.

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 agencies, academic institutes, and governmental groups in projects focused on injury epidemiology, injury prevention, and improvements in the prehospital and inhospital delivery and coordination of trauma care. Colin F. Mackenzie, MD, is the Director.

The National Study Center for Trauma and Emergency Medical Systems (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. To date, 293 patients have been enrolled into the CIREN study, a multi-center collaboration of nine trauma centers. Recent presentations about this research have been made to the National Highway Traffic Safety Administration (NHTSA) addressing injuries incurred in "vehicle mismatch" collisions. In addition, patient interview data collected at six months and one year post-injury were presented at the 46th annual meeting of the Association for the Advancement of Automotive Medicine in Tempe, Arizona.

As part of the CIREN project, the NSC has also been funded by NHTSA to ascertain economic costs and long-term outcomes associated with lower extremity injuries.

The NSC is also part of the CODES data network that provides data to NHTSA and other parties with an interest in highway safety. During FY 2003, CODES data were used in projects that were presented at several national and international conferences. Two such projects–an evaluation of the graduated licensing law in Maryland and a description of the police perception of alcohol use among Maryland drivers–were presented at the meeting of the American Public Health Association in Philadelphia. The NSC was recently awarded a five-year extension to continue its role in the CODES data network.

In April 2003, the NSC was awarded a three-year contract from the US Army to study mild traumatic brain injury and long-term outcomes in Shock Trauma patients with blunt trauma injuries. Patients will be given a battery of tests, including an electronic balance test and various neuropsychological and cognitive measures, by a multi-disciplinary team. Follow-up tests will be administered and analyses conducted to determine which, if any, baseline measures predict those with persistent physical, cognitive, and behavioral problems. Such measures, if identified, may be useful to the Army in field settings where decisions related to post-injury deployment must be made.

NSC investigators are focusing on motorcycle safety as well. NHTSA has awarded funding to characterize the population of motorcycle operators and to distinguish factors unique to those who have experienced motorcycle crashes. Approximately 300 motorcyclists admitted to the Shock Trauma Center will be interviewed with regard to their riding training and experiences, with a special focus on those over 40 years of age. Other federal funds will support an investigation of the impact of the motorcycle safety classes offered by the Motor Vehicle Administration. The NSC is also participating in a Statewide Motorcycle Safety Coalition in an effort to reduce motorcycle injuries and fatalities through an interdisciplinary approach.

In August 2002, the NSC received excellent scores from the National Institute for Occupational Safety and Health for its proposal to conduct a three-year surveillance of work-related injuries in Maryland. Funding is anticipated by mid-summer 2003.

A study funded by Robert Wood Johnson Foundation's Substance Abuse Policy Research Program in support of an assessment of motor vehicle crash culpability relative to alcohol and other drug use by injured drivers is in its second year.

Approximately 500 patients have been enrolled in a four-year clinical trial of brief intervention of trauma patients identified as alcohol dependent. This trial is funded by the National Institute of Alcohol and Alcohol Abuse. The study hypothesis is that a personalized brief intervention

will result in decreased drinking and consequences (including injury episodes) from alcohol abuse. Enrollment into the trial has ended, but follow-up interviews at six months have been completed and interviews at twelve months post-discharge are still underway.

The results of a study describing factors that influence hospital admission among children with traumatic brain injury were published in *Academic Emergency Medicine*. Data from another NSC study ("Autopsy Study of Motorcyclist Fatalities: The Effect of the 1992 Maryland Motorcycle Helmet Use Law") of motorcycle fatalities were published in the August 2002 *American Journal of Public Health*. These findings were also presented to the Maryland State Legislature in support of non-repeal of the motorcycle helmet law, and presented at the Lifesavers Conference for highway safety professionals in Chicago.

During FY 2003, NSC researchers published the third annual "Crash and Injury Fact Book," which has been developed with support from the Maryland Department of Transportation. As part of this effort, the incidence and severity of motor vehicle-related injuries are being documented statewide. These data are available on the NSC web site (http://nsc.umaryland.edu).

The Human Factors & Technology (HF&T) Group of the Department of Anesthesiology is working collaboratively with NSC on several projects funded by the National Institutes of Health, the Department of Defense, and the National Science Foundation. These collaborating projects investigate potential uses of several types of telecommunication technologies in field and transport care. For example, one project is the integration of wireless mobile communication components into a system that provides reliable and robust transmission of multimedia diagnostic information from ambulance crews to receiving physicians, logistical control centers, and other experts. In another project, digital ambulances in the ExpressCare ambulance system are being used to automate the transmission of global positioning system data and the arrival time of the ambulances at the University of Maryland Hospital. These digital ambulances are also utilized for cardiac patients transferred for cardiac catheterization. The potential benefits for this proof of concept trial are that drug therapy can be initiated or adjusted en route. The catheterization team, whether it is at night or daytime, can be better coordinated and prepared for patient arrival. Several applications of such field- and transport-based audio, video, and data access are being considered, including mass casualty scene command, en-route diagnosis of acute stroke, and decisions regarding transport of trauma and seizure patients. Currently, the HF&T researchers are developing video-based protocols in collaboration with NASA to assist in space-based medical emergency response.

The NSC is leading a collaborative effort funded by the US Army (TATRC) between the University of Maryland campus, Baltimore City, State, and military groups to develop a model for Local Area Defense (LAD) that will result in a Demonstration Exercise in 2004. During the LAD Demonstration, inter-operability of communication technologies, psychological and trauma "casualty" triage will be tested.

In three clinical projects, the NSC is the lead organization in conjunction with the Shock Trauma Center in investigation of respectively, Best Practices or Chest Tube Insertion (Agency for Healthcare Research and Quality (AHRQ) funded), Comparison of Succinylcholine and Rocuronium for rapid sequence intubation (Organon funded), and a randomized trial of a hemoglobin-based O2 carrier ("blood substitute") in comparison to red cells for major orthopedic surgery (Biopure funded).

The NSC and AHRQ co-sponsored a symposium, "Video as Research Data" in September 2002. The conference summarized research in the use of video recording and analysis as a tool for data gathering for topics related to patient safety, improved outcomes, and as a medium for capturing behavioral and other data in multiple domains. Participants included invited researchers from diverse backgrounds including medicine, education, psychology, human factors, medical information, mechanical and industrial engineering, aviation and space systems, safety research, legal, cognitive engineering, and applied cognitive psychology.

The NSC Board of Advisors met twice this year to review current programs and provide guidance to the NSC Director about current and future initiatives of mutual interest, such as collaboration with State, Baltimore City, and University of Maryland initiatives in homeland defense and public health including injury surveillance.

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