



# Maryland Institute for Emergency Medical Services Systems



2003-2004 Annual Report





# 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.



# 2003–2004 ANNUAL REPORT

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Current Listing of EMS Board, Statewide EMS Advisory Council,  
and MIEMSS Executive Staff

inside back cover

# JOINT REPORT FROM THE EMS BOARD CHAIR & THE MIEMSS EXECUTIVE DIRECTOR

Over the years as Chairman of the Emergency Medical Services Board and Executive Director of MIEMSS, we have used our opening messages to trumpet the accomplishments of the emergency medical services system in Maryland. We have endeavored to underscore our progress while defining our future needs.

This year we offer not our own judgments and views but rather report on an assessment offered by objective, subject-matter experts who measure EMS programs on a national scale by stringent standards.

The National Highway Traffic Safety Administration (NHTSA) is charged with reducing accidental injuries on America's highways. One of NHTSA's key missions is to assist states in developing integrated emergency medical services programs that promote comprehensive systems of trauma care. NHTSA appoints Technical Assistance Teams with demonstrated leadership, expertise, and experience who measure EMS programs on the basis of ten component areas, each with a set of "gold standards."

NHTSA's assessment was aimed toward measuring Maryland's progress since its last visit and evaluation completed in 1991. At that time, Maryland's EMS system was going through significant change brought about by the death of R Adams Cowley, MD, the founder and leader of EMS in Maryland for over 20 years, and an economic environment that threatened to dismantle much of what he had imagined and created.

The 1991 NHTSA report noted the "unique and pioneering EMS history" of Maryland and its "strong and charismatic leadership." The report recognized enthusiastic volunteers, career professionals and medical personnel, the most extensive air medical program in the country, and the integral association of the lead EMS agency with the Shock Trauma Center.

However, the report also defined as the "single biggest obstacle to the further development of EMS services in Maryland" the "absence of clear legislative authority and responsibility vested in a state agency." Lacking that authority, Maryland did not have the ability to ensure statewide conformity to approved policies and regulations. There were no uniformly enforced personnel certification and decertification procedures, no uniform statewide ambulance licensure and inspection regulations, and no quality assurance requirements.

The 1991 NHTSA report, as well as the work of the EMS Commission which deliberated during 1992, served as the catalysts for change in Maryland. Legislation passed in 1993 created a new EMS system structure and authority for operations. Funding from motor vehicle registration fee surcharges provided the fiscal underpinnings of the system.

NHTSA's reassessment, completed in June 2004, states that since 1991, "...the Maryland EMS system has embraced change with impressive results." While citing the significance of the passage of the enabling legislation and the regulations



to implement the 1993 law, the report notes that Maryland has "...implemented a vision of excellence through collaboration and consensus." The report cites the many presenters during the proceedings who noted that "...MIEMSS fosters a spirit of teamwork and cooperation. MIEMSS has provided the resources, leadership, and neutral posture that supported the many system stakeholders to come together for planning, implementation, and evaluation of the system."

Indeed it is this spirit that the EMS Board adopted as its guiding principle at its first meeting in July 1993. "Cooperative excellence" is at least as compelling as "legislative authority" in our deliberations and actions. While the NHTSA report accurately identifies the EMS Law as integral to establishing the foundation for growth, it also acknowledges the spirit of collaboration as the engine driving advancements in the system. Certainly the report provides a number of suggestions and recommendations that will help us focus in on areas that will be addressed as we continue to improve the system of delivery of EMS care to Maryland's citizens. But just as certain is the fact that our success will be determined more by continued emphasis on consensus building than by the authority provided through statutes and regulations.

The NHTSA report's summarizing paragraph clearly reflects our thoughts as we contemplate EMS in Maryland in 2004 and beyond: "The greatest asset that Maryland's EMS system possesses is its people. As a team, they have been faithful to the original vision of Dr. Cowley. That vision has been expanded by the EMS Board's

contemporary approach of cooperative excellence and the Executive Director's program of quality improvement. At every level, the people involved in Maryland EMS are committed and capable about the work they do. MIEMSS brings them together as a force multiplier. The citizens and visitors to Maryland are well served by the accomplishments that MIEMSS has achieved and the work that it will do in the future."

We welcome you to read the full report that is available on MIEMSS website, [www.MIEMSS.org](http://www.MIEMSS.org).

In the following pages you will find a number of initiatives described that define our determination to continue as leaders in EMS. The implementation of EMAIS (the electronic ambulance run information-gathering tool) and FRED (the online EMS resource catalogue), our continued engagement in WMD (weapons of mass destruction) and bioterrorism event preparation, hospital overcrowding and work-force issues, and layperson AED (automated external defibrillator) efforts symbolize the breadth of our involvement in essential matters influencing the quality of life Maryland's citizens.

We look to the past with sincere appreciation for the rich history of EMS and to the future to reinforce our partnerships to strengthen our opportunities to make a difference.

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

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



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



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# MIEMSS

## ADMINISTRATION

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

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

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

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

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

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

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

MIEMSS FY 2004 budget information is displayed by state object code and department in the charts on page 4.



## 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 2004 there were 5,428 patients transported by the Maryland State Police (MSP) Aviation Division. Of these patients, 5,144 (95%) were transported from the scene of injury at the request of the local fire services, and 284 (5%) were transported between hospitals to a higher level of care.

Types of calls included the following:

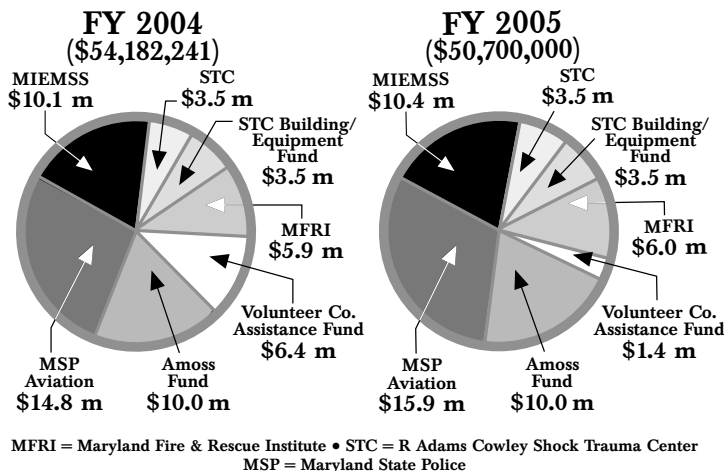
• Motor vehicle crashes	2,544
• Falls	706
• Pedestrians	300
• Gunshot wounds	132
• Assaults	113
• Burns	87
• Industrial accidents	86
• Stabbings	73
• Hand injuries	58
• Hyperbaric patients	14
• Eye injuries	13
• Drownings	12
• Electrocutions	6

Interfacility transports included the following types of patients:

• Trauma	157
• Medical	88
• Neonatal	39

FY 2004 saw the Aviation Division's continued participation in the Adult and Pediatric Rapid Sequence Intubation (RSI) pilot programs. Designed to address the needs of patients with

## EMS Operations Fund



severe head injuries, these RSI pilot protocols allow MSP flight paramedics to use neuromuscular blocking agents in the field to provide endotracheal intubation for patients who are not breathing adequately.

Scenario-based simulation training was again utilized for division flight paramedics in verification of advanced skill proficiency. 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 2004 also saw the continuation of efforts to computerize the documentation of all 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.

### ATTORNEY GENERAL'S OFFICE

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

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

The Attorney General's Office reviewed and prosecuted 35 cases of alleged prohibited acts by EMS providers and applicants, litigated and settled a claim under the Americans with Disabilities Act.

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 com-

### MIEMSS FY 2004 APPROPRIATION BY DEPARTMENT

<b>Administrative Offices</b>	
Executive Director, Legal Office	\$759,307
Financial & Human Resources Administration	1,008,493
Planning/Program Development/Total Quality Management	230,542
<b>Communications</b>	
Equipment	1,270,745
Maintenance	1,131,044
EMRC/SYSCOM	948,941
<b>Education/Public Information</b>	
Education, Licensure, & Certification/Compliance	1,229,396
Public Information & Media Services	510,518
Emergency Health Services Program	93,500
<b>Information Technology</b>	1,013,107
<b>Medical Services</b>	
Office of Medical Director	583,463
Office of Hospital Programs	108,647
EMS-Children	159,712
<b>Regional Administration</b>	837,570
<b>Commercial Ambulance Program</b>	220,000
<b>Grants</b>	
EMS-Children	207,000
Perinatal Center Designation Program	75,000
Rural Access to AED	200,186
Improving EMS in Rural Areas	40,000
<b>TOTAL</b>	<b>\$10,627,171</b>

### MIEMSS FY 2004 EXPENDITURE BY OBJECT CODE (INCLUDES SPECIAL, REIMBURSEABLE AND FEDERAL FUNDS)

FY 2004	Actual
Number of Positions	92.6
Salaries and Wages	\$6,282,529
Technical/Special Fees	516,864
Communication	971,626
Travel	109,608
Fuel and Utilities	49,720
Motor Vehicle Operation and Maintenance	191,145
Contractual Services	1,590,191
Supplies and Materials	204,981
Equipment-Replacement	41,047
Equipment-Additional	178,954
Fixed Charges	72,067
Grants	1,118,701
<b>Total Salary and Wages</b>	<b>\$6,799,393</b>
<b>Total Operating Expenses</b>	<b>\$4,528,035</b>
<b>Total Expenditure</b>	<b>\$11,327,428</b>

puter software application.

The Attorney General's Office presented educational programs on the Health Insurance Portability & Accountability Act (HIPAA) Privacy regulations, the role and responsibility of EMS operational program medical directors in the quality assurance process, and developments in EMS law, including duties relating to the transport of minors.



The Attorney's General's Office assisted in the administration of state and federal grants, and in licensing the MIEMSS Facility Resource Emergency Database (FRED) 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) (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	291
• IRC Investigations Initiated	248
• IRC Investigations Conducted	198
• IRC Investigations Continued	50
• IRC Complaints Forwarded to PRP	37
• Complaints Dismissed by PRP	2
• Complaints Forwarded to EMS Board	35

### EMS Board Action

• Reprimands	3
• Probation	9
• Suspensions	2
• Revocations	10
• Remedial training	2
• Surrenders	1
• Evaluation	3
• Applications Denied	3
• Case Resolution Conferences	8
• Dismissed	3
• Counseling	2

## EDUCATION, LICENSURE, AND CERTIFICATION

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

During FY 2004, the number of career, volunteer, and commercial prehospital providers in Maryland was 29,552, with the following breakdown:

• First Responders	10,551
• Emergency Medical Technicians-Basic	15,323
• Cardiac Rescue Technicians	361
• Cardiac Rescue Technicians-(I)	252
• Emergency Medical Technicians-Paramedic	2,192
• Emergency Medical Dispatchers	873

Education programs offering courses leading to EMS certification or licensure are required to obtain approval from the EMS Board. The approval process involves a comprehensive self-study and a site visit. The site visit team is comprised of a medical director and educator from outside programs, as well as MIEMSS staff. The findings of the self-study and site visit are then submitted to the EMS Board for approval. During FY 2004, the Office conducted five site visits for the advanced life support (ALS) and basic life support (BLS) education program approval processes. As of June 2004, nearly 15 education programs are scheduled to complete the entire approval process by October 2004. In addition, nearly 30 law enforcement agencies, which are approved by the Maryland Police and Corrections Training Commissions, are to be approved by the EMS Board by October 2004.

In cooperation with the BLS Committee of the Statewide EMS Advisory Council (SEMSAC), the Office has initiated the development of a revised EMT-Basic Refresher Course. The theme of the course is "back to the basics" and focuses on skills practice. Through data analysis and input from instructors, it was determined that basic skills (for example, splinting, bleeding control, traction splinting, spinal immobilization, etc.) need to be a primary focal point in educational courses offered to EMT-Bs. As of June 2004, the Committee completed the needs analysis, data review, and design of the course and is working on its development.

The modified refresher course is scheduled for implementation starting July 1, 2005 with all

EMT-B instructors being introduced to the curriculum in March and April of 2005.

In November 2003 and May 2004, first responder instructor courses in Frederick and Havre de Grace were held for law enforcement instructors, educating over 40 new instructors. These instructors, as well as existing instructors, include automated external defibrillator (AED) training within all first responder courses. Given the prevalence of AEDs in public places, as well as the inclusion of AED content in all CPR courses since 2000, the addition of AEDs to the first responder curriculum was well received.

In cooperation with the Maryland Fire and Rescue Institute (MFRI) and the MIEMSS Prehospital Education Quality Improvement Committee, the Education, Licensure, and Certification Office continues to analyze three 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 utilized to maximize the quality of EMS educational programs offered in Maryland. Furthermore, it will be used to better meet the educational needs of the all learners.

MIEMSS Education, Licensure, and Certification Office, in conjunction with MFRI, sponsored a statewide instructor rollout for "Geriatric Education for Emergency Medical Services" (GEMS). The two-day rollout includes

the GEMS ALS course and an instructor/coordinator course to provide the state with 22 instructors and course coordinators for implementation statewide. The GEMS course focuses on older people and the EMS provider, and the differences that complicate the emergency medical care delivered to the elderly.

Working collectively with various MIEMSS departments and the Maryland State Firemen's Association, Metro Chiefs, and Council of Academies, the Office has assisted with staffing the Workforce Committee. The Workforce Committee is comprised of representatives from around the State and is focused primarily on identifying issues related to recruitment, retention, and the perceived shortage of EMS professionals throughout the State. The Committee is charged to gather data, review and identify issues, and make recommendations to the SEMSAC and EMS Board by January 2005.

## EMERGENCY HEALTH SERVICES DEPARTMENT

### UNIVERSITY OF MARYLAND, BALTIMORE COUNTY

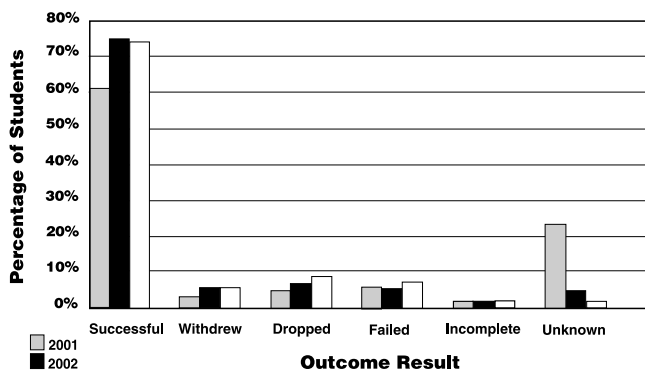
*Mission: To provide leadership in the field of emergency health services through excellence in education. This educational excellence is supported by an active research agenda, service to the University and EMS communities, and provision of professional continuing education. The EHS Department recognizes 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 fourth year with the Department of Homeland Security (formerly 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 \$1 million. 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.

**EMTB Student Outcome**



A Maryland Emergency Services Student Application (MESSA) is completed and turned in for every student enrolled in an EMS course. The above chart illustrates the outcome trends for EMT-Basic students in the calendar years 2001, 2002, and 2003. In 2001, over 60% of students that enrolled in an EMT-B class successfully completed it, compared to over 75% in 2002 and 74% in 2003. The decrease with the number of unknown outcomes is to be commended. These trends, in combination with other data from the MESSA, will be compared, monitored, and enhancements made to EMS educational processes. A few of the many examples of data are provided below.



Undergraduate enrollment continues to increase, especially in the paramedic track, which opened a designated laboratory for skills and individualized instruction. One reason for the enrollment increase is the EHS Living Learning Center, an academic residential community for EHS majors. The department continues to maintain Maryland accreditation from MIEMSS and national accreditation through CAAHEP. EHS majors are active members of 27 Maryland emergency services organizations.

To date, EHS has contracts with over 40 educational institutions nationwide to provide critical care transport training utilizing the department's Critical Care Transport Course. During 2003, 247 Maryland providers participated in EHS continuing education courses, including 48 members of the Maryland State Police.

Between January 30 and February, Jeffrey Mitchell was invited to participate in a conference jointly sponsored by the British Red Cross and the European Union. He was the only American invited to make a presentation at this prestigious international conference. His topic was "Disaster Psychology and the need for a comprehensive and systematic approach to mental health services."

## **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 Committee (PEMAC), the state Pediatric Quality Improvement Committee (QIC), 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.


The EMSC Program staff and medical directors from PEMAC continued to support the Maryland Enhanced 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 PEMAC 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. Forms and resources are available on the web at <http://www.miemss.org/EMSCwww/PEPPEnhanced.html>.

Through the Maryland Medical Protocol review process, establishment of current state-of-the-art clinical approaches to pediatric seizure management and pediatric automated external defibrillator (AED) use have been developed and implemented. Protocol revisions were based upon a comprehensive evidence review and expert consensus process of the PEMAC. During each of the educational seminars and conferences in Maryland during 2003-2004, the Tracheostomy Skills Workshop was presented. Based upon both provider and instructor feedback, the EMSC staff expanded the program and developed a CD-ROM training resource on Tracheostomy Care for All Ages that was reviewed by a statewide work group and approved by both PEMAC and the Office of the Medical Director. This resource has

been made available to all county and college training programs and will be available on the MIEMSS EMSC website at <http://www.miemss.org/EMSCwww/PedsCE.html>.

Prehospital continuing education programs were offered at several conferences throughout the state. Pyramid 2003 included both BLS PEPP and preconference workshops on moulage, in addition to the annual session on Pediatric Case Reviews from the Pediatric Base Stations. Winterfest 2004 featured a moulage preconference session and a conference presentation on pediatric trauma. The Miltenberger EMS & Trauma Conference included a lecture and workshop on child victimization. The EMS Care 2004 state conference included a Maryland Enhanced ALS PEPP course, as well as presentations on child victimization, pediatric cardiac arrest and the AED, crash reconstruction,

pediatric seizure management, Pediatric Trauma Case Reviews, a pediatric resuscitation update, and JUMPSTART with tabletop exercises. 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 2003-2006 EMSC Partnership Grant continues to build 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 expansion

		
<b>Maryland EMS for Children Program</b> <b>2003 Injury Prevention Special Projects</b> EMS Based Injury Prevention Program for Children July 2003–January 2004		
Applicant	Summary of Project	Target Area
<b>Region II</b> Frederick County Department of Fire & Rescue Frederick SAFEKIDS	<b>Children Riding in Vehicles Safely:</b> Joint project between Fire & Rescue, Frederick County SAFEKIDS, and Frederick Memorial Hospital Wellness Center to update CPS materials in those fire stations with trained CPS technicians.	Children 0-8 & families in Frederick Co
<b>Region IV</b> Shore Health Systems EMS Program Queen Anne & Talbot EMS	<b>"Latch Key Kids: Making It Safer":</b> Review of existing programs and materials and development of Safety Checklist and Emergency Response Plan for middle school children at home alone after school.	Pilot in Queen Anne and Talbot counties with replication on Eastern Shore.
<b>Region V</b> Emergency Education Council Region V Bowie VFD Auxiliary	<b>"Operation Safe Arrival–Bike Safety for Tulip Grove Elementary School":</b> Pilot project with Bowie, Maryland to saturate elementary school-age children and families with bike helmets and bike safety information. Pre- and post-intervention observational tool development included.	School-age children in Bowie, Maryland with replication planned for the county and region
<b>Region V</b> Montgomery County Fire & Rescue County SAFEKIDS	<b>"Saved by the Helmet":</b> Bike helmet and safety intervention with high-risk, multi-lingual communities. Partnership between Fire & Rescue, SAFEKIDS Coalition, and National Capital Park Police.	School-age, middle-school children in Montgomery County
<b>Region V</b> Emergency Education Council Region V MSFA Prevention Committee & Bowie VFD Auxiliary	<b>"Adapting RISKWATCH for Children with Special Needs":</b> Replication of successful project in Special Needs with the adaptation of the NFPA RISKWATCH curriculum tools, presentations, and evaluations for 2-6-year-olds with special learning and medical needs.	Schools in Central and Southern Prince George's County with statewide presentation for duplication.
<b>Region V</b> Montgomery County Fire & Rescue County SAFEKIDS	<b>"Mobile Safety Resources":</b> Enhancement of mobile safety trailer to incorporate video material and PSA for children between skill stations at open houses, safety fairs, school prevention events.	School-age children in Montgomery County



sion of the JUMPSTART triage training and disaster preplanning with schools. The Kids in Disasters project includes the following initiatives:

1. Pediatric Triage Training with START and JUMPSTART workshops with corresponding tabletop exercises and scenarios focused on children. Educational opportunities are being expanded to include school and public health nurses with scenarios involving children with special learning and health needs. The Maryland Medical Protocols for EMS Providers now includes the combined START and JUMPSTART triage tool.

2. A Maryland Moulage Team has been recruited to assist in the preparation of victims for full-scale drills. Many of the members of this team have taken the moulage workshops offered through the EMSC Program and coordinated by the MIEMSS regional offices. Resources on moulage are available on the Emergency Education Council of Region 5 website <http://www.eecreg5.org/moulage/index.htm>.

3. The Maryland Virtual Emergency Response Systems (MVERS) is a joint project with the Maryland State Police, the MIEMSS Operational Support 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. Anne Arundel County schools are utilizing the MVERS project through a federal Department of Education grant they received.

The Maryland EMSC program received a second EMSC Regional Symposium grant and will be jointly coordinating the third Mid-Atlantic eight-state EMSC Regional Symposium with Delaware EMSC, to be held in Rehoboth during the fall of 2004. The initial grant period coordinated two eight-state planning meetings. The first meeting included the filming of a multi-state public service announcement based upon the federal EMSC "Right Care When It Counts Campaign." The second meeting was a partnership with the Atlantic EMS Council and facilitated collaboration and knowledge exchange among state directors and EMSC directors. The Mid-Atlantic EMSC group includes Virginia, West Virginia, the District of Columbia, Maryland, Delaware, Pennsylvania, New Jersey, and New York.

The federal EMSC research agenda continues to be implemented through the Chesapeake

Applied Research Network (CARN) of the national Pediatric Emergency Care Applied Research Network (PECARN). The CARN project is based at Children's National Medical Center and through partnerships with Johns Hopkins Children's Center provide the academic base for the nodal network in Maryland that have the first EMS and Emergency Department collaborative research projects within the PECARN project. The University of Maryland Pediatric Emergency Department has joined the research network this year along with Holy Cross Hospital, Calvert Memorial, and Howard County Hospital. The CARN is establishing data linkage projects and the structure to apply for and implement pediatric EMS and ED research initiatives.

Maryland EMSC personnel participated on the following national advisory committees and expert panels during the past year: (1) The Health Resources and Services Administration's National Consensus Panel on Guidelines for Prehospital Response to School Health Emergencies; (2) the Centers for Disease Control's National Center on Environmental Health Work Group on EMS Management of Asthma Exacerbations; and (3) the Institute of Medicine's Subcommittees on Pediatric Emergency Medicine and Hospital-based Emergency Care of the Committee on the Future of Emergency Care in United States Health Systems. In June 2004, the Maryland EMSC Program Director was presented with the 2004 EMSC National Heroes Award in the state coordinator's category.

During May 2004, EMS for Children's Day was celebrated across Maryland through the recognitions of children and youth who have demonstrated one of the 10 Steps to Take in an Emergency or one of the 10 Ways to be Better Prepared for an Emergency. On May 17, 2004, First Lady Kendel S. Ehrlich presented eight young Marylanders with awards for their actions that ensured another person would receive "The Right Care When It Counts." Public service announcements and a Maryland EMSC Day poster are available in English and Spanish to continue the public education message promoting injury prevention, family preparedness, and appropriate emergency actions.

The EMSC Program continues to receive a Maryland Department of Transportation Highway Safety Grant focused on improving the child passenger safety resources within Maryland hospitals and health care professional practices. Maryland's Child Passenger Safety Law changed on October 1, 2003 (with the inclusion of booster seats).

MIEMSS collaborated with the Maryland Highway Safety Office and the Kids in Safety Seats program at the Maryland Department of Health and Mental Hygiene to develop and produce public service announcements, posters, and press releases to inform the public about the importance of using booster seats for preschool and early school-age children. The third-year project has also included the expansion of the website (<http://www.miemss.org/EMSCwww/CPSHome.htm>) resources to include all the informational packages distributed to the hospitals and the occupant protection posters developed jointly with the MIEMSS Public Information & Media Services staff. Three new resources are being developed for the hospitals to promote current child passenger safety initiatives and health-care provider education:

1. Child Passenger Safety: Best Practice for Health Care Facilities (Workbook)
2. Proper Occupant Protection training video for hospitals
3. Introductory workshops on child passenger safety and children with special needs.

Maryland was awarded a RISK WATCH® Champion Award for 2003- 2005 from the National Fire Protection Association (NFPA). The EMSC Program at MIEMSS is the lead agency coordinating this two-year initiative, along with 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 placed the RISK WATCH® program into more than 100 classrooms during fall 2003 and winter 2004. These communities are Montgomery, Prince George's, and Howard counties, special needs schools in Bowie, Maryland, and a parochial school in Charles County. During the second year of the Champion project, the RISK WATCH® program will expand into an additional 100 classrooms in Maryland, with implementation during the entire academic school year. MIEMSS has developed a website page for RISK WATCH® and produced posters to increase the access for teachers and parent in other counties and school systems. (See

<http://www.miemss.org/EMSCwww/RISKWATCH2.htm>.)

The Maryland State Firemen's Association provided the funding for a 9-1-1 simulator to be dedicated to RISK WATCH® programs and for each school to receive at least four "RISKY BUSINESS" boxes that include training equipment and videos on life-safety skills. RISK WATCH® projects and county programs were presented at both the September 2003 Mid-Atlantic Life Safety Conference and the March 2004 Public Education and Injury Prevention Conference.

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 PEMAC on injury prevention resources and initiatives. Through the federal EMSC Partnership Grant, Special Projects in Injury Prevention continue to be available and awarded through the EMSC program office. The recipients during the federal FY 2003 grant period are listed on page 8.

## FIELD OPERATIONS

*Mission: To provide support in the area of planning and coordination for health and medical preparedness for catastrophic events, as well as to provide communications equipment and maintenance and to provide communications services to assist in the quality of care provided patients in Maryland's EMS System.*

## Communications Engineering Services

During FY 2004, the integration of St. Mary's County EMS Services into the Region V Emergency Medical Resource Center (EMRC) was completed. This allows providers to have access to the entire network provided by SYSCOM/EMRC. This project included the installation of three new communications sites and digital microwave links connecting Baltimore to the St. Mary's County system.

As part of the partnership to build the statewide communications infrastructure, MIEMSS Communications coordinated the installation of new towers at Grantsville (Garrett County), Stoney Forest (Harford County), Hagerstown (Washington County), and Denton (Caroline County).

New medical base stations were installed at Denton, Hagerstown, Grantsville, Hereford, Kingsville, and Stoney Forest.



A state-of-the-art hydrogen fuel cell power system was installed at the MIEMSS tower site at Elk Neck State Forest in Cecil County. This system provides up to five days of backup power for the digital microwave serving Cecil County. A second system was installed in Hancock (Washington County) at a fiber optic relay site for Network Maryland and the infrastructure project. This system eliminated the need for a backup generator for the site.

Three regular Central Alarm Advisory Council meetings were held around the state—one in Queen Anne's County in August, one in Prince George's County in December, and one in Frederick County in April.

A total of 35 mobile EMS radios were distributed throughout the state. Grant funding in the amount of \$377,200 was supplied for the purchase of cardiac monitor/defibrillators and automated external defibrillators.

MIEMSS Communications processed a total of 700 service reports for the FY 2004.

## EMRC/SYSCOM

In FY 2004, the Emergency Medical Resource Center (EMRC) handled 151,342 telephone calls and 116,035 radio calls. Of these 267,377 calls, 100,893 were communications involving a patient or incidents with multiple patients.

In FY 2004, the System Communications Center (SYSCOM) handled 60,514 telephone calls and 4,311 radio calls. Of these 64,825 calls, 6,969 were related to requests for med-evac helicopters.

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

The FRED system was also utilized by EMRC/SYSCOM in support of local emergencies and several drills conducted statewide.

EMS communications operations for Frederick and Saint Mary's counties were incorporated into the EMRC. The EMRC/SYSCOM operations center now provides EMS communications for all of Regions III and V and for Cecil and Frederick counties.

Through a cooperative agreement, SYSCOM/EMRC now answers the Maryland Department of Health and Mental Hygiene's 24-hour Duty Officer Telephone lines for referrals.



## Emergency Operations Program

The emergency operations program has been established to support our federal, state, local, and private partners in areas of health and medical preparedness. Some of the programs activities over the past fiscal year included:

- Staffed and coordinated the Governor's Emergency Management Advisory Council, Health and Medical Committee, which is responsible for the planning and coordination of all health and medical preparedness activities in Maryland.
- Managed the Facility Resource Emergency Database (FRED), which continues to be used regularly to alert emergency medical services, hospitals, and public health agencies and allows for the effective use of available resources during emergency events and exercises.
- During preparation for potential disasters and actual emergency occurrences, a MIEMSS Operational Support Team has provided support to federal, state, and local agencies, as well as hospitals, for the coordination of resources. The team has participated in 17 events since January 2004 that required coordination efforts.
- MIEMSS continues to partner with the Maryland Department of Health and Mental Hygiene (DHMH) in participating in the Strategic National Stockpile Program. In addition, the partners are working to implement the "Chempack" program, which strategically pre-places federally owned caches of nerve antidote agent in the state.
- Coordinated the distribution of bioterrorism cooperative agreement funding provided by DHMH to local emergency medical services operations to enhance their ability to respond and provide care.
- Provided representation on the Governor's Senior Homeland Security Group and, when appropriate, provided risk-based information to EMS organizations and hospitals.

## 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 coordinated the planning for the First Emergency Department Leadership Summit. This Summit was well attended with representation of over half of the hospitals in Maryland. There was important information exchanged between MIEMSS, the trauma and specialty referral centers, and the community hospital emergency departments. Contact information was exchanged, and critical issues related to interhospital transfers of injured patients were discussed.

The office staff coordinated the designation process for the Neurotrauma Center and the re-verification process for nine trauma centers that was completed in December 2003. These processes involved accepting and reviewing trauma center applications, obtaining an out-of-state review team, site visits to each of the centers, writing the report of findings, and notifying the centers of the report 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 for a second year.

The purpose of this grant was to evaluate the triage of seriously injured patients to trauma centers in Maryland. MIEMSS contracted with the National Study Center to link data from the pre-hospital Maryland Ambulance Information System (MAIS), the trauma registry, and the Health Services Cost Review Commission (HSCRC) hospital discharge data to evaluate access to trauma centers statewide and to determine if the patients who met the trauma triage protocol criteria were transferred to the appropriate trauma center. The data for this project are currently being collated and analyzed.

A third year planning grant was submitted to HRSA with a request of \$40,000 to purchase outcomes software for the 11 trauma centers to use with the trauma registry collector software and to evaluate the current collector software and make recommendations for needed upgrades.

## 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. After beta testing was complete, a pilot program for EMAIS, designed to work out any additional issues/processes that were not discovered during beta testing, was implemented. MIEMSS initiated EMAIS in the first pilot program jurisdiction (Cecil County) on December 1, 2003 and then Washington County on December 15, 2003. By April 2004, MIEMSS had expanded the pilot program to five jurisdictions (Allegany, Dorchester, and Garrett, as well as Cecil and Washington counties). Working closely with these jurisdictions, MIEMSS was able to correct issues in EMAIS while implementing enhancements needed by the jurisdictions. With all issues resolved, MIEMSS implemented EMAIS in full production mode on July 1, 2004.

The County Hospital Alert Tracking System (CHATS) tracks six different alert types for the hospitals and jurisdictions of all regions in Maryland. The 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. FRED version 2.0 was implemented in April 2004. Version 2.0 has many additional features that give tighter control over who gets alerts, how the alerts are sent, and what data points are collected.

MIEMSS began actively pursuing its eGovernment goals in FY 2001 and continued to make progress in FY 2004:

- CHATS, EMAIS, and FRED are all web-based systems.
- MIEMSS staff can access their email via the MIEMSS web page.
- EMS providers can find copies of the protocols online and can access their individual continuing education reports.

The Information Technology Department continued optical character recognition (OCR) scanning during FY 2004 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 2004, MIEMSS has successfully OCR-scanned over 1,650,000 MAIS forms.

MIEMSS performed a full re-write of the Maryland Prehospital Provider Registry (MPPR) system in FY 2004. The MPPR system tracks all prehospital care EMS providers (currently over 31,000) that operate in the State of Maryland. The MPPR system not only tracks who the providers are, but also tracks their existing continuing education credits needed for recertification. Providers



can access their continuing education credit status from the MPPR system via the MIEMSS web page.

### **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.*

The Office of the Medical Director has been invited to Charles, Calvert, Anne Arundel, and Prince George's counties to conduct or participate in a SWOT (Strengths Weaknesses, Opportunities, and Threats) to address selective EMS issues to improve the delivery of prehospital medical care. The Charles County SWOT has been completed with a signed consensus report to the county execu-



utives with several of the recommendations already being instituted by the county. These SWOT analyses have improved the following: internal communications, the availability of ALS services to the public, established response standards, augmentation of quality medical oversight, and establishment or augmentation of quality improvement initiatives.

The Office of the Medical Director and other MIEMSS staff have provided comprehensive education on Maryland's EMS/Trauma system to guests of the U.S. Secretary of State. Health, trauma, and political officials from Bosnia, Chile, Egypt, Japan, and Korea visited MIEMSS and several designated trauma/specialty referral institutions within Maryland. MIEMSS is viewed as an internationally recognized, quality, comprehensive EMS/Trauma system.

Throughout FY 2004, 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.

The Tenth Annual Medical Director Symposium was conducted with participation by the many Regional, Jurisdictional, and Commercial Medical Directors, as well as Base Station Physician Coordinators. Several jurisdictions' comprehensive databases and quality assurance/improvement systems were presented, and the software engines were distributed for reference and modification to meet each jurisdiction's needs.

In February 2004, 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:

- Modifications to the General Patient Care section improving pediatric care and implementation of the refinements of the Trauma Decision Tree.
- Allowing the use of the pediatric automated external defibrillator (AED) age to be lowered to include children ages 1-8.
- Allowing the use of a copy of the EMS/DNR form to be used for purposes of

withdrawing care when indicated by the EMS/DNR protocol.

- Lowering the dose of Haldol for patients 69 years of age and older.
- Addition of contraindications to nitroglycerin—not to be administered to patients who have recently taken Viagra, Cialis, or Levitra.
- The Continuous Positive Airway Pressure program has been converted from a pilot program to a jurisdictional optional program, with each jurisdiction needing to submit a request for approval to MIEMSS.

The Governor's Emergency Management Advisory Council (GEMAC) was reconstituted and provided a new mission and vision to address grants, weapons of mass destruction issues, and the state's preparedness to manage catastrophic events. Richard Alcorta, MD was appointed as a member of the GEMAC. The Health and Medical Subcommittee of GEMAC has been revitalized with expansion of membership and the development of technical advisory groups to bring multiple source efforts into a single focus work group on a topic. The Health and Medical Subcommittee is chaired by Robert Bass, MD (Executive Director, MIEMSS) and Arlene Stephenson (Deputy Secretary, Public Health Services, DHMH), with Clay Stamp (MIEMSS) leading the staffing and management of the committee.

During the last year, several potential disasters occurred in Maryland, two of them at the Baltimore-Washington International Airport (BWI). The MIEMSS Rapid Response Team (recently re-named the Field Operations Support Team [FOST]) responded to BWI for a suspected radiologic package release and to an arriving flight with a cluster of passengers reportedly presenting with toxic signs and symptoms of a possible chemical exposure. Both instances were managed effectively and protected the citizens from harm. The suspicious radiologic packaged was determined to not be a hazard. The suspected toxic exposure flight was managed by medically screening the passengers and releasing them after ensuring that the single person who was ill previous to boarding the flight received medical attention.

As part of Maryland's EMS/Fire disaster preparedness, the Office of the Medical Director has participated in numerous national and state planning and educational programs. Maryland's EMS/Fire and Public Health communities have conducted multiple disaster exercises to evaluate the effectiveness of and to improve existing plans.

The Office of the Medical Director, along with other MIEMSS staff, continues to provide essential resources, expertise, and training to the local EMS/fire services. Special exercise focus has been directed on preparedness to receive and distribute the federal Strategic National Stockpile (SNS) through the state and local public health delivery systems.

The Maryland Board of Nursing and the Maryland Board of Physicians have both been actively training nurse and physician volunteers to augment their volunteer corps. The Office of the Medical Director has been actively involved in the delivery of training presentations for both boards—on bioterrorism for the Board of Nursing and on the principles of incident management systems for the Board of Physicians. The incident management presentation, through collaborative work with Johns Hopkins Public Health, has become an internet-based distance learning program. More than 2,000 nurses and 700 physicians have been trained through this program which improves Maryland's preparedness in the event of a disaster.

## **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 and year-end cumulative reports containing individual facility alert activity to all hospitals. Overall alert activity remains elevated and is particularly high during the flu and respiratory season. In comparison to previous years, 2003-2004 was a very busy season, with record peaks in selected regions of central Maryland. Continuous online availability of hospital alert activity status is available at [www.miemss.org/chats](http://www.miemss.org/chats).

Increased efforts are underway to address specific emergency department (ED) overcrowding and hospital capacity issues after recent national studies have indicated that inpatient capacity and prolonged throughput times are the largest reason for ED delays. MIEMSS will be partnering with organizations such as the Maryland Hospital Association, the Maryland Health Care Commission, the Maryland Department of Health & Mental Hygiene (DHMH) Office of Health Care Quality, the American College of Emergency

Physicians, the Maryland State Firemen's Association, and jurisdictional EMS services to address best practices that focus on inpatient capacity and decreasing throughput times, thus shifting the emphasis from the ED to the entire hospital.

### **Lay Person Automated External Defibrillator Program**

The Lay Person Automated External Defibrillator (AED) Program has continued to grow throughout Maryland. Under the "public access defibrillation" 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 375 approved programs in the state. A list of AED facilities and program information can be viewed at [www.miemss.org/AED](http://www.miemss.org/AED).

The AED Task Force dealt with issues related to statutory amendments and regulation revisions, as well as strategies for enhanced statewide placement of AEDs. The Task Force was also provided with the 2001-2003 Maryland Out-of-Hospital Cardiac Arrest Report from the MIEMSS Office of Epidemiology. Recommendations based on the report data will include placement of AEDs in skilled nursing facilities and other high-risk locations identified in the report, such as assisted living facilities, rehabilitation centers, and dialysis centers.

MIEMSS, in partnership with EMS services in 14 rural jurisdictions in Maryland, including Garrett, St. Mary's, Caroline, Dorchester, Kent, Somerset, Talbot, Wicomico, Calvert, Washington, Frederick, Carroll, Harford, and Worcester counties, again obtained funds through the federal Office of Rural Health Policy's FY 2003 Rural Access to Emergency Devices Grant Program. This allowed for the placement of 123 AEDs and numerous CPR and AED training sessions in EMS, public safety, and layperson sites. A total of 203 AEDs have been placed in eligible rural jurisdictions since the first grant funds were awarded in 2002. MIEMSS again plans to participate in the Rural Access to Emergency Devices Grant Program in FY 2004.

MIEMSS will again partner with several agencies along with 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 develop-

ing public access defibrillation programs when appropriate. Last year's 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." The council again plans to request that September 2004 be proclaimed "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 management 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.

Committee member David Chang, PhD and MIEMSS staff John New (Director of Quality Management) and Lisa Myers (Director of Program Development) gave a presentation entitled, "Triage of the Elderly Trauma Patient" at the 2004 EMS Care conference held at the Maritime Institute of Technology. A survey was also distributed to determine possible causes for the under-triage of elderly trauma patients. The presentation is scheduled to be given again at the annual Pyramid conference in October 2004.

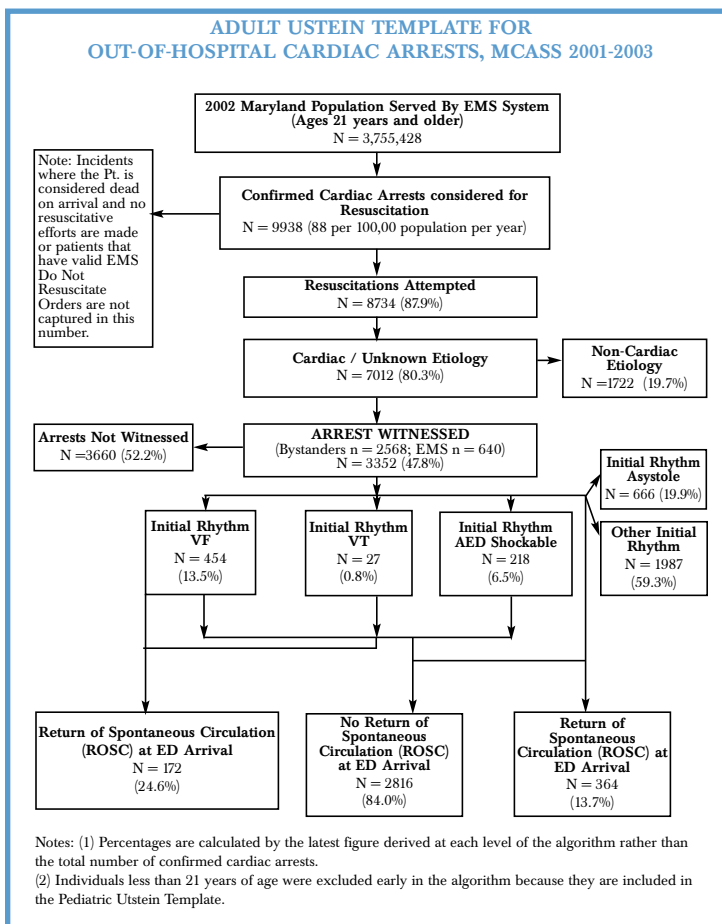
### Do Not Resuscitate Program

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, a comprehensively revised EMS/DNR and medical care order form was issued in July 2003. The new form is easier for patients and their caregivers to read and use. It is available on the MIEMSS website and also available in printed form from MIEMSS.

### 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 previous page). State annual reports for statewide data are available upon request.

## PUBLIC INFORMATION AND MEDIA SERVICES

*Mission: To contribute to MIEMSS' vision of eliminating preventable death and disability by providing to the public essential information on how to recognize an emergency, summon an EMS response, and incorporate injury prevention methods in their daily lives, as well as designing and developing educational programs for EMS providers through state-of-the-art technology.*

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

The office is responsible for the design 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. This year the annual EMS Week Stars of Life Awards Ceremony was held in Annapolis at the State House with the assistance of Governor Ehrlich. In a special ceremony held prior to the Stars of Life ceremony, First Lady Kendel Ehrlich assisted with Awards for Children. This was done in recognition of the National EMS for Children Day. Press releases were distributed statewide and

media coverage obtained on the award winners. Press releases were also produced on many EMS related issues, including Yellow Alerts and hospital emergency department overcrowding.

The office provides conference planning, as well as technical and audiovisual support to MIEMSS-sponsored continuing education programs. These regional and statewide conferences allow providers to update their certification and licensure by attending programs. Design and production of printed, photographic, computer-assisted programs, and video materials assist the learning process.

This year the National Highway Traffic Safety Administration (NHTSA) conducted a re-assessment of the Maryland EMS system. Their initial assessment occurred in 1991. The office staff assisted with the production of the briefing document and PowerPoint presentations.

Several training modules were produced during the past year. These included "The Prehospital Protocol Update," "Tracheostomy: Care across the Ages," and "Facility Resource Emergency Database (FRED) Training Program." These modules were produced on compact disc and include printed materials. The office 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). PSAs were produced in conjunction with the NHTSA Region III Office. Law enforcement personnel and doctors from the surrounding states came together to participate in a PSA about the dangers of impaired driving. A major video project with the Mid-Atlantic EMSC Council highlighted the top ten emergency situations and how to handle them. Eight states sent representatives to be a part of these PSAs. Working with the Maryland State Firemen's Association, office staff produced the annual convention's Memorial Service eulogies and slide show.

Statewide prevention initiatives were developed through partnerships with other state and local government agencies. This year, the international World Health Day focused on motor vehicle crashes and the need for prevention. A press event and special Grand Rounds were held at the R Adams Cowley Shock Trauma Center with multiple partners. Participation on the Occupant Protection Task Force, the Motorcycle Safety Task Force, the Pedestrian Safety Task Force, the Impaired Drivers Coalition, and the R Adams

Cowley Shock Trauma Center Prevention Committee allowed these teams to work collaboratively on multiple projects. Membership on the State Highway's Diversity in Traffic Safety Program raised the need for diversity in public education efforts. Print and broadcast projects were produced in both Spanish and English. Projects were completed with representation of Maryland's growing diverse population.

## QUALITY MANAGEMENT

*Mission: To support MIEMSS and the EMS community in their continuous quality improvement initiatives and 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 relationships.

## Managing for Results (MFR)

For the past six years, covering two different gubernatorial administrations, MIEMSS, like all State agencies, is required to submit a Managing for Results plan along with its fiscal year budget requests to the Maryland Department of Budget and Management. Initiated in 1997, this phased-in planning process began with the submission of MIEMSS Vision, Mission, and Principles statement through a customer-focus strategic planning process. MIEMSS has again met those requirements; these include re-evaluation of key goals, subsequent objectives and strategies, development of associate action plans, and 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.

## KEY GOALS AND OBJECTIVES

**Goal 1.** Provide high quality medical care to individuals receiving emergency medical services.

**Objective 1.1** Maryland will maintain its trauma patient care performance above the national norm at a 95% or higher statistical level of confidence.

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

**Objective 1.3** Achieve 20% witnessed sudden cardiac arrest resuscitation upon emergency department (ED) arrival in 70% 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 emergency medical dispatch (EMD) services.

**Objective 2.2** Before 2003, x% of jurisdictions will achieve or exceed 90% compliance with pre-hospital 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 seriously injured patients transported to a designated trauma center in Maryland.

## Team EMS

An innovative approach to Quality Management education and application in the real world of EMS management was developed in conjunction with the MIEMSS Region V administration. Implemented in 1996 and updated to present standards, MIEMSS staff and a cadre of volunteer presenters from the EMS community present ways for company and jurisdictional managers to plan for, measure, maintain, and improve quality services. Techniques taught range from brainstorming to data analysis interpretation and include topics from quality improvement team creation to meeting quality assurance standards established under state law. Jurisdictions and Regional EMS Advisory Councils have utilized this training for planning purposes, and more than 100 providers

have attended workshops at Pyramid and EMS Care on a variety of subjects from indicator development to data interpretation.

### EMS Surveillance Measures

MIEMSS has established several EMS system surveillance priorities based upon routine data review, customer requests, and research outcomes. Hospital yellow alert demand is monitored daily on a regional basis to keep individual hospitals updated on system response. This monitoring (especially in the winter months) and individual hospital resolution to high ED service demand helped keep this vital service available system-wide. The maintenance of a plentiful, diverse, and stable EMS work force was addressed this year based on local and national experiences. An EMS provider survey has been developed in concert with the Maryland EMS community in an attempt to identify the key factors to be addressed jointly. A joint research effort in the area of geriatric trauma triage led to the identification of differences in transport decisions system-wide. Education strategies are underway through a variety of means to address root causes.

### Data Confidentiality

MIEMSS maintains or has access to eight confidential databases used in ensuring quality EMS care delivery. The Data Access and Research Committee (DARC) was formed to ensure that all data and information requests were expedited efficiently and accurately, while ensuring patient and provider confidentiality at all times. Since January 2000, over 900 requests have been tracked and facilitated. Profiles of requestor, types, format, and content are reviewed at the end of each year so that MIEMSS' routine, non-confidential reports are modified to better meet the most common needs of data requestors.

## REGIONAL PROGRAMS

*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

The MIEMSS Region I Office was involved in the prioritization and implementation of grants involving: \$88,486 for bioterrorism projects to 14

departments; \$40,000 for Matching and Hardship Grants for the purchase of automated external defibrillators (AEDs) and monitor defibrillators for 8 departments; submission of a \$75,000 Bystander Care Program to the Department of Highway Safety (in conjunction with Jennifer Dreese of the Frostburg Safe Communities Program); prioritization and implementation of 4 Highway Safety Grants for communications scene safety, extrication, medical equipment, and training; and the implementation of the second year Rural AED Project in Garrett County. The total amount for all of these projects affecting 9 companies in the Region was \$80,800.

The highlight of training activities for Region I was the presentation of the second annual Miltenberger Emergency Services Seminar. Held in March at Allegany College of Maryland, the program had over 100 participants and provided workshops for nursing, EMS, and fire personnel. The keynote program focused on the I-68 Memorial Day Weekend Crash of 2002 and the lessons learned from the multi-vehicle crash that involved over 90 vehicles and was the worst highway crash in Maryland history. Other training activities included coordination of Facility Resource Emergency Database (FRED) training for hospitals and 9-1-1 operators; funding for a CRT-Bridge program; and two video conferences between the R Adams Cowley Shock Trauma Center and the Western Maryland Health System.

Quality assurance and quality improvement continue to be a major emphasis for the Region. In addition to the tracking of specific quality indicators (response times, intubation success rates, trauma patients to trauma centers, ALS coverage) and the formalization of a medical review committee chaired by Dr. William May and staffed by Bill Hardy, the office was involved at the state level with the organization of a QA/QI officers summit at a special workshop at EMS Care entitled "Conducting an Internal Investigation."

EMAIS was implemented in the Region during this fiscal year. The Regional Office's involvement in this included the setting-up and coordination of the training for 600+ EMS providers; contact with ALLCONET and GCNET to obtain internet access for fire and rescue; and the identification and necessary paperwork for EMAIS supervisors and administrators. In addition, a special training program was put together for the supervisors, administrators, and train-the-trainers. The training itself was provided by Eric Chaney and Kathy Paez from MIEMSS.





For EMAIS to be successful, the Community Access Project (the provision of computers for all hospital emergency departments, EMS companies, and select First Response fire departments funded through a Federal grant) was implemented. The office delivered 40 computer systems to the Region from Baltimore and oversaw their delivery to all of the EMS services and Regional hospitals. Formal inventory paperwork and arrangements for acceptance of equipment by jurisdiction EMS organizations were also completed.

Ambulance inspections were conducted in the fall of 2003. In Allegany County 26 ambulances were inspected and in Garrett County 6 ambulances were inspected. Also, there were 10 first response units (two ALS, eight BLS) examined. Looking to the future, the Region I Office has begun to initiate the updating of the Seal of Excellence standards for the state.

Efforts were conducted in the Region for response preparation to weapons of mass destruction (WMD) incidents. The Regional Office participated with Allegany and Garrett counties' Health Departments and Emergency Management Offices in updating their disaster plans. In addition, a WMD Summit was held by the Region I EMS Advisory Council in April, serving as a forum for public safety agencies, health departments, and hospitals to share information on planning efforts and equipment purchased.

Efforts in the communications area in the Region focused on a first meeting of the 9-1-1 centers and hospitals in Garrett, Allegany, and Washington counties to discuss the establishment of a Western Maryland EMRC (Emergency Medical Resource Center). Also in the communications area, new consoles were provided by MIEMSS to the Regional hospitals; assistance was provided in gaining Garrett County Commissioners' approval to build a 350-foot tower at the new highway garage in Grantsville; and radios were also obtained for seven ambulance services.

## Region II

Richard A. Mettetal retired in February 2004 as the Region II EMS Administrator with over 18 years of dedicated service to the EMS communities of Frederick and Washington counties. During EMS Week in May 2004, Mr. Mettetal was presented the Leon W. Hayes Award for Excellence in EMS at the Maryland EMS Stars of Life Awards ceremony held in Annapolis. He was highly committed to and supported the county governments, hospitals, fire and EMS providers throughout Region II. Mr. Mettetal was part of the implementation, modification, and evaluation of the quality assurance and improvement program, 12-lead EKG program, special response team, emergency medical services medical dispatch system, EMS conferences, and many other programs. In May 2004, Richard "Rick" C. Meighen was appointed the new Region II EMS Administrator. Mr. Meighen worked in Region V as its Associate Administrator for over ten years. With his many years of experience and expertise in EMS management and as a field provider, the Region II EMS communities of Frederick and Washington counties have extended their congratulations to Rick and are looking forward to working with him.

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. A Regional Medical Review Committee has been established within the Regional EMS Advisory Council to discuss issues or initiatives that could affect or benefit the entire region.

The Region II Office has coordinated and will be doing the inspection for 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.

The Region II Administrator has been actively involved in disaster preparation at the local, regional, and state levels. The concept of interagency cooperation and communication, principles of continuous quality improvement, have been integrated into the design of mass casualty exercises so that each is evaluated, and the resulting data are used to further increase response capability and improve operations. Templates for drill organization and presentation have been developed that will allow local and regional groups to utilize proven processes and

evaluation tools. A package that includes flow charts, victim and provider accountability, and other management and training tools, as well as loaner vests, has been made available throughout the state. The office also provided support to the Hagerstown Community College for a multi-disciplinary 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" that were provided prehospital care by the EMT-P students. The justice students investigated the "crime scene" which was a simulated

schools, the program and training will be made available to any agency/organization upon request.

Both the Frederick Memorial Hospital and the Washington County Hospital have conducted drills throughout the year to plan for weapons of mass destruction (WMD) events (involving HAZMAT and decontamination of patients), as well as their routine annual mass casualty management drills.

The Region II Office continues to provide the administrative support to the region for the annual Highway Safety Office Grant Program as well as the MIEMSS Matching and Hardship Grant Program for the acquisition of monitor-defibrillators and automated external defibrillators (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 nine grants approved. A total of one monitor-defibrillator and 12 AEDs were obtained through the MIEMSS Matching and

Hardship Grant process. Through the Maryland Department of Health and Mental Hygiene, Office of Health Preparedness, this office provided

instruction packets and applications to every EMS, fire, and rescue company in Region II for the Bioterrorism Sub Grants.

Through this Bioterrorism

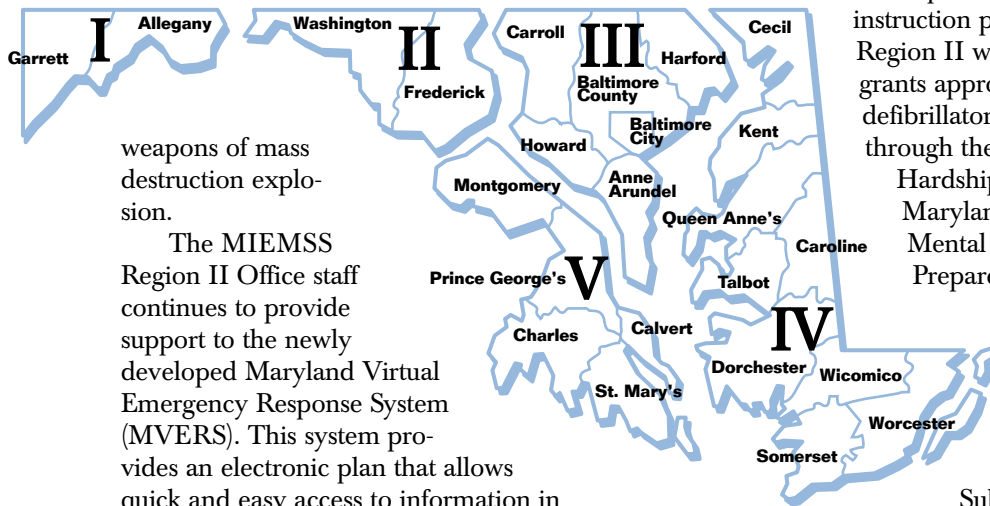
Sub Grant the region was

approved for five grants for equipment such as Mark 1 kits, patient treatment and triage items, and communications equipment.

Hagerstown Community College has been very successful teaching EMS training curriculums, both ALS and BLS certification courses as well as several other medical/EMS related ancillary programs to benefit the EMS students. The MIEMSS Region II Administrator also serves on the EMS Curriculum Advisory Board of the Hagerstown Community College. The Frederick County Department of Fire and Rescue Services has applied to become an ALS Education Program. This office provides administrative support and materials to these programs as requested.

Region II this year administered certification examinations to 7 First Responder Basic classes and 9 EMT-B classes. In addition, 12 EMT-P, 29 EMT-B, 6 FR-B, and 5 CRT individual examinations were administered in the Region II Office.

This office identified the training sites and recommended the appropriate jurisdictional and



weapons of mass destruction explosion.

The MIEMSS Region II Office staff continues to provide support to the newly developed Maryland Virtual Emergency Response System (MVERS). This system provides an electronic plan that allows quick and easy access to information in order to expedite a response to a critical situation. MVERS has been developed and managed cooperatively between MIEMSS, the Maryland State Police (MSP), and the Maryland Emergency Management Agency (MEMA). The Region II Administrator, along with other MIEMSS staff and representatives from the three participating agencies, continue to make presentations to organizations interested in implementing the program. Training has been provided to organizations that need assistance in collecting specific data, conducting walk-throughs of facilities, taking digital images, and constructing the final plan for storage on a CD. The Maryland State Police has received Patriot Funds to provide support for the implementation of MVERS. The funds have been utilized to assist with gathering the electronic data, purchasing photographic equipment, and establishing a team of programmers to assist interested agencies with the process. While MIEMSS through its EMS-C program will focus on implementing MVERS in

regional individuals, including health departments, 9-1-1 centers and adjoining out-of-state hospitals to undergo training in the Facility Resource Emergency Database 2.0 (FRED) Program which is being implemented statewide by MIEMSS.

The Region II Office provided reference materials and accurate information to our key EMS officials, the Mid-Maryland EMS Advisory Council (MMEMSAC), and to the emergency services community pertaining to the construction of the controversial emergency communications tower on Lamb's Knoll, the second highest point on the historic South Mountain 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, Lamb's Knoll tower has been approved by the Federal Communications Commission and construction will begin in July 2004 with a completion date in September 2004.

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. This grant has been very beneficial in providing to the citizens in these areas access to the AED. Fifteen AEDs have been distributed to the Hancock and Emmitsburg areas.

Region II's Washington County was one of the first counties in the state to implement the Electronic Maryland Ambulance Information System (EMAIS) as a pilot program. The Rural Community Access Grant provided 18 computers for Washington County. The computers were placed in all EMS services, Washington County Hospital, and Frederick Memorial Hospital to implement the EMAIS program. The computers will also be used for monitoring FRED and the County Hospital Alert Tracking System (CHATS). In July 2004, EMAIS will be implemented officially in Washington County—it will no longer be a pilot program.

### **Region III**

The Region III Office continued its expansion of the Facility Resource Emergency Database (FRED) by releasing FRED Version 2.0 in April 2004. FRED is an internet-based communication system designed to alert all components of the State's EMS system and catalog resources available for response to a large-scale incident. These enhancements in FRED 2.0 include regional alert-

ing capabilities, text paging of key individuals, more flexibility of databases, and more organized information pages. Throughout the year, the number of institutions participating with FRED increased steadily, as did user response during its use in various exercises and real-time events such as Hurricane Isabel and the funeral of President Ronald Reagan.

FRED played a major role in the HarborBASE II exercise. Conducted in June, this exercise strived to test the new Strategic National Stockpile (SNS) Plan. The SNS is the federal stock of medications that can be deployed to any area of the country. The challenge is to repackage this from one central receiving point to the areas of the state in need. Although the exercise was conducted by the state health officials, Baltimore City Health Department led all the Region III hospitals in a full functional role. Clinics were established and "antibiotics" were actually distributed to emergency response personnel and the general public. The Region III Office also cooperated with the National Study Center for Trauma and EMS in conducting the Local Area Defense exercise. This was an exercise that tested the University of Maryland at Baltimore (UMB) campus capabilities to respond to an on-campus emergency. The MIEMSS building (on the UMB campus) was evacuated due to a bomb that was defused while EMRC tested its ability to move operations to the back-up communication center.

The Region III EMS Advisory Council continued to face the recurring problem of hospital overloads. Record yellow alert usage was again experienced during the winter illness season. A working group was established to begin to investigate a study of potential policy changes that could effect improvement. Literature has been reviewed and available data are being cataloged. It is hoped that the group will return recommendations back to the full Council by September.

The Region III Medical Director was due for reappointment in July 2004. As Dr. Kevin Seaman had successfully filled the role for the last four years, the Council voted to recommend Dr. Seaman for reappointment. This will allow the Council time to revise their current Medical Director recruitment and appointment procedures to more closely reflect Title 30 regulations. An Associate Medical Director will be selected to assist Dr. Seaman and increase physician involvement with the Council and the Region.

As part of their ongoing commitment to education, the Emergency Education Council of Region III conducted EMS Care 2004, at the Maritime



Institute of Technology and Graduate Studies on April 22–25. Approximately 200 registrants attended this year's conference whose theme was "Covering All the Bases." Participants from various parts of the State enjoyed seminars on topics ranging from self-defense to advanced respiratory management. Pre-conference seminars were also offered to cover topics specific to geriatrics, pediatrics, and quality management. The Emergency Education Council of Region III continues to meet quarterly to improve the quality and efficiency of training efforts throughout the Region.

Funding was received through Maryland's EMS for Children Program to conduct an EMS Moulage course in Region III. Seventeen participants from various parts of the Region participated in the course and will be used to expand the State's current cadre of moulage experts who assist in local, regional, and statewide disaster exercises.

As a result of the Regional EMS Advisory Council's prioritization of issues to be investigated in a quality improvement format, the Quality Improvement Managers Committee continued to work on evaluating current field practices regarding patient refusals and unrecognized esophageal intubations. In 2004, the Committee, chaired by Dr. Christina Johns, concentrated primarily on the patient refusal process, identifying potential data sources and areas for improvement in the process.

Testing and ambulance inspections also continued throughout the year with the Region III Office conducting 85 written exams and over 50 vehicle inspections.

## Region IV

The Region IV Office continues to coordinate and support the medical review committees within the region's nine counties concerning 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.

Wor-Wic Community College formally received its designation as an advanced life support (ALS) training center by MIEMSS. The first Emergency Medical Technician-Paramedic class graduated May 2004. The college offers 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 nation-

al and State of Maryland certification examinations.

The Region IV Office continues to partner with the MIEMSS Information and Technology Department and the State Medical Director's Office with the implementation of the electronic Maryland Ambulance Information System (EMAIS). Currently, Cecil and Dorchester counties are operational with the EMAIS. The next regional jurisdiction to be trained is Somerset County. The education component of EMAIS in Somerset County will begin in September 2004.

The Region IV EMS Advisory Council prioritized 10 requests 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. It coordinated with the region's health departments in the development of a regional bioterrorism training program, and also participated in a bioterrorism drill at Washington College in Chestertown, Maryland.

The MIEMSS Region IV administrators inspected 22 prehospital emergency response vehicles, including advanced and basic life support ambulances, chase cars, and first responder units.

The Region IV Office staff assisted in planning and staffing two regional conferences. The Winterfest 2004 EMS Seminar was held January 31 and February 1, 2004, at Tilghman Island.

## Region V

Pyramid 2003, the fourteenth 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 September conference had 200 registrants. Skill workshops were conducted on such topics as EMAIS, patient restraint, traumatic brain injury scenarios, and new medical

devices. Plenary sessions were presented on the Finzel Crash, traumatic brain injury, and the EMS role in caring for victims of domestic violence and sexual assault. Both ends of the age continuum were addressed through pediatric and geriatric general sessions as well as BLS Pediatric Education for Prehospital Providers (PEPP) and BLS Geriatric Education for Emergency Medical Services (GEMS). Pre-conferences on Quality Assurance Officer Training and Advanced Moulage Techniques rounded out the program.

Region V continues to support a variety of education and prevention activities through the Region V EMS Advisory Council, county fire and rescue associations, and the EMS for Children RISK WATCH initiative. Charles County parochial schools, public schools in Prince George's and Montgomery counties (including special needs schools in Prince George's County), participated in the National Fire Protection Association (NFPA) Risk Watch Programs as part of the State Champion Grant. The Region V Risk Watch for Children with Special Needs project was the first such project in the nation and was recognized in the NFPA "Apple Corps" newsletter.

The Region V EMS Advisory Council has strongly supported the development of Quality Councils in each county and supported quality management education and implementation. Data management tools for quality improvement were developed by the Prince George's County Fire/EMS Department Bureau of AEMS and have been made available statewide. Charles County recently used the Strengths, Weaknesses, Opportunities, and Threats (SWOT) process to revamp their EMS system. The Region V Administrator and State EMS Medical Director staffed that process.

Bioterrorism/WMD planning has been a major focal point of efforts throughout the Region. Hospitals and health care facilities in Prince George's County have entered into a Memorandum of Understanding (MOU) to cover resource sharing during emergencies. Goals include a region-wide MOU for FY 2005. A variety of tabletop exercises and drills have been conducted throughout the Region and a Bioterrorism/WMD Forum, to include EMS, Emergency Management, Hospitals, and Health Departments, is planned for July.

The Region V Administrator continues to offer programs in Geriatric Assessment as requested.

## 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:

- 131 BLS vehicles licensed
- 116 ALS vehicles licensed
- 7 neonatal vehicles licensed
- 31 ground ambulance services licensed
- 4 air ambulance services licensed
- 57 temporary upgrades authorized
- 20 complaints received and investigated
- 243 routine compliance inspections performed

### Number of commercial ambulance transports:

Total ground ambulance transports:	191,115
BLS	167,000
ALS	23,000
Neonatal	1,115
Total commercial air transports:	3,600

The commercial ambulance market continued its contraction during FY 2004, SOCALR's 11th year of operation. The year was marked by the unexpected exit of a large ambulance service in September 2003. The resulting reorganization saw the total number of commercial ambulances reduced 3.8%, from 264 overall to 254. While the BLS category was hardest hit, falling from 144 to 131, ALS ambulances increased slightly in number from 112 to 116. Neonatal units fell slightly from the eight licensed in FY 2003 to seven in FY 2004.

SOCALR invested considerable effort in leadership, particularly in exposing commercial services to the use of Quality Assurance/Quality Improvement measures. This included identifying and implementing QA/QI practices. SOCALR implemented a feedback loop by adopting the reporting structure used by jurisdictional operational programs.

SOCALR also continued to carry out the system-wide strategy of striving for optimal function and reducing death and disability. Two important regulatory steps were carried out during FY 2004. First, the Specialty Care Transport (SCT) regulations were approved by the EMS Board. This was

achieved with extensive consultation from the commercial services. These regulations will provide the framework for more timely access to transport by expanding the scope of practice for specially-prepared EMT-Ps. Next, progress continued on promulgating air ambulance regulations.

SOCALR also made significant progress on its goal of integrating commercial services into disaster response. Supported by many within the commercial sector, SOCALR facilitated participation in two drills and three real events during FY 2004. These events included aiding Baltimore City EMS in evacuating a skilled nursing facility during Hurricane Isabel, and organizing for hospital evacuations during a fire at Dorchester General Hospital and the Fairfield Waterfront ordnance event. Although neither of these resulted in an evacuation, the commercial sector immediately aligned itself to provide needed resources to the incident commanders.

SOCALR also enlisted as a community partner with Sheppard Pratt Hospital to facilitate training in psychological trauma resulting from disasters. This training will greatly improve the effectiveness with which commercial services respond when called upon. It will be provided free of charge to commercial providers, assisting the services in meeting their continuing education requirements. Rene Fechter, BA, NREMT-P, SOCALR's Associate Director, provided significant expertise in the curriculum design to ensure that the program met the needs of EMS providers.

Measurement and analysis also emerged as areas of progress during FY 2004. We implemented a database to track results from compliance checks, which allowed us to aggregate data and draw some conclusions about the efficacy of our inspections. For example, SOCALR performed 243 compliance inspections during the year. Of these, 45% resulted in serious findings. Furthermore, 18% of the 243 were temporarily placed out of service so that the condition could be corrected.

These rates were significantly higher (at 95% confidence) than the historic averages of 14% and 6.3% respectively. We consider this to be a special

cause variance for two reasons. First, we implemented an acceptance sampling scheme that resulted in all of our services being visited rather than relying upon random compliance checks. This resulted in a more representative group than in years past. Next, we focused considerable attention on oxygen storage to improve the safety of this aspect of interfacility transport. This campaign resulted from the need for primary injury prevention activities in the prehospital and interfacility arenas. The installation repairs resulting from this campaign inflated the non-compliance statistics; now that these issues have been addressed, we expect the rate of non-compliance findings to return to their historic levels.

The reporting structure for QA/QI statistics yielded some promising findings. Of special note are the increasing rates of reporting and the preponderance of documentation findings. The table below presents the categories accounting for the most findings. While the samples are too small to draw any significant conclusions, we believe they are nonetheless representative of the distribution. They also demonstrate the commercial services' ongoing critical review of their activities.

In the year to come, we look forward to continuing our efforts to carry out our goals under the EMS Plan. For example, we will continue efforts to ensure that interfacility transport is carried out efficiently, effectively, and in accordance with protocols. This will include the implementation of the SCT program, as well as participation with the Inter-Hospital Transport Subcommittee of the Maryland Health Care Commission's committee on interventional cardiology. We will also refine the process by which commercial services respond to emergencies when requested by public safety jurisdictions. Chief among these efforts will be addressing questions of liability and reimbursement. Next, we will build upon our oxygen safety campaign to address behaviors among commercial EMS providers (for example, safety restraint usage and heavy item storage). Finally, we will continue to champion the ongoing critical review of the commercial services' activities and efforts to improve the quality of service.

Period reporting	Companies reporting	Documentation issues	Transport issues	Protocol variances
10/1-12/31/03	8	153 (82.7%)	14 (7.6%)	7 (3.8%)
1/1-3/31/04	14	155 (81.2%)	9 (4.7%)	3 (1.6%)



# 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

### **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**

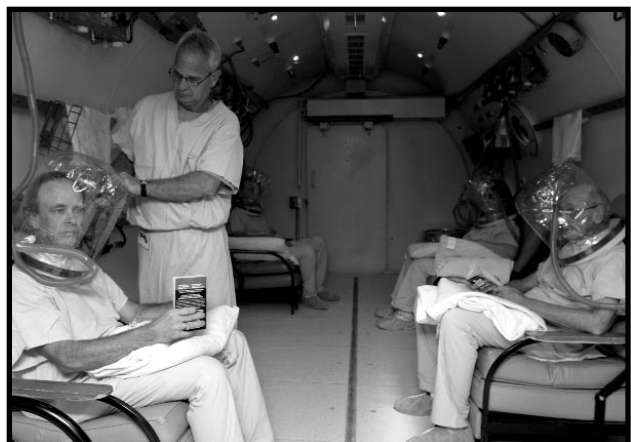
Pediatric Trauma Center/The Johns Hopkins Children's Center, Baltimore City  
Pediatric Trauma Center/Children's National Medical Center, Washington, DC

### **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 5,829 trauma patients from June 2003 to May 2004, according to the Maryland Adult Trauma Registry. (See pages 42 to 47 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 59 groups. Case reviews open to prehospital care providers were held quarterly. There were 101 EMS providers who participated in ALS Skills Labs that were offered 10 times. In the Observation Program, 194 EMS providers observed in the Trauma Resuscitation Unit, and 56 EMS providers in Critical Care. In addition, 61 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:

- Tested a novel device capable of measuring blood flow to the brain without the need to drill a hole in the skull. The Brain Acoustic Monitor (BAM) has shown promise in the early identification of patients with brain trauma, which may greatly facilitate triage and transport decisions and revolutionize care of the patient with traumatic brain injury.
- Served as a test-bed for new technology, becoming one of the first facilities in the world to evaluate the Statscan, a new low-dose, digital X-ray system that can take images of the entire body in 13 seconds.
- Participated in an ongoing study seeking to identify biological markers of sepsis in a patient's blood and to validate their ability to detect sepsis 24 hours or more prior to the onset of clinical symptoms.
- Collaborated with the Department of Pathology to help the University of Maryland, Baltimore become a national center in the Transfusion Medicine/Hemostasis Research Network funded by the National Heart Lung and

Blood Institute. The designation will facilitate the study of methods designed to reduce RBC transfusions, control hemorrhage, and reduce mortality in trauma patients.

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 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. As part of the community outreach initiative, Shock Trauma also held a "Minds of the Future" program four times this year with 454 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.

The on-site high-risk teen program at the Shock Trauma Center is provided to four counties: Cecil, Anne Arundel, Frederick, and Howard counties. A total of 365 teens participated from those counties. Other counties sent an additional 10 teens and special requests for 3 other high-risk groups allowed another 28 teens to participate, bringing the high-risk teen total attendees to 393. Three on-site programs were conducted for students who were members of Students Against Destructive Decisions (SADD).

The teen outreach program goes to the high-risk teens. Mountain Manor Residential Treatment Center, Harford County, Howard County, and Sykesville Shelter are included in the group. A total of 368 teens participated in these classes.

Fifteen high-school assemblies were provided, reaching 12,000 students. The assemblies were very well received. Three health classes were taught to an additional 65 students.

A similar on-site program is provided to adult DWI offenders, with 328 participating in this program during FY 2004.

The prevention staff attended six health/safety fairs reaching thousands of Marylanders. The staff also coordinated a 3-D event on the University of Baltimore campus during December 2003 for 3-D Month (National Drinking, Driving, Drugged Campaign). The staff has also participated in various committees and task forces that focus on drunk driving issues.

Positive Alternatives to Dangerous and Destructive Decisions (PADDD) is a 501C3 prevention organization that was developed by Trauma Nurses Debbie Yohn and Laurel Stiff. In FY 2004, PADDD was awarded a grant from the Maryland Highway Safety Office. In conjunction with the R Adams Cowley Shock Trauma Center, the organization has implemented the following programs in the State of Maryland reaching 598 participants who were court ordered and 5,188 who were part of special presentations. Howard County had 993 participants who attended the program at the courthouse in Ellicott City. The Howard County Sheriffs Department and PADDD staff administer the program. In Harford County, where the classes are held at the Upper Chesapeake Health Center, 581 court-ordered participants and over 100 guests attended. The company also presented an educational seminar for the drivers and staff at Comcast Cable for 20 participants. PADDD gave a presentation to the military for a total of 2,186 soldiers in Edgewood and Aberdeen Proving Grounds. Baltimore County had four PADDD business seminars with 189 participants. The Maryland Highway Safety Office held two presentations for a total of 47 participants. Carroll County had one business presentation at Tevis Oil Company with a total of 45 truck drivers. PADDD also participated at the annual Firemen's Convention in Ocean City with 5,000 attendees. The PADDD program reached more than 10,000 Maryland residents with a message of injury prevention this year.



## **Level I**

### **The Johns Hopkins Hospital, Adult Trauma Center**

*Located in Baltimore City, the Johns Hopkins Hospital Adult Trauma Center reported receiving 2,296 trauma patients from June 2003 to May 2004, according to the Maryland Adult Trauma Registry. (See pages 42 to 47 for patient data in various categories.) Edward Cornwell III, MD, FACS, FCCM, serves as Director of the Johns Hopkins Hospital Adult Trauma Service, and Kathy Noll, MSN, RN, is the Trauma Nurse Coordinator/Program Manager.*

The Johns Hopkins Hospital 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 Service 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 service has successfully recruited two additional full-time trauma surgeons, Doctors David Efron and Elliott Haut.

The Johns Hopkins Hospital Division of Adult Trauma has a strong commitment to trauma prevention, particularly in the area of youth violence. During the past fiscal year, the Division of Adult Trauma continued its involvement in several important trauma prevention endeavors. The Hopkins Injury Prevention and Community Outreach Collaborative (HIPCOC), which was established by Dr. Cornwell in 2000, is a multi-disciplinary group of clinicians, hospitals, 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 by 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. The results of this program with the first 90 youths (presented at the American Trauma Society meeting in May 2004), demonstrated a decreased likelihood toward conflict and aggression that was quantifiable. 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 were 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 the American Trauma Society (national and state), and the New Song Community Learning Center in the Sandtown neighborhood of West Baltimore. Dr. Cornwell also works with the Fort Worthington Police Athletic League (PAL) center.

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. Doctor Cornwell is the Chairman of TraumaNet through November 2004. The Division of Adult Trauma also continues to provide educational and community outreach and participates in numerous grand rounds presentations. The Division also provides 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 received 1,250 trauma patients from June 2003 to May 2004, according to the Maryland Adult Trauma Registry. (See pages 42 to 47 for patient data in various categories.) Paul Freeswick, MD, FACS, serves as the center's Director, with Robert Dice, RN, MS as Trauma Coordinator and Barbara Ward, RN, MS as the Nursing Clinical Coordinator of Trauma, Burn, and Surgical Intensive Care.*

The Trauma Center at the Johns Hopkins Bayview Medical Center (JHBMC) provides comprehensive care to all trauma/burn patients, including direct injury treatment along with psy-

chosocial and physical/rehabilitative focuses. In FY 2004, the center registered 1,250 patients in the Maryland Adult Trauma Registry with outcomes data securely in the upper levels of what would be expected from any center dedicated to the treatment of trauma victims.

The JHBMC Trauma division has recently attained successful redesignation as a Level II center. While we take pride in our achievement, we realize that while some areas are exceedingly strong, other areas, which are adequate, can be significantly enhanced. To this end, trauma team members and the hospital administrators have rededicated resources and made personal commitments to these areas.

We have revamped our reviews of cases which trigger audit filters. We now ask subspecialists from our own institutions (that is, neurosurgeons, orthopedic surgeons, plastic and reconstructive surgeons), as well as independent outside consultants, to contribute to the review of these cases. Additionally, the JHBMC has allocated significant resources for physician and nursing continuing education, which is well above what has been budgeted in the past.

JHBMC trauma bypass guidelines have been completely rewritten to only allow the medical center to go on trauma bypass when the Trauma Director or his designee (in the event the Trauma Director is not available) has been apprised of the situation and approved its utilization. Additionally, incremental increases of surgical, anesthesia, and burn physicians will allow the institution to fully serve its injured patients and limit bypass events.

JHBMC continues to focus on its community commitment via its burn education and outreach programs in schools. Additionally, the Trauma/Burn services have and will continue with case presentations to the EMS and first responders to allow for our better understanding of what is necessary to optimize care from injury to discharge. These presentations have been met with much enthusiasm by all. Some issues raised at these sessions have led to JHBMC changes and improvements to our initial intake and triage of injured patients. The equipment lockers in the trauma bays were redesigned and updated. Additionally, an audit form filled out by an independent third party critiquing the resuscitation for review and improvement has been implemented.

The Trauma Service at JHBMC recognizes the role an aging population has in the evolution of trauma. Given that on the JHBMC campus is a world-class center for the diagnosis and treatment

of the geriatric patient (the JHB Care Center), the Trauma Service and our gerontologists have combined forces to address the special needs of the elderly trauma patient. This allows for formal (for example, hip fracture service) medical oversight by the Geriatrics and Trauma services to provide optimum care to this frail population.

In summary, the JHBMC Trauma Service is a multi-disciplinary unit dedicated to our trauma patients of all ages and the community as a whole. We continue to strive to continually assess and improve our services to the city of Baltimore and its surrounding communities.

## **Level II**

### **Prince George's Hospital Center**

*Located in Cheverly, the Trauma Center at Prince George's Hospital Center continues to grow.*

*According to the Maryland Adult Trauma Registry, Prince George's Hospital Center received 2,636 trauma patients from June 2003 to May 2004.*

*(See pages 42 to 47 for patient data in various categories.) This is an 11% increase in trauma patient volumes from the previous year. In July 2003,*

*Carnell Cooper, MD, joined the Prince George's Hospital Center as the Medical Director, Trauma Services. Philip R. Militello, MD, has continued to*

*serve in the capacity of the Assistant Trauma Director. Melissa E. Meyers, RN, BSN joined*

*Prince George's Trauma Service in September 2003 as the Trauma Program Manager. Sandra Waak,*

*RN, CEN continues in the role of the Assistant Department Manager for the Trauma Service.*

The Prince George's Hospital Center (PGHC)

continues to serve as the primary adult trauma center for the counties of Prince George's, Calvert,

Charles, St. Mary's, and southern Anne Arundel,

as well as parts of Montgomery and Howard counties and the eastern part of Washington, DC.

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 maintains their affiliation with the R Adams Cowley Shock

Trauma Center in Baltimore which 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.

The Trauma Service continues to expand with new programs being instituted. In the past year, a new high-speed CT scanner has been installed. The installation of the new CT scanner not only serves as a reliable backup scanner, providing a more efficient trauma workup, but also has contributed to the significant decrease in trauma fly-by hours that PGHC has experienced in the past several years. Patient disposition rounds are conducted on a daily basis. These rounds are multi-disciplinary. They not only ensure a standard of care for the trauma patient but also contribute to decreasing trauma patient hospital lengths of stay. Another program reinstated in the past year is the Trauma Grand Rounds/M&M conferences that are held on a regular monthly basis. These conferences not only serve as an exercise in quality management but also provide physician, nursing, and ancillary staff with trauma continuing education opportunities to ensure current standards of trauma care.

PGHC is actively involved in violence intervention/prevention initiatives. This past year, Prince George's Hospital Center provided interventions for troubled teenagers on the nationally viewed Judge Hatchett Show. This is the third year that PGHC has participated in this program. Prince George's Trauma Service also participated in the media kickoff for NBC-4's "Safe and Secure" campaign featuring pedestrian safety with emphasis on the impaired pedestrian. The Trauma Center also actively participates in hosting the "Reality" program with the Prince George's County Juvenile Justice System.

In an effort to improve relationships and communications with prehospital care providers, the Trauma Service has been visiting the Region V EMS squad houses and regularly attending council meetings. These visits also serve to address and improve prehospital quality of care issues.

## **Level II**

### **Sinai Hospital Trauma Center**

*Located in Baltimore City, Sinai Hospital Trauma Center reported receiving 1,513 trauma patients from June 2003 to May 2004, according to the Maryland Adult Trauma Registry. (See pages 42 to 47 for patient data in various categories.) Tom Genuit, MD, serves as the Trauma Director. 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.

## **Level II**

### **Suburban Hospital**

*Located in Bethesda, the Suburban Hospital Trauma Center cared for 1,312 trauma patients from June 2003 to May 2004, according to the Maryland Adult Trauma Registry. (See pages 42 to 47 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.*

Ongoing enhancements have been applied to the Picture Archiving and Communication System (PACS) system that was instituted last fiscal year. As further technological advances became available this year, such as web-based software upgrades to improve remote access for our medical staff in addition to wireless access to PACS for radiology image reviews for case review conferences, enhancements have been made to the system. A second image reader station was also added to the trauma bay.

The trauma center's bypass hours during this fiscal year have continued to remain below the threshold 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 Trauma Quality Improvement Committee, 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. Suburban staff continue to participate in community partnerships to educate the public in the surrounding community about "pedestrian safety," child-related safety issues, and "drinking, drug, and driving" awareness. Suburban sponsored a community-wide event on October 11, 2003 to kick off the opening of our new Pediatric Center (including a pediatric emergency department, as well as inpatient beds). More than 500 parents and their children attended this educational event.

Suburban Hospital continues to provide trauma training for the registered nurses and corpsman at Bethesda Naval Hospital. This affiliation was established prior to the deployment of the *USS Comfort* to the Middle East in FY 2003. This trauma program includes didactic and clinical trauma components based on the Maryland Trauma Nursing Orientation Core Curriculum.

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.

Renovations have been underway since January, 2004 to expand our critical care bed capacity. Once this expansion has been completed, it will improve Trauma/ED patient flow which will result in a decrease in our diversion time.

### **Level III**

### **Peninsula Regional Medical Center Trauma Center**

*Located in Salisbury, the Peninsula Regional Medical Center (PRMC) Trauma Center received 773 trauma patients from June 2003 to May 2004, according to the Maryland Adult Trauma Registry. (See pages 42 to 47 for patient data in various categories.) Un Y. Chin, MD, serves as the Trauma Director, and Lisa Hohl, RN, BSN as the Trauma Nurse Coordinator.*

Under the direction of Dr. Un Y. Chin, Peninsula Regional Medical Center successfully applied for and received re-designation as a Level III trauma center effective November 19, 2003 for a period of five years.

Peninsula Regional Medical Center continues to coordinate and participate in community-based injury prevention initiatives. Initiatives addressing the impact of driving under the influence of alcohol and/or drugs were presented at area high schools during their pre-prom celebrations. Education through the Emergency Nurses Association EN-CARE program, demonstration with fatal vision glasses, and the reenactment of a motor vehicle crash were different methods used to portray the safety message. Other injury prevention efforts continue with the Maryland Division of the American Trauma Society, SAFEKIDS Lower Shore Coalition, the Worcester and Wicomico Highway Advisory Committees, and the Ocean City Pedestrian Task Force.

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

- The Trauma Office continues to coordinate and sponsor the annual "Topics in Trauma" conference, with topics ranging from prehospital care to advanced inpatient trauma care.
- The Education Department joined forces with the AACN Delmarva Chapter to sponsor and coordinate the Critical Care/Medical-Surgical Conference. Current healthcare trends and issues that challenge nurses today were addressed by

offering a variety of topics designed to advance professional practice.

- Peninsula Regional Medical Center continues to work collaboratively with WorWic Community College in providing continuing education for pre-hospital providers, as well as curriculum management and coordination of EMT programs. Ongoing work has progressed for establishing course work for an EMT-B to EMT-I program. This addition to the EMT program will expedite certification of emergency medical technicians on the intermediate level to provide ALS care.

Peninsula Regional Medical Center has improved communication with area prehospital providers by implementing a quarterly newsletter. The newsletter addresses current issues in prehospital care, educational opportunities, and special announcements. It is distributed to prehospital providers throughout the Lower Shore of Maryland, Sussex County in Delaware, and Accomack County in Virginia.

Peninsula Regional Medical Center has continued to improve its radiographic capabilities with the purchase of a 16 Pro CT scanner. The new scanner will have the ability to provide a thorax to toe scan in 10 seconds with thinner slices for improved diagnostic capability. This scanner is expected to be operational by August 2004.

### **Level III**

#### **Washington County Health Systems Trauma Center**

*Located in Hagerstown, the Washington County Health Systems Trauma Center reported receiving 845 trauma patients from June 2003 through May 2004, according to the Maryland Adult Trauma Registry. (See pages 42 to 47 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.*

During the past fiscal year, the Trauma Center at Washington County Hospital has provided trauma services to residents of Washington and Frederick counties, Southern Pennsylvania, and the Eastern Panhandle of West Virginia. As specialties such as neurosurgery decrease in the surrounding areas, transfers to the Trauma Center for treatment of complex injuries are increasing.

Throughout the year, the Trauma Center staff has been active in community education events.

They have participated in community health fairs, served as speakers about safety issues, and participated in Prom Promise. Trauma Center representatives have also been working with community members to plan the annual Citizen's Emergency Preparedness Day. An indoor Bike Safety Rodeo was held during December in cooperation with SAFE KIDS and other local community agencies.

The staff of the Trauma Center continues to provide trauma-related education to physicians and other staff members on a regular basis. The Trauma Center collaborated with Hagerstown Community College to present two multi-disciplinary trauma conferences for trauma providers. Plans are already in progress to continue this semi-annual event in upcoming years. Trauma Center representatives have also presented case studies to area EMS providers on an "as requested" basis.

To celebrate the outstanding contributions and dedication of the trauma center staff throughout the hospital, the Trauma Service organized Trauma Team Recognition Day. A crashed vehicle was displayed in front of the hospital during EMS week, concluding with a vehicle extrication demonstration by a local EMS agency. Members of the trauma team were invited to a reception. Displays about trauma services and motor vehicle safety were set up in the hospital lobby. Employees and staff learned about the multi-disciplinary approach to providing trauma services.

The Trauma Center underwent successful Level III redesignation by the MIEMSS. The hospital and staff of the Trauma Center look 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 Trauma Center received 599 patients from June 2003 to May 2004, according to the Maryland Adult Trauma Registry. (See pages 42 to 47 for patient data in various categories.) Juan Arrisueno, MD, serves as the Trauma Director and Sheri Troutman, RN, is the Trauma Nurse Coordinator.*

With nearly 70 percent of its trauma cases attributable to motor vehicle and motorcycle crashes, the Western Maryland Health System (WMHS)—Memorial Trauma Center focuses much of its community injury prevention efforts on traffic safety.

WMHS works cooperatively with the Allegany County Health Department, local law enforcement agencies, and other area organizations to promote child passenger safety issues and conduct safety seat checks at various locations in the community. Their efforts also include programs on bicycle safety and an "On the Road Again" program that is provided to prison inmates prior to their release.

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

Staff from the WMHS–Memorial Trauma Center also participate in the School Safety Council, which brings together the Allegany County Board of Education, law enforcement agencies, the Allegany County Health Department, and the Allegany County Emergency Operations Center to effect a safer school environment.

Continuing education is another important component. The telemedicine link between the University of Maryland Shock Trauma Center and the WMHS–Memorial Trauma Center enables physicians, nurses, EMS personnel, and other healthcare providers to participate in classes throughout the year. Staff members also participated in the Miltenberger Emergency Services Seminar, now held annually in Allegany County and named in memory of Fred Miltenberger, MD, a long-time advocate for Maryland's trauma network. This program offers a variety of topics related to trauma and emergency case, including a specialized track for nurses.

Staff from the WMHS–Memorial Trauma Center worked with Maryland State Police Trooper 5's team to provide education on helicopter safety to staff in the Emergency Department, ICU, and other areas. The class provided training for safely loading and unloading patients, as well as preparing patients for transport.

### **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 1600 visits a year. Robert J. Spence, MD, FACS is the Director of the Burn Center.*

During FY 2004, the Baltimore Regional Burn Center (BRBC) treated 389 inpatients, of whom approximately one-quarter were children. During

### **ADMISSIONS TO BALTIMORE REGIONAL BURN CENTER BY MODE OF TRANSPORT (FY 2004)**

Arrival Mode	Patients
EMS ground	140
EMS aeromedical	69
Commercial, ground	83
Commercial, aeromedical	26
Personal transportation	63
Not recorded	8
<b>Total</b>	<b>389</b>

this time period, the trend toward increased outpatient care continues, and outpatient visits were increased to approximately 1600. Patients were admitted from Baltimore City and 22 counties in Maryland, as well as from the states of Delaware, Pennsylvania, Virginia, and West Virginia. (See charts on pages 34-35 for other statistics.)

During the past fiscal year, the Burn Center added a community outreach nurse, who focuses on both adult and child burn prevention, as well as other topics of interest. She also provides classes of interest within the institution.

The Wound Care Team has proven to be essential to quality inpatient care. It has recently started to attend the outpatient burn clinic sessions and has been extremely helpful.

During the year, the Burn Center continues its commitment to professional and community education. The Center commits to many hours of speaking and teaching to the community, as well as providing educational and clinical opportunities for physicians, nurses, nurse practitioners, physician assistants, burn technicians, and paramedic students. It is a well respected clinical site for EMT-I and EMT-P students. Last fiscal year, more than 1,000 hours of clinical time were provided for the paramedic students.

The Metropolitan Fire Fighters Fund continues its support with the Burn Center, helping with both patient needs and professional education.

### **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 INJURY TYPE (FY 2004)

Injury Type	Patients
Flame	188
Scald	118
Electrical	24
Contact	13
Chemical	11
TENS	16
Sunburn	1
Radiation	1
Not recorded	5

## BALTIMORE REGIONAL BURN CENTER STATISTICAL SUMMARY (FY 2004)

Admissions	389
• Adults	310 (79.9%)
• Children	79 (20.3%)
Average Age	35.68 years
Average Total Burn Surface Area	8.22%
Average Length of Stay	8.99 days
Inhalation Injury	61 (15.7%)
Mortality	16 (4.11%)

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 System is the statewide referral center for victims of diving accidents, carbon monoxide poisoning, smoke inhalation, and gas gangrene. It is the only multi-place chamber in Maryland, and is capable of accommodating 10 stretcher patients or 23 seated patients simultaneously. The center is able to provide treatment around the clock, 365 days a year. Robert Rosenthal, MD, is the Director of the Hyperbaric Medicine Center.*

During FY 2004, 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 (WEI), Johns Hopkins Hospital is the first statewide eye trauma center in the nation. The main objectives of the eye trauma center are to provide optimal clinical management of severe ocular injuries, to conduct research into the natural history of eye trauma, to develop new treatments for ocular trauma, and to initiate and support eye trauma prevention activities. Dr. Michael P. Grant, MD, PhD, is the new Director of the Center; the Associate Director for FY 2005 is Robert A. Equi, MD.*

The Wilmer Emergency Room (WER) logged 5,723 patient visits in FY 2004; 159 serious eye injuries, some requiring emergency surgical treatment, were reported to the U.S. Eye Injury Registry.

The Maryland Society for Sight is working to pass statewide legislation requiring children to wear a batting helmet with a protective face shield and soft-core baseballs when participating in organized baseball games. Dr. Stuart R. Dankner, WEI faculty and Chairman of the Society's Eye Safety Committee, presented testimony on the eye safety bill to the General Assembly in 2004, but the legislation did not pass. The Society will reintroduce the bill to the General Assembly in 2005.

John A. Hurson, Chairman of the Health and Government Operations Committee of the Maryland House of Delegates, wrote a letter on the Society's behalf to Secretary Nelson J. Sabatini, requesting that the Office of Injury Prevention within the Maryland Department of Health and Mental Hygiene collect materials on injury prevention, specifically eye injuries in sports, and provide the materials to the injury prevention coordinators in the local health departments. The Society is also working to get an eye safety law passed on the county level. Councilman Ken Ulman, from the Howard County Council, has been contacted requesting his assistance in passing an eye safety law in Howard County.

The WER physicians and nurses continue to be active participants in the Johns Hopkins Disaster Plan, Operation Red: Chemical Plan for the treatment of chemical eye burns.

WEI developed the MIEMSS Quality Improvement Indicators of Care for Ocular Trauma. Data collection will commence in FY 2005 to monitor compliance with indicators.

Community service consisted of dissemination of information before the July 4th holiday on Fireworks and Eye Injury Prevention from the U.S. Eye Injury Registry. Dr. Grant was interviewed for radio broadcast and television (aired twice) on the topic. Martha Conlon, RN and Cindy Henry, RN manned an eye care and injury prevention booth during a health fair at St. Francis of Assisi Parish Church last October. Ann Roberts, RN presented eye injury prevention to students at Harford County Middle School.

During FY 2004, the WEI faculty and RN staff (mainly the faculty of the Oculoplastic Division, Dr. N.I. Iliff, Director) were involved in 14 presentations and publications on ocular trauma. Dr. Morton F. Goldberg, Chairman Emeritus, presented Sick Cell Hyphema for the Barnes Inaugural Lecture at the annual meeting of the Ophthalmic Section of the National Medical Association. Dr. Daniel C. Garibaldi and Dr. Joseph B. Harlan conducted a study on the Detection of Retinal Hemorrhages by Non-Ophthalmologists in Cases of Presumed Shaken Baby Syndrome (SBS) which represented the first prospective trial of its kind to characterize the sensitivity and specificity of non-ophthalmologists for detecting retinal findings of presumed SBS. It demonstrates that non-ophthalmologists may, using standard exam techniques, successfully document retinal findings in presumed Shaken Baby Syndrome. However, there is a need to enhance the sensitivity and specificity of non-ophthalmologists' exams for the detection of retinal hemorrhages using current examination modalities.

### **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 253 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 2004, 962 children (ages newborn to 14 years) were treated at the Pediatric Trauma Center at the Johns Hopkins Children's Center, located in Baltimore City. Paul Colombani, MD, is the Director, and Susan Ziegfeld, MSN, CCRN, CRNP, serves as the Trauma Nurse Coordinator.*

Located in the Johns Hopkins Hospital (listed as one of the "Best of the Best" hospitals in the *U.S. News & World Reports* Rankings for the past 14 years), the Pediatric Trauma Service (PTS) at the Johns Hopkins Hospital Children's Center is a Level I 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 basic science research. The Pediatric Surgery Laboratory, under the direction of Antonio DeMalo, PhD, investigates molecular mechanisms involved in the response to injury. In addition, the laboratory studies confounding factors that modify the response to injury, such as genetics, diet, sex, and age. The laboratory is actively engaged in the training of future academic pediatric surgeons, basic scientists, and medical and graduate students. In addition, the PTS conducts ongoing clinical research and collaborates with other departments and the community to provide childhood injury prevention activities. Paul M. Colombani, MD, FACS, FAAP, is the Children's Surgeon-in-Charge at Johns Hopkins and the Director of the PTS. He serves on TraumaNet.

Susan Ziegfeld, MSN, CCRN, CRNP, Trauma Nurse Coordinator, serves on TraumaNet, the Maryland Trauma and Specialty Care Quality



Improvement Committee, and the Maryland Trauma Registry, Education and Injury Prevention Committee. She is serving as Course Director for the Advanced Trauma Care for Nurses, in collaboration with the Air Force and R Adams Cowley Shock Trauma Center, to train nurses in Advanced Trauma Life Support. She also spearheaded a project funded by the Johns Hopkins Children's Center Telethon to distribute stuffed animals, specifically bloodhound puppies, to children that present to the trauma bay. Regardless of the child's age, this can be a comfort to him/her. Furthermore, the stuffed puppies, named "Stitches" by local junior high school students, will serve as educational tools. The puppies have a Velcro open stomach. If the child has an injury, the child will place a stuffed replica of the injured organ/bone into the puppy with a fact sheet regarding the injury. The puppy will serve two purposes: to comfort the child during a frightening experience and provide the needed prevention and post-injury education for the child and family.

Vinita Misra Knight, MPH, CSTR, 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. Ms. Knight is actively involved in several research initiatives, including traumatic brain injury studies and pedestrian injuries. Four manuscripts, on topics ranging from physical child abuse to renal and spine injury, have been published or accepted for publication.

Mary Pasquariello, CSTR, Pediatric Trauma Data Coordinator, 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.

The Pediatric Trauma Service welcomed two new members to its team. Stacey Nash, RN, BSN serves as Performance Improvement Coordinator. In her new role, she will be coordinating monthly pediatric trauma morbidity and mortality conferences and initiating trauma-related performance improvement projects in the Johns Hopkins Children's Center. In addition, she will be serving as a liaison between the EMS community and the PTS. Rose Stinebert recently joined the PTS as the Program Coordinator for Hopkins Outreach for Pediatric Education (HOPE). The HOPE program has continued to provide quality educational pro-

grams for all prehospital providers and has expanded to offering approximately 20 classes annually. Approximately 500 participants have completed the PALS course during the past year.

All members of the PTS actively participate in prehospital provider follow-up and education. In May 2004, the PTS spearheaded a multi-departmental EMS appreciation program which distributed thank-you gifts, such as stethoscopes and gift certificates for local restaurants, to over 50 prehospital providers.

Through collaboration with the American Trauma Society, the PTS has received funding for car seats, bicycle helmets, and elbow/knee pads. All members of the service distribute these products free of charge to families and reinforce an injury prevention message.

The PTS received funding from the Robert Wood Johnson Foundation in November 2002 for Johns Hopkins Hospital 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. Mahseeyahu Ben Selassie, MSW, MPH, serves as the Project Administrator. The Baltimore Coalition's program gathered information and input from community residents on injuries to children in their neighborhoods and is currently conducting its first Parent Safety Leadership Group, which trains parents and caregivers in various areas of injury prevention, such as smoke detector installation, poison prevention, CPR, and First Aid. The aim of the program is to train parents, residents, neighbors, and caregivers to become safety leaders and advocates for safety in their communities.

### **Pediatric Trauma Center Children's National Medical Center**

*In FY 2004, Children's National Medical Center, as a pediatric specialty referral center, treated 914 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 Maureen Deehan, RN, CPNP is the Trauma-Burn Coordinator.*

The Children's National Medical Center (CNMC) was re-verified by the American College of Surgeons in July 2004 as a Level I Pediatric Trauma Center. CNMC serves the pediatric community of Region V, which includes Montgomery, Prince George's, Calvert, Charles, and St. Mary's

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

CNMC provides pediatric emergency and trauma education to physicians, nurses, and pre-hospital providers. The EMT-B course is offered twice a year. Thirteen courses in Pediatric Advanced Life Support (PALS) are offered annually. Four courses in the Pediatric Education for Prehospital Professionals (PEPP) are presented annually. The Center for Prehospital Pediatrics has produced a regional report on the state of EMSC in the Mid-Atlantic Region. The Trauma Nurse Core Curriculum (TNCC) is offered five times per year. 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: 7% from motor crashes, 40% from drowning, 69% from non-helmeted bike riders, and 63% from residential fires. The campaign interacts with more than 600 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 grassroots 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 ([www.safekids.org](http://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 87 new and continuing grantees with resources and technical assistance. The EMSC National Resource Center also supports the Federal program with many activities, including the Partnership for Children stakeholder committee (comprised of more than 30 representatives from national organizations, federal agencies, and grantees), the annual grantee meeting, and preparation of special reports. EMSC joined the American College of Emergency Physicians for another successful national observance of EMS Week (May 16-22), including a special EMSC Day. 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 to address children's needs during catastrophic emergencies ([www.ems-c.org](http://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 ten 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 ([www-nrd.nhtsa.dot.gov/departments/nrd-50/ciren/CIREN.html](http://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 TransCyte™, 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](http://www.eapsa.org)).

## Perinatal Referral Centers

To date, MIEMSS has designated a total of 14 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 a regional poison center for Maryland. MPC also serves as a consultation center for MIEMSS. Bruce D. Anderson, PharmD, DABAT, is Director of Operations, and Suzanne Doyon, MD, ACMT, is Medical Director.*





### Cause of Poisoning (CY 2003)

Circumstance	Number of Patients	Percentage
Unintentional	29,026	82.6
Intentional	5,180	14.7
Other & Unknown	950	2.7
<b>TOTAL</b>	<b>35,156</b>	<b>100.0</b>

### Medical Outcome (CY 2003)

Medical Outcome	Number of Patients	Percentage
No Effect/Minor Effect	32,404	92.2
Moderate Effect	1,313	3.7
Major Effect	118	0.3
Death	24	0.1
Other & Unknown	1,297	3.7
<b>TOTAL</b>	<b>35,156</b>	<b>100.0</b>

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 2003)

Region	Number of Exposures	Percentage
Region I (Garrett, Allegany)	744	2.1
Region II (Washington, Frederick)	2,661	7.6
Region III (Carroll, Howard, Harford, Anne Arundel, Baltimore County, Baltimore City)	21,552	61.3
Region IV (Cecil, Kent, Queen Anne's, Talbot, Caroline, Dorchester, Wicomico, Worcester)	3,331	9.5
Region V (Montgomery, Prince George's Charles, Calvert, St. Mary's)	5,735	16.3
Unknown County/ Other state	1,133	3.2
<b>TOTAL</b>	<b>35,156</b>	<b>100.0</b>

## REHABILITATION

The vision of MIEMSS is the elimination of preventable deaths and disabilities due to sudden illness or injury through an integrated system of prevention, intervention, and rehabilitation. This integrated system is known as the trauma care continuum. Rehabilitation is the cornerstone of "post-trauma" care. It is the phase of emergency

care that enables the individual to return to a maximum level of function and, in most cases, to return as a productive member of society.

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 2004, trauma centers in Maryland referred 1,326 trauma patients ages 15 and over to inpatient rehabilitation services. The ten rehabilitation facilities receiving the most patients are listed on this page.

### TOP TEN DESTINATIONS OF TRAUMA PATIENTS 15 & OVER WHO WENT TO INPATIENT REHABILITATION FACILITIES: (JUNE 2003 TO MAY 2004)

Source: Maryland Adult Trauma Registry

Rehabilitation Center	Number of Patients
Genesis Long-Term Care Facilities	31
Good Samaritan Hospital of Maryland	16
Johns Hopkins Comprehensive Geriatric Center	22
Kernan Hospital	341
Kessler Adventist Rehabilitation Facilities	21
Laurel Regional Hospital-Rehabilitation	16
Maryland General Hospital	58
NRH Regional Rehabilitation @ Irving Street, DC	17
Peninsula Regional Medical Center, Transitional Care Unit	23
Washington County Health System, Comprehensive Inpatient Rehab Services	52

Note: Total patients ages 15 and over who went to a rehabilitation center = 1,326

# MARYLAND TRAUMA STATISTICS

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

Source: Maryland Trauma Registry

Age Range	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
Under 1 year	170	172	161
1 to 4 years	542	636	616
5 to 9 years	567	629	638
10 to 14 years	857	831	886
15 to 24 years	4,734	4,714	4,953
25 to 44 years	6,296	6,184	6,455
45 to 64 years	2,960	3,155	3,532
65 + years	1,529	1,568	1,661
Unknown	35	17	27
<b>TOTAL</b>	<b>17,690</b>	<b>17,906</b>	<b>18,929</b>

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

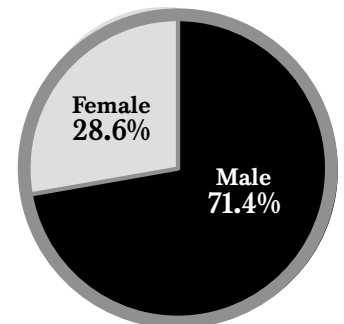
Trauma Center	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
The Johns Hopkins Bayview Medical Center	1,318	1,182	1,250
Johns Hopkins Medical System	1,976	2,101	2,296
Peninsula Regional Medical Center	854	846	773
Prince George's Hospital Center	2,512	2,364	2,636
R Adams Cowley Shock Trauma Center	6,138	6,037	5,829
Sinai Hospital of Baltimore	775	1,062	1,513
Suburban Hospital	1,253	1,370	1,312
Washington County Hospital Association	699	487	845
Western Maryland Health System- Cumberland Memorial Trauma Center	489	560	599
<b>TOTAL</b>	<b>16,014</b>	<b>16,009</b>	<b>17,053</b>

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 2003 to May 2004)

Source: Maryland Adult Trauma Registry



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

**OCCURRENCE OF INJURY BY COUNTY:  
SCENE ORIGIN CASES ONLY  
(JUNE 2003 TO MAY 2004)**

Source: Maryland Adult Trauma Registry

County of Injury	Number
Allegany County	268
Anne Arundel County	857
Baltimore County	2,066
Calvert County	105
Caroline County	69
Carroll County	359
Cecil County	204
Charles County	201
Dorchester County	86
Frederick County	334
Garrett County	44
Harford County	409
Howard County	379
Kent County	61
Montgomery County	1,288
Prince George's County	1,784
Queen Anne's County	116
St. Mary's County	134
Somerset County	56
Talbot County	61
Washington County	442
Wicomico County	225
Worcester County	129
Baltimore City	4,460
Virginia	49
West Virginia	257
Pennsylvania	122
Washington, DC	155
Delaware	119
Other	2
Not Indicated	534
<b>TOTAL</b>	<b>15,375</b>

Note: Scene origin cases represent 90.2% of the total trauma cases treated statewide.

**RESIDENCE OF PATIENTS BY COUNTY:  
SCENE ORIGIN CASES ONLY  
(JUNE 2003 TO MAY 2004)**

Source: Maryland Adult Trauma Registry

County of Residence	Number
Allegany County	213
Anne Arundel County	796
Baltimore County	2,164
Calvert County	150
Caroline County	73
Carroll County	369
Cecil County	149
Charles County	212
Dorchester County	68
Frederick County	292
Garrett County	33
Harford County	399
Howard County	282
Kent County	51
Montgomery County	1,121
Prince George's County	1,727
Queen Anne's County	104
St. Mary's County	141
Somerset County	47
Talbot County	50
Washington County	363
Wicomico County	232
Worcester County	95
Baltimore City	4,293
Virginia	324
West Virginia	298
Pennsylvania	364
Washington, DC	358
Delaware	205
Other	338
Not Indicated	64
<b>TOTAL</b>	<b>15,375</b>

Note: Scene origin cases represent 90.2% 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

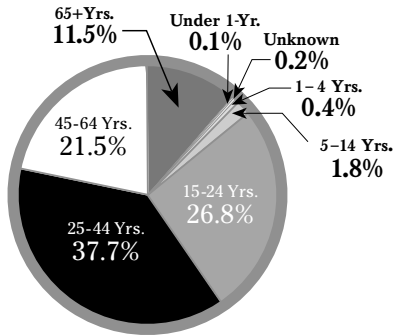
Protective Device	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
None	31.1%	28.1%	27.4%
Seatbelt	37.5%	38.2%	36.6%
Airbag & Seatbelt	11.5%	14.5%	15.2%
Airbag Only	3.0%	2.8%	3.3%
Infant/Child Seat	0.2%	0.1%	0.1%
Protective Helmet	8.2%	8.1%	8.8%
Padding/Protective Clothing	0.1%	0.0%	0.1%
Other Protective Device	0.4%	0.2%	0.1%
Unknown	8.0%	8.0%	8.4%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Note: Washington County Hospital 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 2003 to May 2004)**

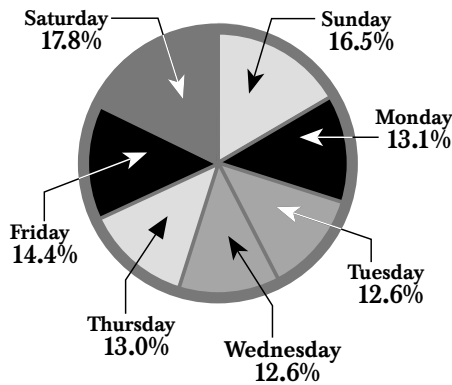
Source: Maryland Adult Trauma Registry



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

**EMERGENCY DEPARTMENT ARRIVALS BY DAY OF WEEK: PRIMARY ADMISSIONS ONLY (June 2003 to May 2004)**

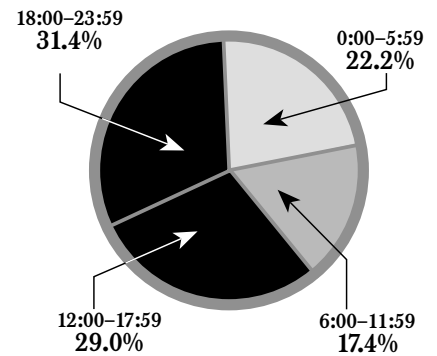
Source: Maryland Adult Trauma Registry



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

**EMERGENCY DEPARTMENT ARRIVALS BY TIME OF DAY: PRIMARY ADMISSIONS ONLY (June 2003 to May 2004)**

Source: Maryland Adult Trauma Registry



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

**MODE OF PATIENT TRANSPORT TO TRAUMA CENTERS (JUNE 2003 TO MAY 2004)**

Source: Maryland Adult Trauma Registry

Modality Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMHS	TOTAL
Ground Ambulance	92.2%	82.3%	63.7%	59.6%	91.6%	55.3%	78.3%	66.9%	68.0%	68.7%
Helicopter	0.2%	1.6%	30.0%	35.8%	0.0%	43.5%	18.6%	22.3%	25.3%	25.4%
Other	7.6%	16.1%	6.3%	4.6%	8.4%	1.2%	3.1%	10.8%	6.7%	5.9%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

**ORIGIN OF PATIENT TRANSPORT TO TRAUMA CENTERS (JUNE 2003 TO MAY 2004)**

Source: Maryland Adult Trauma Registry

Origin Type	BVMC	JHH	PEN	PGH	SH	STC	SUB	WCH	WMHS	TOTAL
Scene of Injury	98.1%	81.7%	96.7%	98.6%	95.9%	85.2%	94.1%	90.6%	94.8%	90.5%
Hospital Transfer	0.5%	3.2%	3.3%	0.8%	1.1%	14.8%	3.3%	5.0%	4.4%	6.5%
Other	1.4%	15.1%	0.0%	0.6%	3.0%	0.0%	2.6%	4.4%	0.8%	3.0%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

### NUMBER OF DEATHS BY AGE (3-YEAR COMPARISON)

Source: Maryland Adult Trauma Registry

Age	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
Under 1 year	2	1	1
1 to 4 years	4	0	1
5 to 14 years	8	11	14
15 to 24 years	153	159	164
25 to 44 years	194	175	185
45 to 64 years	104	112	113
65+ years	155	173	165
Unknown	14	8	9
<b>TOTAL</b>	<b>634</b>	<b>639</b>	<b>652</b>
<b>Deaths Overall as a Percentage of the Total Injuries Treated</b>	<b>4.0%</b>	<b>4.0%</b>	<b>3.8%</b>

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 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
Under 1 year	24	19	23
1 to 4 years	89	63	74
5 to 14 years	405	349	388
15 to 24 years	4,679	4,655	4,893
25 to 44 years	6,296	6,183	6,455
45 to 64 years	2,960	3,155	3,532
65+ years	1,529	1,568	1,661
Unknown	32	17	27
<b>TOTAL</b>	<b>16,014</b>	<b>16,009</b>	<b>17,053</b>

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 2003 TO MAY 2004)

Source: Maryland Adult Trauma Registry

Age	Number of Injured Patients		Number of Deaths	
	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	23	20	1	1
1 to 4 years	74	62	1	1
5 to 14 years	388	337	14	13
15 to 24 years	4,893	4,294	164	136
25 to 44 years	6,455	5,597	185	154
45 to 64 years	3,532	3,058	113	95
65+ years	1,661	1,460	165	154
Unknown	27	17	9	4
<b>TOTAL</b>	<b>17,053</b>	<b>14,845</b>	<b>652</b>	<b>558</b>

Note: Only pediatric patients that were treated at adult trauma centers are included in this table. For patients treated at the pediatric trauma centers, see pediatric trauma center tables and graphs.

### ETIOLOGY OF INJURIES TO PATIENTS: PRIMARY ADMISSIONS ONLY (3-YEAR COMPARISON)

Source: Maryland Adult Trauma Registry

Etiology	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
Motor Vehicle Crash	42.1%	40.8%	40.5%
Motorcycle Crash	4.6%	4.4%	4.9%
Pedestrian Incident	5.9%	5.7%	5.8%
Fall	17.6%	17.9%	18.9%
Gunshot Wound	7.7%	8.0%	7.8%
Stab Wound	7.3%	8.1%	7.4%
Other	14.8%	15.1%	14.7%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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 2003 TO MAY 2004)

Source: Maryland Adult Trauma Registry

Blood Alcohol Content	Motor Vehicle				Total
	Crash	Assault	Fall	Other	
Negative	46.9%	31.1%	37.1%	37.9%	41.0%
Positive	20.1%	29.7%	13.6%	9.6%	20.0%
Undetermined	33.0%	39.2%	49.3%	52.5%	39.0%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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

## ETIOLOGY OF INJURIES BY AGES OF PATIENTS: PRIMARY ADMISSIONS ONLY (JUNE 2003 TO MAY 2004)

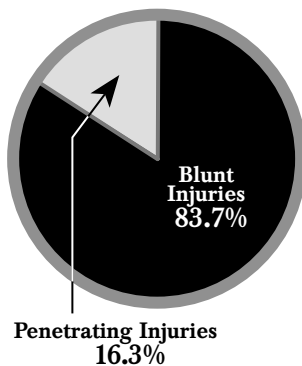
*Source: Maryland Adult Trauma Registry*

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound	Other	Total
Under 1 year	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.2%	0.1%
1 to 4 years	0.2%	0.0%	0.6%	0.7%	0.2%	0.0%	0.4%	0.4%
5 to 14 years	1.4%	0.8%	4.8%	1.5%	0.6%	0.9%	3.1%	1.8%
15 to 24 years	31.6%	20.1%	18.9%	9.8%	48.4%	43.0%	22.1%	26.9%
25 to 44 years	36.5%	55.0%	37.5%	26.5%	40.7%	43.7%	44.8%	37.6%
45 to 64 years	20.3%	21.9%	28.8%	29.7%	8.4%	11.3%	23.7%	21.5%
65+ years	9.9%	2.2%	9.1%	31.5%	1.0%	1.0%	5.4%	11.5%
Unknown	0.1%	0.0%	0.3%	0.0%	0.7%	0.1%	0.3%	0.2%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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

### INJURY TYPE DISTRIBUTION OF PATIENTS: PRIMARY ADMISSIONS ONLY (June 2003 to May 2004)

*Source: Maryland Adult Trauma Registry*



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

### ETIOLOGY DISTRIBUTION FOR PATIENTS WITH BLUNT INJURIES: PRIMARY ADMISSIONS ONLY (JUNE 2003 TO MAY 2004)

*Source: Maryland Adult Trauma Registry*

Etiology	Percentage
Motor Vehicle Crash	48.8%
Motorcycle Crash	5.9%
Pedestrian Incident	6.9%
Fall	22.5%
Other	15.3%
Unknown	0.6%
<b>TOTAL</b>	<b>100.0%</b>

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

### ETIOLOGY DISTRIBUTION FOR PATIENTS WITH PENETRATING INJURIES: PRIMARY ADMISSIONS ONLY (JUNE 2003 TO MAY 2004)

*Source: Maryland Adult Trauma Registry*

Etiology	Percentage
Motor Vehicle Crash	0.1%
Gunshot Wound	48.3%
Stabbing	45.6%
Fall	0.9%
Other	4.6%
Unknown	0.5%
<b>TOTAL</b>	<b>100.0%</b>

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

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

Source: Maryland Adult Trauma Registry

Final Disposition	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
Inpatient Rehab Facility	9.3%	9.4%	10.7%
Skilled Nursing Facility	1.9%	1.6%	1.7%
Residential Facility	1.2%	1.3%	1.0%
Specialty Referral Center	2.7%	3.5%	3.8%
Home with Services	4.4%	4.3%	3.2%
Home	70.7%	70.0%	69.9%
Acute Care Hospital	2.4%	2.4%	2.0%
Against Medical Advice	1.7%	1.6%	2.0%
Morgue/Died	5.2%	5.4%	5.3%
Other	0.5%	0.5%	0.4%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
1 to 12	73.8%	71.5%	74.5%
13 to 19	10.4%	12.5%	10.9%
20 to 35	11.5%	12.6%	10.7%
36 to 75	4.3%	3.4%	3.9%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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 2003 TO MAY 2004)**

Source: Maryland Adult Trauma Registry

ISS	Blunt	Penetrating	Total
1 to 12	68.1%	74.5%	69.2%
13 to 19	17.2%	10.9%	16.1%
20 to 35	12.2%	10.7%	12.0%
36 to 75	2.5%	3.9%	2.7%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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

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

Source: Maryland Adult Trauma Registry

ISS	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
1 to 12	70.0%	70.1%	68.1%
13 to 19	15.7%	15.6%	17.2%
20 to 35	11.7%	11.8%	12.2%
36 to 75	2.6%	2.5%	2.5%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
1 to 12	70.6%	70.3%	69.2%
13 to 19	14.9%	15.1%	16.1%
20 to 35	11.6%	11.9%	12.0%
36 to 75	2.9%	2.7%	2.7%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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

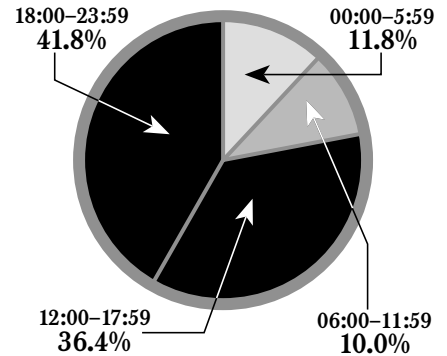
Children's National Medical Center CNMC  
 Johns Hopkins Pediatric Trauma Center JHP

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

Trauma Center	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
CNMC	864	919	914
JHP	812	978	962
<b>TOTAL</b>	<b>1,676</b>	<b>1,897</b>	<b>1,876</b>

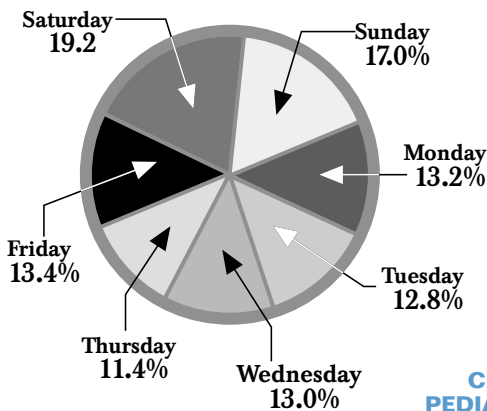
Note: For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland.

## EMERGENCY DEPARTMENT ARRIVALS BY TIME OF DAY: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2003 to May 2004)



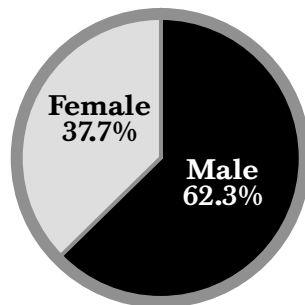
Note: For children that were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland.

## EMERGENCY DEPARTMENT ARRIVALS BY DAY OF WEEK: CHILDREN TREATED AT PEDIATRIC TRAUMA CENTERS (June 2003 to May 2004)



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 2003 to May 2004)



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 2003 to May 2004)

County of Injury	Number
Anne Arundel County	71
Baltimore County	148
Calvert County	17
Caroline County	9
Carroll County	34
Cecil County	27
Charles County	25
Dorchester County	4
Frederick County	30
Harford County	47
Howard County	23
Kent County	11
Montgomery County	111
Prince George's County	222
Queen Anne's County	16
St. Mary's County	23
Talbot County	2
Washington County	4
Baltimore City	228
Virginia	1
West Virginia	1
Washington, DC	17
Not Indicated	163
<b>TOTAL</b>	<b>1,234</b>

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 65.8% of the total cases treated at pediatric trauma centers.

### MODE OF PATIENT TRANSPORT BY CENTER

Children Treated at Pediatric Trauma Centers (June 2003 to May 2004)

Modality Type	CNMC	JHP	Total
Ground Ambulance	32.1%	56.2%	44.8%
Helicopter	26.4%	35.0%	31.0%
Other	41.5%	8.8%	24.2%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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.

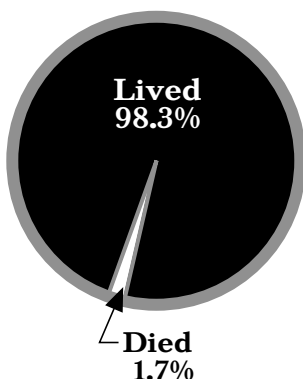
### ORIGIN OF PATIENT TRANSPORT BY CENTER

Children Treated at Pediatric Trauma Centers (June 2003 to May 2004)

Origin	CNMC	JHP	Total
Scene of Injury	54.3%	76.8%	65.8%
Hospital Transfer	40.7%	20.0%	30.1%
Other	5.0%	3.2%	4.1%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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 2003 to May 2004)



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 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
Inpatient Rehab Facility	1.7%	1.7%	1.4%
Skilled Nursing Facility	0.0%	0.1%	0.0%
Residential Facility	0.1%	0.2%	1.0%
Specialty Referral Center	0.6%	0.6%	0.7%
Home with Services	2.5%	1.4%	2.3%
Home	92.1%	92.1%	92.0%
Acute Care Hospital	0.4%	1.1%	0.1%
Against Medical Advice	0.1%	0.1%	0.0%
Morgue/Died	2.0%	1.7%	1.7%
Foster Care	0.3%	0.8%	0.7%
Other	0.2%	0.2%	0.1%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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 2003 to May 2004)

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
Under 1 year	2.5%	0.0%	0.4%	12.2%	0.0%	5.9%	9.2%	7.4%
1 to 4 years	18.7%	7.7%	18.7%	37.4%	11.1%	14.7%	33.7%	29.0%
5 to 9 years	36.0%	23.0%	40.9%	24.6%	14.8%	11.8%	19.9%	26.7%
10 to 14 years	41.4%	66.7%	39.6%	23.8%	63.0%	67.6%	31.0%	33.7%
15+ years	1.4%	2.6%	0.4%	2.0%	11.1%	0.0%	6.2%	3.2%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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 piercings and punctures.

### INJURY TYPE

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

Injury Type	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
Blunt	80.3%	77.8%	80.9%
Penetrating	2.8%	3.0%	2.6%
Burn	6.0%	6.6%	7.0%
Near Drowning	1.6%	1.5%	1.7%
Hanging	0.1%	0.2%	0.1%
Inhalation	0.7%	1.0%	0.5%
Ingestion	7.2%	7.9%	5.8%
Crush	0.1%	0.0%	0.1%
Snake Bite/Spider Bite	0.1%	0.3%	0.1%
Animal Bite/Human Bite	1.0%	1.4%	0.7%
Other	0.1%	0.3%	0.5%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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.

### NUMBER OF INJURIES BY AGE

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

Age	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
Under 1 year	146	153	138
1 to 4 years	453	573	542
5 to 9 years	450	540	501
10 to 14 years	569	571	635
15+ years	55	60	60
Unknown	3	0	0
<b>TOTAL</b>	<b>1,676</b>	<b>1,897</b>	<b>1,876</b>

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.

### MECHANISM OF INJURY

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

Mechanism	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
Motor Vehicle Crash	21.6%	19.8%	18.9%
Motorcycle Crash	1.5%	1.0%	2.1%
Pedestrian Incident	10.7%	8.7%	12.1%
Gunshot Wound	1.4%	1.3%	1.4%
Stabbing*	1.5%	1.6%	1.8%
Fall	28.7%	30.4%	29.9%
Other	34.6%	37.2%	33.8%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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 piercings and punctures.

### NUMBER OF DEATHS BY AGE

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

Age	June 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
Under 1 year	3	6	3
1 to 4 years	15	11	13
5 to 9 years	6	9	10
10 to 14 years	9	6	6
15+ years	0	1	0
Unknown	1	0	0
<b>TOTAL</b>	<b>34</b>	<b>33</b>	<b>32</b>

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 2003 to May 2004)

Age	Number of Injured Patients		Number of Deaths	
	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	138	136	3	3
1 to 4 years	542	526	13	12
5 to 9 years	501	478	10	10
10 to 14 years	635	610	6	5
15+ years	60	60	0	0
<b>TOTAL</b>	<b>1,876</b>	<b>1,810</b>	<b>32</b>	<b>30</b>

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 2001 to May 2002	June 2002 to May 2003	June 2003 to May 2004
None	33.6%	37.8%	35.7%
Seatbelt	18.9%	18.5%	18.6%
Airbag & Seatbelt	1.7%	0.8%	2.4%
Airbag Only	0.4%	0.6%	0.4%
Infant/Child Seat	11.3%	9.7%	8.7%
Protective Helmet	6.9%	7.7%	7.9%
Padding/Protective Clothing	0.2%	0.2%	0.2%
Other Protective Device	0.0%	0.2%	0.4%
Unknown	27.0%	24.5%	25.7%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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

**RESIDENCE OF PATIENTS BY COUNTY: SCENE ORIGIN CASES ONLY**

*Children Treated at Pediatric Trauma Centers (June 2003 to May 2004)*

County of Residence	Number
Anne Arundel County	84
Baltimore County	151
Calvert County	18
Caroline County	8
Carroll County	43
Cecil County	25
Charles County	30
Dorchester County	5
Frederick County	23
Harford County	56
Howard County	24
Kent County	8
Montgomery County	130
Prince George's County	261
Queen Anne's County	16
St. Mary's County	18
Talbot County	2
Washington County	8
Wicomico County	2
Baltimore City	272
Virginia	5
West Virginia	1
Pennsylvania	8
Washington, DC	8
Delaware	3
Other	23
Not Indicated	2
<b>TOTAL</b>	<b>1,234</b>

*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 65.8% 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 on projects focusing on injury epidemiology, injury prevention, and improvements in the prehospital and in-hospital delivery and coordination of trauma care. Colin F. Mackenzie, MD, is the Director.*

During FY 2004, the National Study Center for Trauma and Emergency Medical Systems (NSC) added two new faculty members, both of whom have appointments in the Department of Epidemiology and Preventive Medicine, as well as two full-time research staff members to support recent project awards.

The NSC is a leading participant in two multi-center studies of injuries sustained in vehicular crashes, the Crash Injury Research and Engineering Network (CIREN) and the Crash Outcomes Data Evaluation System (CODES) Data Network. To date, 345 patients have been enrolled into the CIREN study, a multi-center collaboration of ten trauma centers. Recent NSC initiatives in CIREN have involved analyses of six-month and one-year post-injury interview data. The results of an examination of the causes and outcomes of mild traumatic brain injury in the CIREN project were presented at the annual meeting of the Association for the Advancement of Automotive Medicine in Lisbon, Portugal. NSC researchers traveled to Vienna, Austria to present CIREN findings related to functional outcomes among a cohort of motor vehicle crash survivors at the 7th World Conference on Injury Prevention and Safety Promotion. More recently, a manuscript documenting the unexpected physical and psychosocial outcomes occurring among CIREN patients who sustain a lower extremity injury has been accepted for publication by the *Journal of Trauma*.

As part of the CIREN project, the NSC has also been requested by the National Highway Traffic Safety Administration (NHTSA) to ascertain economic costs and long-term outcomes associated with lower extremity injuries. Findings from this project, which include an analysis of compre-

hensive CIREN interview data and estimates of costs attributable to specific fracture types, will soon be published as a NHTSA-sponsored report.

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 2004, an analysis of CODES data conducted at the NSC was used to describe crash characteristics among injured pedestrians in an *Accident Analysis & Prevention* publication entitled "Pedestrian injuries and vehicle type in Maryland, 1995-1999." The CODES project also provided the means for an investigation of injuries occurring due to vehicle mismatch, which was presented at the World Injury Conference in Vienna.

The NSC is in the second year of a three-year contract from the U.S. Army to study mild traumatic brain injury and long-term outcomes in Shock Trauma patients with blunt trauma injuries. Patients are given a battery of tests, including an electronic balance test and various neuropsychological and cognitive measures, by a multi-disciplinary team. Follow-up tests are 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. Currently, the NSC is in the second year of a NHTSA-awarded project 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. Analysis is also underway to investigate the impact of motorcycle safety classes offered by the Motor Vehicle Administration. Additionally, the NSC is participating in a Statewide Motorcycle Safety Coalition in an effort to reduce motorcycle injuries and fatalities through an interdisciplinary approach.

In July 2003 the NSC was awarded a grant from the National Institute for Occupational Safety and Health to conduct a three-year surveillance of work-related injuries in Maryland. Trauma nurse

coordinators from all nine adult trauma centers have agreed to participate by identifying work-related injury patients treated in their institution. In addition, in-depth interviews of patients with known occupational injuries will be conducted at the R Adams Cowley Shock Trauma Center. This information will be linked with other data sources to provide an overall description of occupational injuries in Maryland. Through this effort we hope to determine means of decreasing work-related injuries throughout the state.

Preliminary results of a study assessing motor vehicle crash culpability relative to alcohol and other drug use by injured drivers are being drafted by NSC staff for submission to the funding agency. The two-year project, which is funded by the Robert Wood Johnson Foundation's Substance Abuse Policy Research Program and ends in early FY 2005, addresses the association of driver culpability with blood alcohol concentration and positive toxicology test results for cocaine, marijuana, and opiates over a five-year period.

Data analysis is currently underway for 497 subjects enrolled in a clinical trial of brief intervention for trauma patients identified as being alcohol dependent. This trial, funded by the National Institute of Alcohol and Alcohol Abuse, seeks to determine if a personalized brief intervention will result in decreased drinking and consequences (including injury episodes) from alcohol abuse.

During FY 2004, NSC researchers published revisions to the annual "Crash and Injury Fact Book," which has been developed with support from the Maryland Department of Transportation. As part of this project, the incidence and severity of motor vehicle-related injuries are being documented statewide. Individual fact books pertaining to each county were also produced in an effort to disseminate regional traffic information. These data are available on the NSC web site (<http://nsc.umaryland.edu>).

In September the NSC published the first edition of a bi-monthly newsletter entitled *Injury Watch*. The two-page fact sheet was created to provide legislators and researchers with news briefs related to injury prevention as well as short descriptions of ongoing NSC projects.

The results of study of airbag data, entitled

"Driver Deaths in Frontal Crashes: Comparisons of Older and Newer Airbag Designs," was invited for presentation at the Blue Ribbon Panel for Evaluation of Depowered and Advanced Airbags held in Washington, D.C. Using data obtained from a project previously funded by the Robert Wood Johnson Foundation, NSC researchers traveled to the World Injury Conference in Vienna to present findings of a study describing risk factors for suicide among a cohort of former trauma patients.

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 led the collaborative effort funded by the U.S. Army Telemedicine and Advanced

Technology Research Center (TATRC) between the University of Maryland campus, Baltimore City, State, and military groups to develop a model for Local Area Defense (LAD). A tabletop exercise was conducted in February 2004 and the LAD Demonstration followed in March 2004. During the LAD Demonstration, inter-operability of communication technologies and psychological and trauma "casualty" triage were tested. A mobile wireless telecommunication platform developed by UM and Northrop Grumman researchers was used to transmit video imaging to NATO headquarters and the University of Regensburg, Germany. A team of disaster management experts evaluated the images and the LAD Demonstration remotely using these ISDN transmitted images in real-time.

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 O<sub>2</sub> carrier ("blood substitute") in comparison to red cells for major orthopedic surgery (Biopure funded).

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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