



Maryland Institute for Emergency Medical Services Systems



**2011 -2012
ANNUAL REPORT**



MIEMSS

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

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



2011–2012 ANNUAL REPORT

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Mission/Vision/Key Goals

MISSION

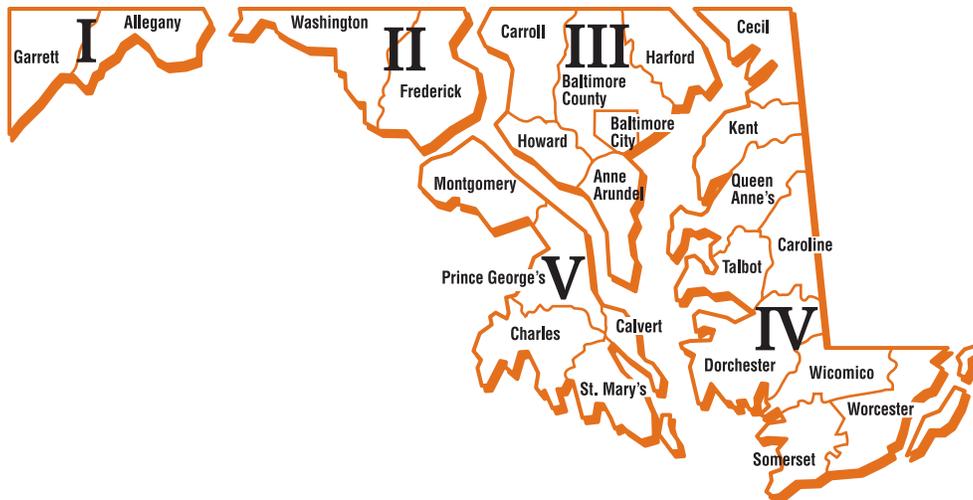
Consistent with Maryland law and guided by the EMS Plan, to provide the resources (communications, infrastructure, grants, and training), leadership (vision, expertise, and coordination), and oversight (medical, regulatory, and administrative) necessary for Maryland's statewide emergency medical services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

VISION

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

KEY GOALS

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





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

FROM THE EMS BOARD CHAIRMAN

*A*s we approach nearly 20 years since passage of the landmark legislation that created our statewide EMS system, I am proud of how much we have accomplished together. From triage, to prehospital care, to transportation, to communications, to emergency department/specialty center care: Maryland's EMS system is one of the most comprehensive, integrated, and respected systems in the country.

I am pleased to report that this past year's achievements have further enhanced Maryland EMS and helped preserve our status as a national leader in EMS care.

Our prehospital electronic patient care information system—"eMEDS"—has achieved near-statewide implementation, a significant advance that has the potential to improve patient care, increase quality assurance effectiveness, and encourage outcomes research. The widespread adoption and use of eMEDS was made possible by the close

and coordinated partnership that exists among State, county, and local governments, agencies and entities, and EMS providers. It is a potent example of the cooperative excellence on which our statewide EMS system is built.

Other technologies were showcased during the emergency responses to Hurricanes Irene and Lee and the Grand Prix Race in Baltimore. These events required real-time tracking of treatment, triage, and transport provided to emergency patients and those who had to be evacuated from nursing homes and hospitals. Using bar code scanners, patients were tracked as each moved through the EMS system by the use of a patient tracking application that recorded patient information, including vital signs and treatment provided, and combined it with GPS mapping information. In this manner, patients were tracked from the scene to their ultimate destination. Other applications in use provided EMS personnel with real-time access to hospital bed availability, helping to minimize overcrowding of hospital resources.

While some aspects of our statewide EMS system are highly advanced, other components need to be updated to current technology standards. Most notable is the MIEMSS communications center which coordinates communications among ambulances, medevac helicopters, dispatch centers, hospital emergency departments, specialty referral centers, and trauma centers. A recent study concluded that the center's equipment is prone to breakdown due to its advanced age, some of which is based on 1986 technology. To remedy this problem, the equipment needs to be replaced with Internet Protocol (IP)-based technology that will lower the risk of system interruption/failure, reduce operational and maintenance costs, provide the ability to remotely manage equipment and interconnections, and interface with the State's 700 MHz radio system.

Addressing this and other critical needs requires sufficient financial support be secured. For the past 20 years, Maryland's EMS System has relied on the Maryland EMS Operations Fund (MEMSOF) that is funded by an annual \$11.00 surcharge on vehicle registrations. The MEMSOF provides support for critical components of our statewide emergency medical services system:

- MIEMSS
- MSP Aviation Command's Medevac Program
- R Adams Cowley Shock Trauma Center
- Maryland Fire & Rescue Institute
- Amoss Grants that provide monies to local jurisdictions for the purchase of fire and rescue equipment and capital building improvements

Because the surcharge that funds the MEMSOF is not sensitive to inflation, however, projections indicate that that the MEMSOF will become insolvent in 2014. Thus, a major priority for the coming year will be to ensure that MEMSOF remains solvent and able to provide the financial support needed by our EMS system and to address the serious and significant needs of our statewide EMS communications system.

With your support, we can ensure that EMS will continue to improve and meet the needs of Marylanders throughout the state. On behalf of the EMS Board, I thank you for all you do to care for our citizens in need and pledge to continue to strengthen Maryland's exceptional EMS system. Together, we can continue to save lives.



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

MIEMSS

FROM THE EXECUTIVE DIRECTOR

*T*he Maryland EMS system continues to be not only one of the best in the country, but also a national and international model. We are grateful for the dedication, hard work, and support of our partners: EMS providers; public safety jurisdictions; public and commercial ambulance companies; hospitals, trauma, and specialty centers; physicians, nurses, and allied health care personnel; and local, county, and state officials. A brief overview of some of our achievements this past year illustrates the range of successes of these partnerships.

The MIEMSS Task Force on Ambulance Safety released recommendations for improving ambulance safety in Maryland. Altogether, Maryland's public safety jurisdictions and licensed commercial services have nearly 1,000 ground ambulances available for response throughout the state that are equipped to carry and treat patients per Maryland protocols. Ambulance crashes are a significant risk for EMS personnel and for the patients they transport, and while many of these crashes are minor, some are not. Key factors that lead to such crashes include insufficient driver training, driver error, failure to use restraints, and excessive use of "lights and sirens." Task Force recommendations to create a culture of ambulance safety in Maryland included the following:

- screen ambulance drivers,
- ensure effective initial ambulance driver training and periodic refresher training,
- increase use of restraints and safety improvements during ambulance operations,
- reduce the incidence of excessive ambulance speeds ("lights and sirens"), and
- improve monitoring of ambulance safety issues and enforcement of safety practices.

The Task Force plans to continue its work over the next several years to assist jurisdictions and providers with implementation of its recommendations.

Also during this past year, MIEMSS promulgated standards for designation of Comprehensive Stroke Centers. These Comprehensive Stroke Centers will advance and complete our statewide system of stroke care which started several years ago with the designation of Primary Stroke Centers. The Comprehensive Stroke Centers will support our Primary Stroke Centers by providing the full spectrum of care needed to treat the most complex stroke cases. These include components that are likely to maximize patient outcome from a serious stroke, including health care providers with specific expertise in neurosurgery and neurology, advanced neuroimaging capabilities, intensive care unit resources, and certain program elements, such as a stroke registry. MIEMSS plans to begin designation of Comprehensive Stroke Centers in 2013.

Additionally, during the past year, Maryland completed its preparations for the new national EMS education and scope of practice standards which became effective on July 1, 2012. The new education standards define the competencies for each level of EMS certification/licensure, and the new scope of practice standards integrate the skills and knowledge taught as part of the new education standards into each certification level. During the year, MIEMSS adopted the new national standards, as well as the national terminology for its EMS providers, and worked with education partners to modify curriculum and testing requirements. The transition to the new standards will continue in Maryland for the next several years as Advanced Life Support educational programs transition to a national accreditation system. MIEMSS will continue efforts to ensure that the implementation of these changes is responsive to the needs of Maryland's EMS System.

This past year also saw the completion of the expansion of the Emergency Medical Resource Center to the Eastern Shore—a significant milestone for that region that will improve communications and coordination between EMS and emergency departments and statewide trauma and specialty centers. Other communications needs remain to be addressed, however. The aging equipment at the MIEMSS Communications Center in Baltimore is past its engineered life, and we are increasingly at risk for a catastrophic and potentially unrecoverable communications failure. Upgrading this technology is a vital need that we hope to address in the next several years.

Sadly, during the year, MIEMSS lost a friend and colleague with the passing of Richard Meighen in February. Rick started his EMS career in the mid-1970s, joined MIEMSS in 1994, and, most recently, served as the MIEMSS Region IV Administrator. Rick was known to those who worked with him as kind, competent, and dedicated. We are grateful to have had the opportunity to know and work with him.

Moving forward, a priority for the upcoming year will be to address the looming insolvency of the Maryland Emergency Medical System Operations Fund (MEMSOF). The MEMSOF, which is funded from a surcharge on the vehicle registration fee, supports the Amoss Fund grants to local jurisdictions, MFRI, the MSP Aviation Command, Shock Trauma, and MIEMSS. The MEMSOF is projected to become insolvent as soon as 2014. Remedying the projected shortfall is vital to the ongoing operation of the statewide EMS system, as well as to addressing specific system needs, such as those of our communications center.

In closing, I want to express my sincere gratitude to all of our partners for their support in making Maryland's EMS the best in the country. It is only through this collaboration that we have been able to build on our strong foundation and continue improving our world-class system. While we have challenges to face, I am confident that together, we will move forward to ensure that our statewide system continues to be the model that it has been for so many years.

MIEMSS

ADMINISTRATION

Mission: To provide comprehensive accounting, personnel, and administrative resources in compliance with all applicable State laws, regulations, and policies in support of MIEMSS operations and overall mission.

The Administration Office is responsible for the accounting, procurement, grant administration, and human resources functions of MIEMSS.

The Accounting unit is responsible for providing guidance to management on various fiscal and budgetary matters. The staff develops the budget, tracks and monitors expenditures, processes accounts payables and receivables, maintains employee leave records, processes payroll, and deposits cash receipts. The staff administers special, federal grant, and reimbursable fund appropriations.

The Procurement unit is responsible for obtaining all necessary supplies, materials, and services required by MIEMSS to fulfill its mission in accordance with all applicable State procurement laws and regulations. The unit is also responsible for contract and grant administration.

The Personnel unit coordinates all areas of human resources for MIEMSS. This includes setting policy and procedural guidelines to ensure compliance with State personnel law and regulations. The staff is responsible for recruitment and hiring, salary determination, position classification and promotion, benefits and retirement coordination, employee assistance, ADA compli-

ance, and the employee evaluation process.

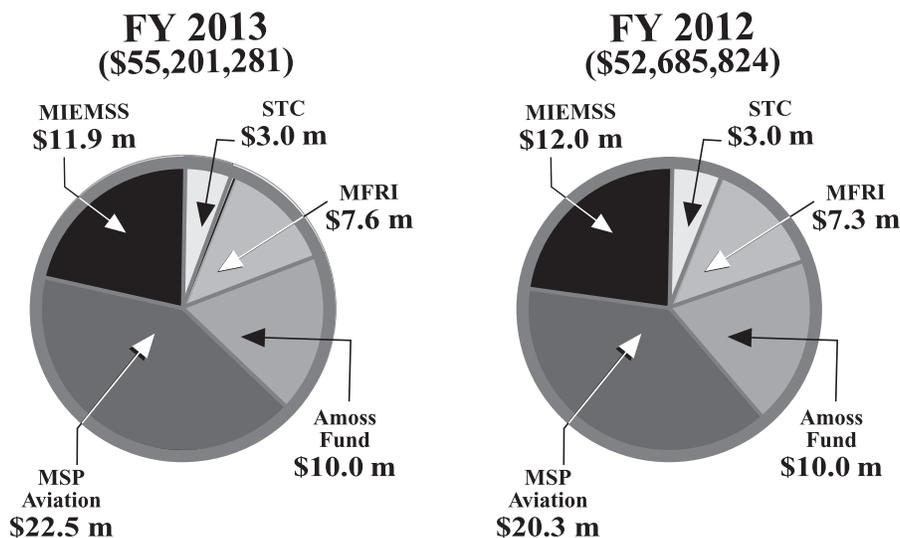
The Administration Office is also responsible for inventory control, fleet management, travel services, and building operations and maintenance.

MIEMSS budget information is displayed by state object code and department in the charts below.

MIEMSS FY 2012 Expenditure by Object Code (Includes All Funds)

FY 2012	Actual
Number of Positions	94.1
Salaries and Wages	\$7,904,209
Technical/Special Fees	553,726
Communication	849,755
Travel	169,604
Fuel and Utilities	106,265
Motor Vehicle Operation and Maintenance	246,868
Contractual Services	1,981,928
Supplies and Materials	132,519
Equipment—Replacement	71,706
Equipment—Additional	14,870
Fixed Charges	100,387
Grants	1,534,286
Total Expenditure	\$13,666,123

EMS Operations Fund



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

AEROMEDICAL OPERATIONS

Mission: To provide the physician medical support necessary for the Maryland State Police Aviation Command to meet the emergency helicopter needs of Maryland's citizens. The State Aeromedical Director is actively involved in the ongoing training and verification of skill proficiency for the State Police flight paramedics. He provides around-the-clock consultation support to SYSCOM for medevac requests and medical direction and is actively involved in the development of new patient care protocols and the oversight of ongoing care.

In FY 2012 there were 2,450 patients transported by the Maryland State Police (MSP) Aviation Command. Of these patients, 2,414 (98%) were transported from the scene of injury at the request of the local fire services and 36 (2%) were transported between hospitals to a higher level of care.

Types of calls included the following:

• Motor vehicle crashes	1057
• Falls	574
• Pedestrians	139
• Assaults	54
• Gunshot wounds	48
• Burns	46
• Stabbings	41
• Industrial accidents	35

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

Scenario-based simulation training was utilized for MSP flight paramedics in verification of advanced skill proficiency. These exercises, also used for recertification in International Trauma Life Support (ITLS), allowed life-like simulation of patient care situations as would be faced by flight paramedics in the course of their normal duties.



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 (EMS), 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 office also assisted in the administration of several state and federal grant programs.

Forty cases of alleged prohibited acts by emergency medical services (EMS) providers and applicants were reviewed and prosecuted by the Attorney General's Office and its staff provided legal advice and support to the State Office of Commercial Ambulance Licensing and Regulation in all compliance matters, including contested cases. In addition, responses were prepared to 35 public information act requests and eight subpoenas.

The Attorney General's Office participated in a variety of committees, task forces, and work groups, including the task force on the clinical aspects of telemedicine, a work group on allocation of scarce resources, and a study group reporting to the General Assembly on the legality, feasibility, and ramifications of transitioning the Maryland State Police Aviation Command Medevac Program to insurance-only billing of Maryland residents and full billing of nonresidents for Medevac services. The Attorney General's Office worked with MIEMSS to review and revise various regulations and also provided support to MIEMSS during the legislative session.

With the support of the Attorney General's Office, including developing and participating in train-the-trainer programs, MIEMSS participated in the development of the Maryland Orders for Life Sustaining Treatment (MOLST) form. (See page 7 for more information on this program.)

The Attorney General's Office participated in drafting several information technology procurements, including a program to replace the current Maryland Prehospital Provider Registry and modifications to

the eMEDS data collection program. In addition, the office participated in drafting information technology agreements for an enhanced dashboard health care data reporting system.

Office staff made educational presentations at several venues, including EMS Care 2012, the Medical Directors' Symposium, Advanced Disaster Life Support training, Quality Assurance Officer's Training, Pyramid, and MOLST educational forums.

COMMUNICATIONS ENGINEERING SERVICES

Mission: To provide the equipment, support, and expertise necessary to operate the statewide emergency medical services (EMS) communications systems and to support public safety interoperability.

Fiscal year 2012 continued to be challenging because of the retirements of three long-term employees in April 2010. Their departures created a severe manpower shortage that was felt throughout the entire fiscal year. Numerous and continuous recruitment efforts finally paid off when two of the vacancies were filled in July 2012 with qualified and experienced technicians, bringing our maintenance staff level up to four. At this time, the department is still seeking a qualified individual to fill the remaining Network Specialist position. Despite the manpower shortages, the department was successful in completing many important projects.

As a result of a communications consultant's report completed in FY 2011, MIEMSS was able to secure special funding to address a key vulnerability to the communications system. This vulnerability consisted of a single 1800 pair cable connecting our communications consoles, phones, and patching systems to the microwave and phone hub at the Bressler Research Building, located two blocks from MIEMSS' office building on Pratt Street in Baltimore. This past year, this critical tie cable has been under constant peril because of the new Shock Trauma Tower construction as well as the planned subway under Lombard Street. The loss of this cable would result in the majority of communications services provided by MIEMSS to cease. In order to negate this vulnerability, the department has created a fault-tolerant SONET ring utilizing existing fiber and a new 11 GHz microwave hop between the MIEMSS and Bressler buildings. This SONET ring allows for the immediate and seamless re-route of all of our critical traffic. The department has begun transferring some of the more than 700 circuits to this new infrastructure and looks forward to having all the circuits protected within the first quarter of FY 2013.

The department has continued to address many other vulnerabilities within the MIEMSS building that were identified in the initial internal review and the consultant's report. These include the replacement of the original uninterruptable power supply (UPS) that was installed during the building's construction and which had been housed in an inferior location. A new Server/Radio Room was constructed with a new UPS sized to supply the room as well as other critical sections of the building. The new UPS is now located in an environmentally controlled location that is contaminant free and maintains a consistent temperature range. Other ongoing improvements to the Server/Radio Room are the addition of multiple package air conditioner units that will be operational in FY 2013 and additional internal fiber and cabling that connects to other critical sections of the building. Many of these improvements were designed, implemented, and installed by our Communications Engineer, Robert Chamberlin; other improvements were conducted under his supervision. Such improvements included the addition of automatic switching gear that allows our trailored generator to automatically backup our main generator upon failure.

Communications Engineering Services continues to lead in the design, implementation, and maintenance of the Statewide Public Safety Microwave System. During the past fiscal year, the department engineered and deployed several new microwave systems in the state such as the link from Martin's Mountain to Townhill. The department has continued its partnership role with other state agencies by designing and implementing communication circuits in support of MIEMSS, the Maryland State Police (MSP), and the Department of Natural Resources' (DNRs') new narrowband high-band radio system. MIEMSS continues to play a leadership role in the day-to-day maintenance of the Public Safety Microwave System. The department upgraded the Dyson to District Heights microwave link in support of the statewide 700 MHz Radio Project's Region 1A deployment.

MIEMSS continues to be an active partner in the State's 700 MHz radio system initiative: Communications Engineering Services participates in the Statewide Interoperability Executive Committee (SIEC) Technical Committee by overseeing the design objectives and contractors in the build-out of Region 1A of the 700 MHz radio system, which will be completed by December 2012. Even as the final testing phases of Region 1A continue, the department has been active in developing the design objectives for Phase II of the 700 MHz radio system, which will cover the rest of the Eastern Shore. MIEMSS personnel were key players in

the site surveys on the Eastern Shore necessary to allow the design phase of Phase II to proceed. Because the MIEMSS-operated communications centers (SYSCOM, Region III Emergency Medical Resource Center (EMRC), Region V EMRC, and Region IV EMRC) have been identified as part of Phase II of the project, the department has been active in the specific technical design needed to interface these EMS Communications Systems into the 700 system. This will allow MIEMSS to directly interoperate with the 700 system in support of MSP helicopters and allow all field providers the ability to obtain medical direction while using a 700 radio.

During FY 2012, Communications Engineering Services continued efforts to replace non-narrowband-capable mobiles and portables assigned to field providers through a 100% reimbursable Radio Grant program. This grant program allowed the EMS community to be prepared for the Federal Communications Commission's (FCC's) January 1, 2013, deadline to operate in a narrowband mode. In concert with the unfunded narrowband mandate, the department expanded the Region IV EMRC to include Wicomico, Worcester, and Somerset counties and transitioned all of Region IV EMRC to narrowband operations on April 4, 2012. The department continues the effort to meet the FCC deadline and has scheduled Garrett, Allegany, and Washington counties for conversion on August 16, 2012.

Communications Engineering Services continues to lead in the deployment, administration, and maintenance of the Public Safety Interoperability network (PSInet). PSInet is a statewide private IP-based public safety network composed of fiber, microwave, and wireless links supporting critical data and voice communications managed by MIEMSS. Funding sources have included Public Safety Interoperable Communications (PSIC) grants, Urban Area Security Initiative (UASI) grants, MIEMSS operating funds, Maryland First project, the Maryland Department of Health and Mental Hygiene, and local interoperability project funds. It is a network deployed to MSP Barracks, MIEMSS regional operating centers, jurisdictional emergency operations centers (EOCs) and primary/backup public safety answering points (PSAP/911), state and jurisdictional health departments, hospitals, and other allied agencies. Applications that currently are operating on PSInet include: Digital Emergency Medical Services Telephone (DEMSTel), Central Maryland Area Radio Communications (CMARC), Maryland Eastern Shore Interoperability Network (MESIN), Washington-Allegany-Garrett Interoperable Network (WAGIN), Coordinated Highways Action Response Team (CHART), Maryland Incident Management Interoperability Communications System (MIMICS), Maryland Law Enforcement

Information Network (MLEIN), Maryland First, and systems monitoring/controlling the state's public safety microwave network and tower infrastructure.

The end of FY 2012 also saw the end of the PSIC grant that funded the deployment of IP-enabled devices and connectivity to key public safety locations throughout the state. Communications Engineering Services was able to deploy wireless links, routers, switches, and IP phones throughout the state with the goal of establishing PSInet connectivity and deploying DEMSTel to every hospital, county PSAP, and county EOC. To date, the department has deployed DEMSTel and PSInet to 76 hospital locations, 17 law enforcement locations, 53 health locations, 58 emergency management locations, and two transportation locations. During the reporting period, the department partnered with Prince George's County to deploy PSInet across the county-owned microwave system allowing connectivity to all of the remaining Prince George's hospitals. The department continues to seek funding sources to complete connectivity to all the identified public safety assets in Maryland.

There were many other notable system enhancements and projects that were completed in FY 2012:

- The department successfully integrated Region V EMRC into talkgroups on Prince George's County's new 700 MHz radio system.
- MIEMSS worked with Baltimore County on their transition to their new PSAP and radio system.
- MIEMSS worked closely with DNR on updating their new highband radio system in Southern Maryland and on backhaul circuits in support of that effort.
- Department personnel were key players overseeing the Factory Acceptance Test Plan (FATP) for the new NEC backhaul equipment installed in the 700 Projects Region 1A deployments.
- Washington County's new UHF trunked radio system talkgroups were successfully integrated into the Western EMRC allowing seamless patching from the Washington County's radio system to hospitals.
- Department personnel were instrumental in the relocation of equipment at Essex Community College allowing Baltimore County to create a new public safety transmitter room in support of their radio system, MIEMSS, and the US Army National Guard.
- The equipment at the old Westenport tower was relocated to the town's water tank allowing a new tower to be constructed utilizing PSIC grant funds. The equipment will soon be relocated to the new tower to support the community.

- Funding was identified that allowed the department to purchase 16 700/800/UHF radios for MIEMSS field personnel enabling operation on many county radio systems, MIEMSS radios systems, and the State 700 radio system.
- MIEMSS purchased equipment and supported the expansion of WAGIN, providing a greater footprint of interoperable communications in these counties.
- MIEMSS made system enhancements in support of the CMARC radio system to create greater network reliability.
- Department personnel assisted the DNR with the deployment of TAC Stack radios and radar as part of MLEIN to monitor the Chesapeake Bay and tributaries, enhancing maritime security.

Fiscal year 2012 presented many challenges to the Communications Department including severe thunderstorms that challenged not only the power grid but our communications infrastructure and our ability to respond to simultaneous outages spread across the state. Our ability to keep the systems operational and restore service quickly is due in no small part to our dedicated staff of maintenance technicians, managers, and support staff. We look ahead to the future as we continue migrating our systems to new technologies that allow them to be more survivable and enhance the services we provide to the EMS community.

COMPLIANCE OFFICE

Mission: To ensure the health, safety, and welfare of the public as it relates to the delivery of emergency medical services (EMS) by 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 EMS Board, the Office of the Attorney General, the Incident Review Committee (IRC), and the Provider Review Panel (PRP). The PRP is a 13-member panel comprised of physicians representing the Maryland Board of Physicians, Maryland Medical Chirurgical Society, and EMS Operational Program Medical Directors; all levels of EMS providers are also represented. 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. The State EMS Medical Director and MIEMSS' Executive Director serve as ex-officio members on the PRP.

Compliance Office Activity Report in FY 2012

• Criminal Background Investigations Completed	6318
• Incidents Reported to IRC	595
• IRC Investigations Initiated	377
• IRC Investigations Conducted	350
• IRC Investigations (FY 2012) Continued	27
• IRC Complaints Forwarded to PRP	40
• Complaints Dismissed by PRP	0
• Complaints Forwarded to EMS Board	40
• Complaints Requiring Service	5

EMS Board Action

• Reprimands	6
• Probation	14
• Suspensions	4
• Revocations	13
• Remedial training	0
• Surrenders	4
• Evaluations	0
• Applications Denied	2
• Case Resolution Conferences	17
• Dismissed	0
• Counseling	0
• Rehab	2
• Random Testing	11
OAH Hearings Requested	15
OAH Hearings Conducted	2
OAH Hearings Defaulted	1

DO NOT RESUSCITATE PROGRAM

The focus of the Do Not Resuscitate Program this year has been the transition to Maryland Orders for Life Sustaining Treatment (MOLST) which incorporates, and will replace, the current EMS/DNR form.

The current EMS/DNR form is maintained on the MIEMSS website (www.miemss.org) where it may be downloaded by the public for use. MIEMSS provides copies to individuals without access to the internet. MIEMSS also provides plastic bracelets for use with an EMS/DNR Order insert to the public free of charge. During the transition, MIEMSS has also provided copies of the new MOLST form and plastic bracelets for use with the form. Additionally, the EMS/DNR program routinely responds to phone calls from the public for assistance in obtaining and using both the EMS/DNR form and the MOLST form.

As part of the work group which developed the MOLST form, MIEMSS staff have participated in 19 day-long train-the-trainer education programs for MOLST and spoken about MOLST at various other educational forums.

EDUCATIONAL SUPPORT 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 Educational Support Services Office provides education and information to Maryland's emergency medical services (EMS) community and the general public through training modules and informative programs. This office develops, designs, and produces programs that are distributed statewide.

Educational Support Services is responsible for the design, photography, and editorial content of the MIEMSS Annual Report, MIEMSS website, and the "Maryland EMS News" newsletter, which is currently sent out in an electronic format and can be downloaded from the MIEMSS website. It is emailed to hospital, prehospital, and emergency services personnel and printed copies are sent to each fire station in the state. The newsletter keeps emergency medical services personnel in touch with local, state, and national EMS issues. Recent topics included updates on Maryland events such as the annual EMS Stars of Life Awards and updated protocol and medical issues. MIEMSS continues to contribute information to the "Maryland Fire Dispatch," which is an additional outlet for the dissemination of information to Maryland's emergency services community.

In FY 2012, Educational Support Services completed the 2012 update to the *Maryland Medical Protocols for EMS Providers*, including editing, layout, and design. This document can be found on the MIEMSS website. The 2012 pocket version of the *Maryland Medical Protocols for EMS Providers* was also edited, designed, and printed; copies of the Pocket Protocols were distributed to EMS providers statewide.

This year, the annual Stars of Life Awards Ceremony was held in the Miller Senate Office Building, Annapolis, during EMS Week in May. Both the EMS for Children Right Care When It Counts Awards and the Stars of Life Awards were presented, as were Governor's proclamations in recognition of EMS for Children Day and EMS Week. Press releases were distributed statewide and media coverage was obtained on the award winners.

Media events and press releases were produced during the year on many EMS-related issues. Press releases regarding a high-risk danger to infants and young children, such as hyperthermia resulting from being left alone in a vehicle, helped get the word out to the public and reduce preventable incidents. The Central Maryland Emergency Response Partners announced the first Regional Hospital Mutual Aid Agreement between hospitals and emergency responders in media alerts involving several State and private entities. Educational Support Services' involvement in the Baltimore Area Public Safety Media Council continues to promote good working relationships between the press and public safety public information officers. A major EMS news event this year was the National EMS Memorial Bike Ride, which traveled through Maryland during EMS Week. Through the assistance of multiple agencies, EMS riders from around the country gathered at the Taneytown Volunteer Fire Department in Carroll County, as they traveled through the state, for recognition of EMS providers that gave the ultimate sacrifice.

Many tours of MIEMSS were conducted for local, national, and international visitors. Tour participants viewed the Maryland EMS System overview video, visited SYSCOM and the Region III Emergency Medical Resource Center (EMRC), and listened to overviews of the statewide system presented by various MIEMSS personnel. Visitors from China, England, India, Germany, Korea, and Ireland were among the international audience that came to learn about Maryland's EMS System.

Educational Support Services assists with conference planning, as well as technical and audiovisual support to MIEMSS-sponsored continuing education programs. These regional and statewide conferences allow providers to update their certification and licensure by attending courses. Design and production of printed materials, photographs, computer-assisted programs, and video productions assist with the learning process. Assistance and support with in-house web conferencing, video conferencing, and teleconferencing were done in conjunction with MIEMSS departments and the EMS for Children program.

MIEMSS exhibits are utilized to disseminate information about the EMS system and prevention topics. Exhibits were used at the Maryland State Firemen's Association (MSFA) Convention, many EMS conferences, open houses, and the annual Maryland Association of County Governments Convention.

An updated version of the EMS video “Meet the Protocols” was produced to explain the changes and additions to the 2012 *Maryland Medical Protocols for EMS Providers*. Again this year, an interactive dialogue format with Medical Directors and an EMS provider host was used. The production was placed on the MIEMSS learning management system, which allows EMS providers to acquire continuing education through the MIEMSS website. CD versions were also produced for company drill distribution. Educational Support Services produced video clips and graphics to augment these training methods.

Several other training modules were produced by Educational Support Services during the past year. Working with the Maryland Fire and Rescue Institute (MFRI), topics such as *Legal Issues*, *Violence in the Field*, and *Dealing with Patients with Disabilities* were videotaped. An update on the new National Educational Standards was produced. These modules were replicated on CDs and DVDs for distribution and included printed materials. Educational Support Services provided satellite down-linking and taping of many informational programs on topics such as infection control and bioterrorism.

Video projects completed this year included the documentation of various multi-casualty disaster drills throughout the state. Assistance was given to the Maryland State Police Aviation Command’s updated Off-load Procedures for Helicopters video. The Baltimore Chapter of Safe Kids’ Crosswalk Safety video was produced for Baltimore City by our staff. Other productions included the Mid-Atlantic Life Safety Conference welcome video and the annual MSFA Convention’s Memorial Service program, video eulogies, and slide show.

Statewide prevention initiatives were developed through partnerships with other state and local government agencies. Participation with the Impaired Driving Task Force, Occupant Protection Task Force, the Motorcycle Safety Task Force, the Pedestrian Safety Task Force, the Impaired Drivers Coalition, the American Red Cross Hometown Heroes Program, the Maryland Partnership for a Safer Maryland, the American Trauma Society, the Maryland Committee on Trauma, and the Center for Injury Prevention and Policy at the R Adams Cowley Shock Trauma Center allowed Educational Support Services to work collaboratively on multiple projects. Membership on the State Highway’s Diversity in Traffic Safety Program raised the awareness for diversity in public education efforts. As a result, traffic safety projects are completed with representation of Maryland’s growing diverse population.

EMERGENCY HEALTH SERVICES DEPARTMENT

UNIVERSITY OF MARYLAND AT 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 Emergency Health Services Department recognizes as constituents the University of Maryland, Baltimore County, MIEMSS, and the Maryland, national, and international EMS communities.

The paramedic program continues to thrive, including a large cohort of international students who come to Maryland, and the University of Maryland, Baltimore County, in particular, seeking excellence in emergency medical services (EMS) education. The program has received reaccreditation by the Commission on Accreditation of Allied Health Education Programs. It is currently transitioning to a revised curriculum and exploring ways to enhance active learning as we meet the new national educational guidelines, expanding the depth and breadth of knowledge for the entry level paramedic. The department continues to explore new and innovative uses of two laboratory classrooms for adult and pediatric simulations. The purchase of new computer interactive simulation manikins has allowed instructors to challenge students, while providing them with a realistic “patient” that will respond to their assessment and treatments. Ms. Denna Wiseman, BS, RN, NREMT-P, has replaced Gary Williams as clinical coordinator.

The Emergency Health Services (EHS) management program also continues to grow with more students interested in local and federal employment opportunities entering the field. Ms. Diane Flint, MS, NREMT-P, has joined the department as a clinical assistant professor and management program director. Student interns continue to be placed in excellent internship sites such as MIEMSS, Maryland Emergency Management Agency, American Red Cross, and other regional locations.

The EHS Graduate Program continues to provide master’s degree education in the areas of EMS system design, development and management, public health issues in EHS, education of EMS providers, and emergency management. The makeup of students is gradually changing from domestic students coming directly out of undergraduate studies toward older mid-career students, many of whom already have physician or other graduate-level degrees. There has also been an increase in



international students in the program. Such students are moving into impressive positions throughout the United States and abroad.

The department's Critical Care Emergency Medical Transport Program (CCEMTP) continues to expand, now having served over 12,000 students through approximately 800 courses offered nationwide and internationally. The program has grown to 52 educational sites across the country and continues to grow with additional sites being negotiated monthly. The program rolled out on January 1, 2011, with an entirely revamped curriculum complete with pretest, quizzes, module reviews, and all new lecturer and student resources. The new program has been met with great reviews and is currently seeking Commission on Accreditation of Medical Transport Systems endorsement.

The Pediatric and Neonatal Critical Care Transport (PNCCT) program continues to expand nationwide and recently received organizational endorsement by the International Association of Flight Paramedics (IAFP). This recognition brings with it the first official IAFP recognition of a course of this kind. The PNCCT has now served more than 840 students; it is offered at 11 sites across the country and will soon be offered in Arizona and Ohio.

The Professional and Continuing Education (PACE) program strives to promote critical-care-related education while continuing to meet the needs of the 9-1-1 provider and other affiliated healthcare professions. The program has continued to strengthen its relationship with the University of Maryland, Department of Emergency Medicine by partnering with the residents to review course materials and serve as guest lecturers.

Additionally, the PACE program continues to expand its paramedic training with refreshers, 12-lead and capnography workshops, as well as the traditional certification level courses. The program continues to draw participants from places as far as Trinidad and Canada and is becoming nationally renowned with support from the IAFP and national trade publications. There is much expectation that the course will soon be offered in Saudi Arabia.

EMERGENCY MEDICAL SERVICES FOR CHILDREN

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

The Emergency Medical Services for Children (EMSC) Program is responsible for the development of statewide guidelines, regulations, and resources for pediatric care; quality review of pediatric emergency care and implementing pediatric facility regulations and designation; coordination of pediatric education programs; and collaboration with other agencies and organizations focused on childhood health and illness and injury prevention. The EMSC Program coordinates the state Pediatric Emergency Medical Advisory Committee (PEMAC) and its subcommittees, the state Pediatric Quality Improvement Committee (QIC) and Pediatric Base Station programs, and the pediatric activities within the five Regional EMS Advisory Councils. Grants related to children and families in emergency medical services (EMS) are coordinated through the EMSC Program including: federal EMSC Partnership grant, continuously funded since 1994; EMSC-related research activities in Maryland; and the Child Passenger Safety and Occupant Protection Healthcare grant project, continuously funded since 2001. EMSC is also the lead agency for the Safe Kids Maryland state coalition, with eight local coalitions and four local chapters, and for the Maryland RISK WATCH® community with 14 local communities in partnership with the Maryland State Firemen's Association.

EMSC Program Activities

The State PEMAC Committee meets on a bimonthly basis using web-based meeting technology for those unable to attend in person. The PEMAC website has been expanded to include meeting handouts, state and federal resources for EMSC, and relevant publications for Committee members. PEMAC has standing subcommittees: Pediatric Protocol Development, Education and Pediatric Education for Prehospital Professionals

(PEPP) Steering, Prevention and Life Safety, Research and Data, and Family-Centered Care. Maryland's EMSC program has created a Family Advisory Network (FAN) Council that for three years has reviewed the "Right Care When It Counts" award nominations. Working task forces meet on a regular basis as documents and procedures are updated for the Volunteer Ambulance Inspection Program (VAIP), Interfacility Transport and Transfer, and Pediatric Emergency Department Facility Recognition (www.miemss.org/home/PEMAC/tabid/167/Default.aspx). Bimonthly forums are held in conjunction with PEMAC meetings with specific focuses: January is Transport, March is Education, May is Family-Centered Care, July is Protocol, September is Injury Control and Prevention, and November is Pediatric Research. Through the Maryland Medical Protocol review process, current state-of-the-art clinical approaches to managing childhood emergencies continue to be developed and implemented. Protocol revisions were based upon a comprehensive evidence review and expert consensus process of the PEMAC.

EMS for Children Day took place on May 23, 2012. It was celebrated on May 22, 2012, by recognizing children and youth in Maryland who had demonstrated one of the "10 Steps to Take in an Emergency" or one of the "10 Ways to Be Better Prepared for an Emergency" at an annual awards ceremony. Four young Marylanders received awards for their actions that ensured another person would receive "The Right Care When It Counts." Public service announcements and a Maryland EMSC Day poster are available in English and Spanish to continue the public education message promoting injury prevention, family preparedness, and appropriate emergency actions. More information can be found at www.miemss.org/EMSCwww/RightCare.html. Also on May 22, Charles Boone, NREMT-P, received the Maryland EMS for Children Award in recognition for his decade-long commitment to the state PEMAC committee and serving as the primary liaison to the Commercial Ambulance Services Advisory Committee (CASAC). Mr. Boone has joined the EMSC team at many conferences, teaching both standardized course like PEPP and other pediatric continuing education courses that focused on the care of critically ill children.

The Pediatric QIC continues to coordinate the training for the professional teams at the Pediatric Base Stations and the Pediatric Transport Teams. Two Pediatric Base Stations, at Children's National Medical Center and Johns Hopkins Children's Center, provide statewide coverage for online and offline pediatric medical direction. Their primary focus is on prehospital communication and education and on a dual commitment to consultation for community hospitals and adult trauma center emergency departments across Maryland. Through ongoing quality improvement activities, recommenda-

tions are made that directly impact protocol development, revision, and advancement, as well as targeted pediatric education at conferences and seminars. In collaboration with the two Pediatric Burn Centers and the Adult Burn Center at Hopkins Bayview, the State has established a unique centralized burn data registry with new reports to assist local communities with their prevention activities. An outpatient registry has been launched that will capture both emergency department treat and release cases, along with initial and follow-up burn clinic visits, allowing Maryland to accurately describe the impact of burn injuries on its citizens.

EMSC Grant Activities

Federal EMSC grants are coordinated through the Maryland EMSC Program Office and involve statewide projects, specialized targeted issues, projects, and research initiatives at academic universities. MIEMSS is in the seventh year of an EMSC State Partnership Grant from the Maternal Child Health Bureau/Health Resources Services Administration of the US Department of Health and Human Services. The 2009-2013 EMSC Partnership Grant focuses on the continued integration of EMSC into the statewide EMS System utilizing both the federal Maternal Child Health core Performance Measures and the federal EMSC Performance Measures as targeted projects. The specific grant goals include:

1. Continue to implement system enhancements with EMSC initiatives that will move toward achieving targets for the federal EMSC performance measures that support the state's operational capacity to provide pediatric emergency care and the established permanence of EMSC in the state/territory EMS system within organizational structure and statutes or regulations.
2. Continue to implement system enhancements with EMSC initiatives that will move toward achieving targets for the federal EMSC performance measures focused on pediatric education for emergency service providers at each level of practice and supporting the availability of pediatric education for emergency departments and specialty centers.
3. Expand the statewide EMSC data activities and analysis to include the ongoing progress toward National EMS Information System (NEMSIS)-compliant EMS data sets and the expansion of pediatric data reporting for system evaluation and specific regional quality improvement initiatives.

During FY 2012, the Maryland EMSC team focused on specific Performance Measures where development and implementation is still needed. The program continues to work with both public safety and commercial providers for the adoption of all patient assessment and treatment equipment for Ambulance Transport Vehicles

recommended by the national EMSC Program and professional organizations. Through the EMSC Partnership Grant, MIEMSS regional grants were able to offer a unique second opportunity for funding of AEDs and pulse oximeters for those companies and counties that lacked pediatric-capable devices. Through the Regional Affairs review process \$50,000 was awarded, bringing Maryland closer to the goal of pediatric capable AEDs on every ground transport EMS unit. The grant project

leaders, Allen Walker, MD, MBA, Associate State EMS Medical Director for Pediatrics at MIEMSS, and Cynthia Wright-Johnson, RN, MSN, met with the five Regional Councils and hospitals within the regions to merge the national Guidelines for the Care of Children in Emergency Departments into draft recognition criteria that will include specific pediatric levels for each emergency department in Maryland.

Pediatric Emergency Care Education across Maryland

Month and Location	Conference Title	Pediatric Components
September 2011 Ocean City, MD	Peninsula Regional Medical Center Trauma Conference	Displays: Child Passenger Safety (CPS) and Occupant Protection (OP) Healthcare Project
October 2011 Huntingtown, MD	Pyramid 2011	Preconference: Pediatric Emergency Assessment, Recognition and Stabilization (PEARS®) Course from the American Heart Association (AHA) Workshops: Pediatric Burns and Pediatric Cases: Think Fast – Decisions are Critical Displays: Pediatric Ambulance Equipment Display and CPS and OP Healthcare Project
October 2011 Laurel, MD	Emergency Nurses Association (ENA) Barbara Proctor Conference	Display: CPS and OP Healthcare Project, EMSC Guidelines for Care of Children in Emergency Departments
November 2011 Maritime Institute of Technology and Graduate Studies, Linthicum Heights, MD	Ambulance Safety Summit	MIEMSS hosted the first Ambulance Safety Summit presentations including: Maintaining a Culture of Safety within Your Organization; Maryland Ambulance Safety Taskforce Project & Report; Best Practice Models; Mobile Driver Simulator; New Ambulance Technology for Safety; Implementation Focus Groups – strategies for success; Driver Screening and Crash Investigations; Driver Education – Initial, CE, and Technology; Lights and Sirens – Dispatch and Transport Decisions
January 2012 Tilghman Island, MD	Winterfest Conference 2012	Preconference: Sugar, Temperature, Airway, Blood pressure, Lab work, and Emotional support (S.T.A.B.L.E.) workshop Workshops: Diabetes in Children Recognition and Assessment, Triage, and Treatment Displays: Pediatric Ambulance Equipment Display, CPS and OP Healthcare Project, and Sports Safety and Concussion Awareness
February 2012 Queenstown, MD	Eastern Shore ENA Seminar	Pediatric Trauma Seminar: Pediatric Trauma Assessment, Burn Care of Children and Youth, Traumatic Brain Injury: Algorithm for CT Scan, Pediatric Falls – Intentional and Non-intentional Trauma Display: Sports Safety and Concussion Awareness
March 2012 Rocky Gap, MD	Miltenberger Emergency Services Seminar 2012	Preconference: PEARS® Workshops: Safe Concussion, Outcome, Recovery, and Education Program (SCORE); Pediatric Burn Case Reviews; Pediatric Cardiac Arrest: Maryland's Experience with AEDs/Monitors and Kids; and Sports Injuries in Children Display: Pediatric Ambulance Equipment Display, CPS and OP Healthcare Project, and Sports Safety and Concussion Awareness
May 2012 Linthicum, MD	ENA by the Bay 2012	Presentations: Things are not always what they seem – Pediatric Case Reviews and Pediatric Asthma Display: CPS and OP Healthcare Project
June 2012 Ocean City, MD	Maryland State Firemen's Convention	Child and Family Interactive Displays: RISK WATCH® and Safe Kids: Steps to Safety – Focus on Sports Safety, Make the Right Call: 9-1-1 Access, Home Fire Safety, Poison Safety, Burn Safety, Inside an Ambulance, and Senior Adult Safety

The Maryland EMSC Program continued to provide leadership in the coordination of the Atlantic EMSC Region, which includes representatives from South Carolina, North Carolina, Virginia, West Virginia, the District of Columbia, Maryland, Delaware, Pennsylvania, New Jersey, and New York. These 10 EMSC coordinators meet in May and December to share resources as all states work on the federal EMSC Performance Measures and continue to promote pediatric educational programs within state and local conferences.

The Federal EMSC research agenda continues to be implemented through the national Pediatric Emergency Care Applied Research Network (PECARN). The Network has established data linkage projects and the structure to apply for and implement pediatric EMS and emergency department research initiatives. MIEMSS has participated in the project for the “Development of Research Partnerships with EMS Agencies and Descriptive Study of EMS Pediatric Population within PECARN,” which was recently published by Leonard et al. in the *Annals of Emergency Medicine and Academic Emergency Medicine*.¹ MIEMSS continues to work with the local research network node of PECARN located at Children’s National Medical Center on prehospital research capacity building, including participating in monthly conference calls and focus groups on Asthma Scoring tool development and serving on the Community Advisory Board. Two EMSC-targeted grants are ongoing within Maryland pediatric specialty centers: (1) Children’s Research Institute of Children’s National Medical Center: Family Presence During Pediatric Trauma Team Activation (Principal Investigator: Karen O’Connell, MD); and (2) University of Maryland participation with the Medical College of Wisconsin: Educational Pediatric Pain Management Program for the EMT-P (Principal Investigator: Halim Hennes, MD, and Co-Principal Investigator: Richard Lichtenstein, MD).

Pediatric EMS and Hospital Education

During each of the EMS and Emergency Nursing educational seminars and conferences in Maryland in FY 2012, pediatric displays and/or pediatric topics were presented to highlight both protocol changes and findings from ongoing EMSC PECARN studies. Pediatric topics are listed in the annual continuing education chart (see page 12). The EMSC Program staff and medical directors from PEMAC continue to support the Maryland Enhanced PEPP courses that are offered and

are awaiting the revised PEPP curriculum and textbooks which are expected in early 2013. In the summer of 2012, the statewide PEPP Steering Committee, with an expert faculty work group, will evaluate the 2005 materials and update them to include American Heart Association (AHA) 2010 recommendations and updated *Maryland Medical Protocols for EMS Providers*. Updates and information for coordinators and faculty can be found at www.miemss.org/EMSCwww/PEPPEnhanced2.htm.

In the past year, MIEMSS has continued to partner with Pediatric Advanced Life Support (PALS) training programs to introduce the AHA’s Pediatric Emergency Assessment, Recognition, and Stabilization (PEARS®) program that reaches out to Basic Life Support (BLS) providers, school health providers, and outpatient health care professionals. Shore Health System, Children’s National Medical Center, and Johns Hopkins Children’s Center programs have partnered with EMSC to offer these courses as part of conferences and as stand-alone courses.

The EMSC program went “live” with its first online training program, “Apparent Life Threatening Event (ALTE),” in August 2011. In the program, Karen O’Connell, MD, FAAP, from Children’s National Medical Center discusses ALTE recognition, triage, and treatment along with two case studies. The Pediatric Vascular Access Workshop, which has been held across the state as both a preconference and stand-alone workshop, was held at Meritus Medical Center on March 2, 2012, with a repeat offering on March 3, 2012. Both classes were filled to capacity with a combination of EMS and nursing attendees.

To provide ongoing support to EMS agencies as Maryland works to meet the Federal EMSC Performance Measures on ambulance equipment, the EMSC Program, in a joint effort with the State Office of Commercial Ambulance Licensing and Regulation (SOCALR) and the Region III Office, developed a series of equipment reference sheets for the Voluntary Ambulance Inspection Program (VAIP) to assist EMS organizations interested in obtaining compliance. These fact sheets can be found on the Ambulance Safety program website (www.miemss.org/home/AmbulanceSafety/tabid/190/Default.aspx). Pediatric reference cards and posters that focus on pediatric assessment and recommended equipment sizes for infants through adults are posted on the website and are available by mail upon request.

¹Leonard JC, Jaffe DM, Leonard JR, et al. Factors associated with cervical spine injury in children after blunt trauma. *Annals of Emergency Medicine*. 2011;58(2):145-155.

Leonard JC, Scharff DP, Koors V, et al. A qualitative assessment of factors that influence emergency medical services partnerships in prehospital research. *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine*. 2012;19(2):161-173.

Child Passenger Safety and Occupant Protection Healthcare Project

The EMSC Program continues to provide leadership in child passenger safety (CPS) and occupant protection (OP) for the eleventh year of a grant from the Maryland Department of Transportation Highway Safety Office. Within EMSC, federal highway safety funds are used to bring expert CPS and OP training and resources to Maryland hospitals, health care providers, and the EMS and fire community.

Child passenger safety patient materials and provider resources are routinely provided to hospitals and pediatric offices. This year a new display poster on how to travel safely at each stage, birth through age 12, has been distributed to more than 80 sites across the state, along with more than 800 accompanying CPS brochures. In-hospital trainings for pediatricians, labor and delivery, NICU, or wellness staff occurred at Franklin Square Hospital, Western Maryland Medical Center, and Upper Chesapeake Health Service. The project is assisting Kernan Orthopedics and Rehabilitation Hospital in starting a CPS service for children with special transportation needs (e.g., casts/braces) so they can ride home safely in adapted conventional car seats or special seats. The CPS message was also promoted through interactive displays at regional or state conferences for the Emergency Nurses Association and the School Health Nurses Conference.

To help teach best practice in CPS, three conference calls with accompanying presentations in PowerPoint format were organized and promoted. These webinars reached more than 120 CPS technicians (CPSTs), healthcare providers, health department staff, police officers, and fire/rescue personnel. Topics included: school bus CPS safety, CPS for busy pediatricians, and strategies and challenges in getting hard-to-reach groups to buckle up. Each webinar was also archived on the MIEMSS website to be viewed at any time (www.miemss.org/EMSCwww/CPSConference.html); one large pediatric practice is using an archived webinar for multi-site training of their providers.

Educating EMS providers about traveling safely (for themselves and for the patients they treat) continues to be a focus of the CPS project. CPS and OP exhibits are offered at EMS regional and state conferences to provide one-on-one opportunities for providers to ask CPS questions and receive materials to take to their organizations. “Buckle Up – Day & Night” banners have also been distributed to all fire/EMS facilities across the state; these banners are hung outside their stations during national Click It or Ticket (CIOT) campaigns in May and November and also at other opportune times, such as after a much-publicized local

crash. The CPS and OP project continues to expand the focus on EMS vehicle safety with both interactive displays (SECURE) and a statewide campaign to “Buckle Up – Every Ride Every Time” that promotes education for providers and the public. All of these educational programs provide best practices for securing children, their families, EMS and hospital providers, and equipment within EMS transport vehicles. Public Safety vehicle crash data is being analyzed with the National Study Center research team. In partnership with the Maryland State Firemen’s Association (MSFA) EMS and Safety Committees and with funding from the Maryland Highway Safety Office, MIEMSS is distributing vinyl banners to EMS and fire and rescue stations across Maryland to provide a visual reminder to the public and to providers to “Buckle Up – Day & Night.” Posters for SECURE, Buckle Up, and CIOT continue to be available and can be ordered from the website at www.miemss.org/EMSCwww/CPSCHome.htm and the Ambulance Safety Program website (supported by the EMSC Partnership Grant).

New for this year is the planning and pilot-testing of an educational program to have nurses teach youth ages 10 to 15 how to be safe passengers in cars. Specific topics include seat belt use, airbag safety, not distracting drivers, and what to do if you suspect the driver is unsafe. This program builds on programs from Safe Kids Worldwide and engages pre-drivers and their parents in fun and meaningful activities on occupant protection.

To keep up-to-date with the latest technology and products in child passenger safety, the Project Director, Cynthia Wright-Johnson, RN, MSN, attended the national Kids in Motion conference in Florida in August 2011. Materials and information from this conference were brought back and disseminated to other CPSTs and CPS advocates across the state.

The CPS and OP Healthcare Project also includes these ongoing activities:

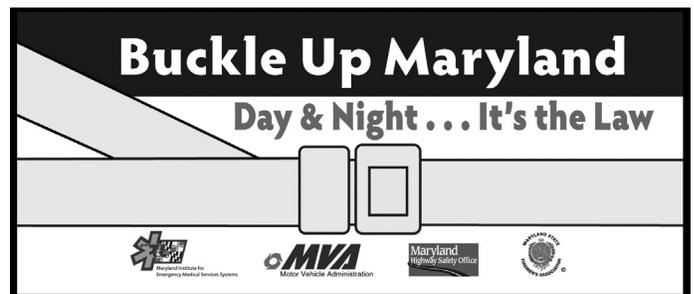
- Updating resources on the Project website: www.miemss.org/EMSCwww/CPSCHome.htm.
- Maintaining a network of hospital contacts and CPS technicians in both the maternal/child health units and the emergency departments of hospitals in Maryland.
- Participating in the state Child Passenger Safety Board to develop CPS guidelines and resources.
- Partnering with state and local agencies to provide child safety seat checks for the public and certification training to healthcare providers, EMS, fire and law enforcement professionals, and health educators.

Injury Prevention and Life Safety

The EMSC Program staff participates in national, state, and local Safe Kids coalitions, the Maryland division of the American Trauma Society (ATS), the Maryland Occupant Task Force, and the Child Passenger Safety Board coordinated by the State Highway Administration. This collaboration provides a consistent flow of information to the five regional pediatric committees and the state PEMAC on injury prevention resources and initiatives. EMSC continues to liaison with the Child Fatality Review Committee in collaboration with the Maternal Child Health Department and serves on the Board of the Partnership for a Safer Maryland led by the Department of Health and Mental Hygiene and funded by a Centers for Disease Control (CDC) grant. In September 2011, PEMAC and the Partnership jointly held a prevention forum focused on the legislative processes involved in injury control and advocacy. Faculty included the University of Maryland Law School, Children's National Medical Center, and the Maryland State Firemen's Association and Ladies Auxiliary.

The Maryland RISK WATCH® Community is led by the MIEMSS EMSC Program in collaboration with the Office of the State Fire Marshal and the MSFA Fire Prevention and Life Safety Committee, along with the Maryland and local Safe Kids coalitions. Other partners in RISK WATCH® include the State Highway Administration, the Maryland State Police, the Maryland and National Capital Poison Centers, the Maryland Chapter of the ATS, and the Maryland Department of Natural Resources. During the fourteen years of the RISK WATCH® program in Maryland, communities have placed it into classrooms, before- and after-school programs, summer camps, hospital child and parent educational programs, and injury prevention programs. There are 14 communities working with RISK WATCH® materials and planning for school, after-school, day-care, and department programs. These include:

- **Calvert County** is considering incorporating RISK WATCH® with St. Leonard Voluntary Fire Department's community activities.
- **Carroll County** has RISK WATCH® Injury Prevention programs at two elementary schools.
- **Cecil County Emergency Services** has RISK WATCH® resources, with their Emergency Operations Center leading the program and is increasing Safe Kids Buckle Up activities through their chapter. Cecil County took the lead on the Make the Right Call training, lead by Captain Holly Trego, at the MSFA Convention.
- **Frederick County** has RISK WATCH® resources for after-school programs in both private and public programs.
- **Garrett County** is using the RISK WATCH® resources at Northern Garrett Rescue and is exploring other school and community programs.
- **Howard County's Parks and Recreation** has the RISK WATCH® materials for education in before- and after-school programs.
- **Johns Hopkins Children's Center** Pediatric Emergency Department and Child Life use RISK WATCH® with families for safety education.
- **Kent Island Volunteer Fire Department** is introducing the RISK WATCH® resources to elementary schools on Kent Island and using them in ongoing safety educational programs in the community.
- **Montgomery County Fire and Rescue** is involved in public, private, and home schools, library programs, RISK WATCH® Recess, child care centers, and programs in hospitals. Each library and fire station has the curriculum.
- **Prince George's Special Education Centers** have four schools located in special centers and are mentoring new programs as they develop in other counties to modify the RISK WATCH® tools for children with different abilities. On June 29, 2011, this team received a state Partnership for Safer Maryland excellence award for reaching over 20,000 young children with different abilities and learning needs.
- **Prince George's County Fire Association** is using RISK WATCH® in their work with Family Day Care Centers in Forestville.
- **Prince George's County Fire and EMS Department** focused on disaster preparedness during the past school year and continues to expand its RISK WATCH® program with over 70 day-care programs.
- **Rock Hall Volunteer Fire Company** is interested in restarting RISK WATCH® activities both in schools and community programs.
- **Tilghman Island's** after-school program has RISK WATCH® resources for use in both fire and life safety and disaster preparedness materials, which have been donated to its school and public library.



At the 2012 MSFA Convention, fire and injury prevention interactive stations designed for the entire family provided information to different audiences. This program has four objectives:

1. To provide young children and school-age children hands-on educational experiences to be safer in their homes and communities through both psychomotor skills and learned knowledge about high risk injuries
2. To provide young life safety advocates (tweens, teens, and young adults) with a mentored experience and specific lesson plans to work with younger children and their families
3. To empower parents and care providers with knowledge on both the risks and the prevention strategies to keep everyone safer in their home and community (infants through seniors)
4. To demonstrate interactive safety displays based upon evidence-based and best practices for life safety advocates across Maryland's EMS and fire and rescue services

Again this year, the RISK WATCH® team served as many adults seeking new information, tools, and resources on teaching fire and injury prevention to children as they did families and young children. The response from the youth and young adults increased significantly this year providing the mentors with the ability to rotate these volunteers through a number of different risk areas and to provide coaching. Cecil County Department of Emergency Services, Johns Hopkins Children's Center Pediatric Emergency Department, MIEMSS EMS for Children Program, and Silver Spring VFD Life Safety Unit all participated in the convention. Three new displays were piloted at the convention and, based upon feedback, will be finalized and produced for RISK WATCH® and Safe Kids programs in geographically balanced areas. The Maryland Poison Center is the lead advisor on the new Poison Display and will be gathering input from the American Association of Poison Control Centers. At the 2012 MSFA Convention the interactive displays included the following:

- In an Emergency – Dial 9-1-1, Don't Play Around (9-1-1 magnets were available to each family)
- Is it Hot? Or Not? Play it Safe – Burn awareness game for younger children and written materials for families
- Is It Safe? Or Not? Play it Safe – Poison awareness game for younger children and new 40th anniversary Maryland Poison Center material for families
- Get Out and Stay Out – Fire safety table top house and "map" for younger children and exit drills in the home (EDITH) plan for families

- Champions Prepare and Play Safe – Safe Kids and CDC sports safety display with family checklist and concussion assessment tools along with correct fitting of a helmet
- Visit in the Ambulance – virtual ambulance with stretcher and EMT equipment to prepare children for the environment inside an ambulance
- Understanding Aging: It's Not Child's Play – sensory tools to demonstrate the changes that occur in the normal aging process and assessment tools for home safety

The EMSC Program of MIEMSS is the lead organization of the Safe Kids Maryland Coalition and holds quarterly meetings in partnership with the Occupant Protection Task Force at the Maryland Highway Safety Office. The state coalition website (www.safekidsmd.org) has been expanded to include a variety of online resources. In FY 2012, the coalition meetings included risk-area topic presentations: CO and Children – A Deadly Combination, Concussion Awareness, CPS Updates, Preparation for Sports Events, Poison Prevention, and the celebration of the Maryland Poison Center's 40th Anniversary. Coalition meetings have also added the capabilities for conference call-in and Go To Meeting® web-based platform to enable more participation. Meetings have traveled across the state to feature local program accomplishments. Again in FY 2012, the Maryland and National Safe Kids programs dedicated its website and various press releases to a very important and high risk danger to infants and young children: hyperthermia secondary to being left alone in a vehicle. Again this year the campaign slogan was: "Never Leave Your Child Alone" and the NHTSA campaign was "Where is Baby – Look before You Lock." The overall goal of the ongoing campaigns is to make family members and child care providers aware of the deadly risks to children when they are left unattended in a vehicle. More information is available on the state coalition website. An educational webcast was held in June 2011 and is now available for viewing on the MIEMSS CPS and OP website at <http://miemss.org/EMSCwww/CPSConference.html>.

Appointments in EMS and EMSC

Allen R. Walker, MD, FAAP, has been appointed to the Maryland State Child Fatality Review Team as one of the two pediatricians who are members of the American Academy of Pediatrics (AAP). The State Team created a policy manual of guidelines to assist local teams with the child fatality review process. Dr. Walker continues to represent the Maryland AAP on the Statewide Emergency Medical Services Advisory Council (SEMSAC).

Joseph L. Wright, MD, MPH, FAAP, has been appointed to the Governor's Emergency Management Advisory Committee (GEMAC) and continues to serve on the National Emergency Medical Services Advisory Council (NEMSAC) representing the pediatric emergency services sector. The NEMSAC provides advice and counsel on national EMS initiatives and offers a forum for the deliberation of national EMS issues.

Cynthia Wright-Johnson, RN, MSN, continues to serve on the National Association of EMS Officials (NASEMSO) Pediatric Emergency Care Council (PECC) and its steering committee and as a member on the Highway Incident Traffic Safety (HITS) Committee. This committee includes work on the Highway Mass Casualty Readiness Project that is focused on development of assessment and evaluation tools and processes to maximize a state or local community's response preparedness for mass casualty motor vehicle crashes on rural highways.

In FY 2012, two members of the MIEMSS EMSC Program remained active members of the AAP Committee on Pediatric Emergency Medicine (COPEM): the MIEMSS EMSC Director Cynthia Wright-Johnson, the National Association of State EMS Officials' PECC Liaison Representative, and Associate State EMS Pediatric Medical Director Dr. Joseph L. Wright, representing EMSC National Resource Center.

EMRC/SYSCOM

Mission: The Maryland EMS Communications Center is a statewide coordination and operation center for Maryland's EMS system, which functions 24 hours, 365 days a year. The communications center has two integrated components: Systems Communications (SYSCOM) and Emergency Medical Resource Center (EMRC).

SYSCOM is a partnership between and jointly staffed by MIEMSS and the Maryland State Police (MSP) that receives requests for, dispatches the most appropriate, and coordinates helicopter resources for missions including Medevac, search and rescue, law enforcement, homeland security, and disaster assessment.

EMRC is staffed by MIEMSS and has a three-fold mission:

- 1. Providing communications linkages and facilitating medical consultations between prehospital EMS providers and emergency departments, trauma centers, and specialty centers*
- 2. Maintaining and sharing situational awareness of the capabilities and capacities of the prehospital system and hospitals*

3. Providing initial alerting and coordination of resources and the distribution of patients during major medical incidents

In FY 2012, the Emergency Medical Resource Center (EMRC) handled 220,439 telephone calls and 163,552 radio calls. Of these 383,991 calls, 142,219 were communications involving a patient or incidents with multiple patients, while 20,169 of these calls involved on-line medical direction.

In FY 2012, the Systems Communications (SYSCOM) center handled 28,071 telephone calls and 2,290 radio calls. Of these 30,361 calls, the majority were related to requests for medevac helicopters.

EMRC/SYSCOM continued to participate in the National Disaster Medical System. Utilizing the Facility Resource Emergency Database (FRED), EMRC/SYSCOM obtained hospital bed status information for several events and routine quarterly exercises.

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

As part of a cooperative agreement, EMRC/SYSCOM answered over 600 calls for the Maryland Department of Health and Mental Hygiene 24-hour Duty Officer.

GOVERNMENT AFFAIRS

MIEMSS' Office of Government Affairs works with the Executive and Legislative branches of State government to develop effective approaches to a variety of emergency care needs. Policy issues are explored and proposed legislation is developed in partnership with EMS providers, physicians, nurses, hospitals, and other health care providers, as well as local and county government officials.

During the past year, MIEMSS submitted two studies to the Legislature:

- Report Evaluating the Configuration and Distribution of Trauma Centers in Maryland – MIEMSS partnered with the Maryland Health Care Commission (MHCC) to study whether changes were needed to the current configuration of Maryland's trauma centers.
- Report Evaluating the Feasibility of Insurance Provider Billing for Medevac Services – MIEMSS worked with the Maryland State Police Aviation Command (MSPAC), the Maryland State Firemen's Association, the Maryland Insurance Administration, the MHCC, the Department of Health and Mental Hygiene's Office of Health Services (formerly the Medical Care Programs Administration),

and the Office of the Attorney General to evaluate the legality, feasibility, and ramifications to transitioning MSPAC Medevac Program to insurance-only billing of Maryland residents and full billing of nonresidents.

EMS-related legislation during the 2012 Legislative Session included the following bills that were passed by the General Assembly:

- Existing law was modified to clarify that human service facilities are responsible for any financial obligation arising from voluntary or mandatory activation of any aspect of the facility's emergency plan.
- The responsibilities of the Emergency Numbers System Board were expanded to include establishing planning guidelines for "next generation" 9-1-1 service system plans and deployment of next generation 9-1-1 services.
- The time period during which a local state of emergency may continue was extended to 30 days.
- Insurers, nonprofit health service plans, and health maintenance organizations must cover and reimburse for health services appropriately delivered through "telemedicine."
- The weight exemption for use of a child safety seat by children younger than eight years of age was repealed; as a result, a child younger than eight who weighs more than 65 pounds must be restrained by a child safety seat, unless exempted by height.
- The law was clarified to ensure that the prohibition against text messaging while driving, and enforcement as a primary offense, applies to all drivers, including those under age 18.

HEALTH CARE FACILITIES AND SPECIAL PROGRAMS

Office of Hospital Programs

Mission: To implement the designation and verification processes for trauma and specialty referral centers, provide continuing evaluation of these centers for compliance with the regulations and standards in COMAR 30.08 et seq., and ensure ongoing quality monitoring of the trauma/specialty care system.

Primary Stroke Centers

The designation of Primary Stroke Centers throughout Maryland was a direct result of a call to action from the Maryland Heart Disease and Stroke Council to address systems changes in stroke prevention and coordination of the delivery of care to

the acute stroke patient. Since 2007 MIEMSS has designated 35 Maryland Hospitals as Primary Stroke Centers. (See page 38 for a complete list of Primary Stroke Centers.)

The Office's responsibility is to carry out the designation and reverification of Primary Stroke Centers as specialty referral centers statewide. The designation standards are based on the recommendations of the Brain Attack Coalition, whose peer-reviewed recommendations for acute stroke care were published in the *Journal of the American Medical Association* (JAMA). MIEMSS has initiated the first five-year cycle for the reverification of Primary Stroke Centers. During FY 2012, 27 Primary Stroke Centers applied for and received reverification.

All Primary Stroke Centers submit data monthly to the American Heart Association Get With The Guidelines®–Stroke Registry. MIEMSS has the ability to access the registry and monitor the Primary Stroke Centers' compliance with the ten core performance measures established by the American Heart/American Stroke Association. Compliance with the core performance measures has been shown to improve patient outcomes.

The Office supports the meetings of the Stroke Quality Improvement Committee (QIC), an advisory body to MIEMSS for quality improvement issues affecting the care of patients with acute stroke and for the designation of specialty centers to provide stroke care. The advisory body is comprised of one designated representative from each Primary Stroke Center.

MIEMSS worked closely with various stakeholders, including the American Heart Association, the Executive Committee of the Maryland Stroke Alliance, physicians, and hospitals, on the development of the regulations establishing the standards for Comprehensive Stroke Center designation. A Comprehensive Stroke Center is defined as a facility or system with the necessary personnel, infrastructure, expertise, and programs to diagnose and treat stroke patients who require a high intensity of medical and surgical care, specialized test, or interventional therapies. The standards, like those for Primary Stroke Center designation, are based on the recommendations of the Brain Attack Coalition as published in the JAMA. The regulations include structural and functional requirements for a hospital wishing to be designated as a Comprehensive Stroke Center. The Emergency Medical Services (EMS) Board promulgated regulations establishing the standards for Comprehensive Stroke Centers. These designations will begin to take place in FY 2013.

EMS Base Stations

Office staff continued to collaborate with the Office of the Medical Director on EMS Base Station verification in FY 2012. Management activities included issuing certifications to Emergency Department personnel completing the Base Station Communications course as well as monitoring and certifying new Base Station instructors. In FY 2012, 12 hospitals applied for redesignation as a MIEMSS-approved Base Station. Each of the hospitals completed a self-assessment survey as well as an application. MIEMSS staff reviewed both the assessment and application and then conducted a Base Station site visit. The survey team was composed of MIEMSS staff, MIEMSS Regional Medical Director, and the MIEMSS Regional Administrator for the hospital. All 12 hospitals received redesignation as a MIEMSS-approved Base Station.

Trauma System

Growing from the historic Maryland “Echelons of Care” approach, the 1998 designation of nine Trauma Centers set the basis for excellence in trauma care for Maryland and the nation. The Maryland Trauma System ensures that injured patients are promptly taken to the most appropriate hospital trauma center where the best staff and equipment are available to meet the patients’ special needs. Patient outcomes with this systems approach are enhanced for a decrease in patient morbidity and mortality.

Since 1998, to fully provide a comprehensive Trauma System to the state, additional Trauma Specialty Referral Centers were designated: Pediatric, Burn, Neurotrauma, Eye, and Hand. Memorandums of Understanding (MOUs) are in effect with several out-of-state hospitals to facilitate expedited trauma care to outlying areas and for a higher level care need. MOU hospitals are the Children’s National Medical Center in Washington, DC, for pediatric trauma and burns and Christiana Care Health Services in Newark, Delaware. Every three to five years a reverification of the trauma designation is completed to assure that the Trauma Center meets regulation and standards for trauma care.

The Office of Hospital Programs staff continues to support the Trauma Quality Improvement Committee. This Committee has a representative from each designated trauma center. Its purpose is to identify opportunities for trauma system improvement and make recommendations to MIEMSS. The Committee has met regularly over the past fiscal year to address system improvement issues. The Committee has reviewed data related to the field triage of trauma patients and mode of transport from the scene and has revised and updated the Maryland Trauma Registry. This update allows the Registry to be compatible with the National Trauma

Data Bank (NTDB) data elements and definition requirements. The office staff continues to work with trauma centers on specific performance improvement issues.

MIEMSS staff worked collaboratively with the Maryland Trauma Centers’ Trauma Managers and Registrars to revise and update the Registry Adult and Pediatric Data Dictionaries. In addition, approval was received for an upgrade to the Registry, which will occur in 2013. The web-based upgrade will keep the Registry current and compliant with the NTDB and will facilitate submission of trauma data by individual Maryland Trauma Centers.

Perinatal Referral Centers

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

In January 2011, MIEMSS completed the process of incorporating the revised Maryland Perinatal System Standards into COMAR Regulations. With the new COMAR Regulations approved and in place, MIEMSS has initiated the second five-year cycle for the redesignation of Level III Perinatal Referral Centers. (See page 38 for a complete list of perinatal centers.)

Hospitals participating in the Maryland Perinatal System submit patient care data to the Maryland DHMH and MIEMSS, as appropriate, for system and quality management. All Level III Perinatal Referral Centers submit an annual perinatal indicator report that provides statistics beyond mortality data and focuses on striving for clinical excellence, patient safety, and reliability with zero preventable adverse outcomes. Defined maternal and neonatal indicators include:

Maternal Indicators:

1. Total number of live births
2. Number of transport admissions:
 - a. to a higher level of care
 - b. from a non-obstetrics-providing facility
3. Number of transports out
4. Number of maternal deaths
5. Number of uterine ruptures
6. Number of cesarean hysterectomies and postpartum hysterectomies
7. Number of eclampsia/seizures
8. Number of maternal admissions to Intensive Care Unit
9. Number of inpatients returned for a complication to OR/L&D following delivery

10. Number requiring blood transfusions
11. Number of 3rd/4th degree episiotomies
12. Number of neonatal birth traumas
13. Number of fetal deaths:
 - a. of 20 weeks or greater
 - b. of 37 completed weeks of gestation or greater
14. Number of intrapartum deaths > 500 gm
15. Number of neonatal deaths in the delivery room
16. Number of primary C/S deliveries
17. Number of repeat C/S deliveries
18. Number of VBAC deliveries
19. Number of TOTAL deliveries
20. Number of maternal re-admission patients returned to OR (same facility)
21. Number of maternal re-admissions (to the same facility)
22. Number with HIV diagnosed and/or treated intrapartum as well as prenatally
23. Number that have not received any prenatal care

Neonatal Indicators:

1. Number and percentage of admissions transferred back to birth, or local, hospital
2. Number and percentage of admissions transferred to another NICU for higher level or specialty care
3. Number and percentage of nosocomial infections (blood stream infections only)
4. Number and percentage of pneumothoraces
5. Number and percentage of severe intraventricular hemorrhage
6. Admission temperature to NICU
7. Charts with adequate documentation of immunization status

MIEMSS continues to work closely with DHMH in supporting all perinatal centers that have the ability to participate in the Vermont Oxford Network Reporting System. This system allows each perinatal center the ability to compare their center's data to data from all group centers.

Office of Cardiac and Special Programs

Mission: To develop and implement policies, regulations, and programs for the enhancement and improvement of the statewide emergency medical services (EMS) system and the community.

Hospital Alert Utilization/Emergency Department Overcrowding

MIEMSS monitors statewide alert activity via the County Hospital Alert Tracking System (CHATS) and

generates quarterly reports comparing current utilization volumes with the past year's utilization volumes. Real-time CHATS screens showing hospital alert activity in all regions and online reports containing individual hospital alert activity are available on the MIEMSS website at www.miemss.org. Additionally, MIEMSS is able to monitor emergency medical services (EMS) return-to-service times recorded in the EMS patient care record. The return-to-service time is defined as the amount of time a provider is at an emergency department (ED) with a patient before returning to service. Return-to-service time is a good indicator of the impact of ED crowding on the EMS system.

CHATS include several categories of alerts. Depending on what is occurring at a hospital, it may be placed on one or more type of alert by entering the request directly into CHATS.

Yellow alert is the most frequently utilized alert category and has the most significant impact on EMS providers transporting patients. After peaking in 2006, yellow alerts then declined over the next several years. In FY 2012, however, a slight increase in yellow alert utilization occurred. MIEMSS is working with individual hospitals to determine the cause for the increased utilization and develop a plan to decrease yellow alert utilization.

MIEMSS provides weekly yellow alert utilization reports to DHMH throughout the year. Additionally, during the flu season MIEMSS monitors alert activity on a daily basis and provides reports to the regions as necessary to assist them in deciding whether to implement strategies from the Maryland Hospital and EMS Emergency Department Overload Mitigation Plan. No strategies from the Plan were required to be implemented during the 2011-2012 flu season, which was reported by DHMH to be relatively light.

Public Access Automated External Defibrillator Program

The Maryland Public Access Automated External Defibrillator (AED) Program continues to grow throughout Maryland. With the exception of public high schools, which are required to have AEDs, Maryland's Public Access Defibrillation (PAD) Program is 100% voluntary and permits non-healthcare facilities that meet certain requirements to have an AED onsite to be used in the event of a sudden cardiac arrest until EMS arrives. In FY 2012, MIEMSS processed 197 new applications and 307 renewal applications for a total of 504 AED program approvals; this was a 38% increase from FY 2011. Currently, there are over 1,500 approved programs in the state, totaling approximately 4,000 actively reg-

ALERT	DESCRIPTIONS
Yellow	The emergency department temporarily requests that it receive absolutely no patients in need of urgent medical care. The facility will receive Priority I patients from within its catchment area for initial stabilization. Subsequent transfer may occur to another facility. Priority II and III ECG-monitored patients will normally bypass unless transport time will be lengthened by more than 15 minutes.
Red	The hospital has no ECG monitored beds available. The facility will receive Priority I monitored patients from within its catchment area for initial stabilization. Subsequent transfer may occur to another facility. Priority II and III ECG monitored patients will normally bypass unless transport time will be lengthened by more than 15 minutes.
Mini (Mini-Disaster)	The emergency department reports that their facility has, in effect, suspended operation and can receive absolutely no patients due to a situation such as a power outage, fire, gas leak, bomb scare, etc.
ReRoute (Hosp ReRoute)	An ALS/BLS unit is being held in the emergency department of a hospital due to lack of an available bed. (This does not replace Yellow Alert.)
TBP (Trauma ByPass)	The hospital's ability to function as a trauma center has been exceeded. (This decision is at the discretion of the facility.)
Blue	Overrides all alerts, except the Mini-Disaster, causing all patients from within that jurisdiction to be transported to the closest facility appropriate for the patient's medical needs due to extraordinary situations as snow, icing, or flooding.

istered locations with AEDs onsite, a 25% increase from FY 2011, with thousands of individuals trained in CPR and AED use. A list of AED facilities and program information can be viewed in the public information section of the MIEMSS website.

The Maryland Public Access Automated External Defibrillator (AED) Program has had 104 (22%) successful AED uses out of 462 reported incidents. Success is measured by the patient having a return of pulse at EMS arrival, during EMS arrival, or during EMS transport. Of the overall arrests, 271 were witnessed, and 78 of those witnessed arrests regained a pulse at the time of EMS arrival for a 29% save rate for witnessed cardiac arrests.

At the 2012 EMS Star of Life Awards Ceremony, MIEMSS was proud to present the Director's Award for Excellence in EMS to a team of rescuers from Queen Anne's County for their efforts resulting in the successful resuscitation of a student that collapsed during gym class. The school was equipped with an AED which was obtained and applied along with performance of CPR until EMS arrived. The student was transported by Maryland State Police Aviation and then a Baltimore County Medic Unit to Johns Hopkins Hospital. The case exemplifies the excellent outcomes that can be obtained when the Chain of Survival is implemented.

Maryland STEMI System

After slightly more than a year since the announcement of the designation of Maryland's Cardiac Interventional Centers and three out-of-state centers, the Statewide System continues to evolve. (See page 38 for a complete list of Cardiac Interventional Centers.)

Designation as a "Cardiac Interventional Center" indicates that a hospital complies with State standards to receive patients transported by EMS who are experiencing the most common type of heart attack called an ST-elevation myocardial infarction, or "STEMI." For these patients, primary percutaneous coronary intervention (pPCI) (also known as "balloon angioplasty") is recognized by the American College of Cardiology and the American Heart Association as the treatment of choice and is generally associated with fewer complications and better outcomes than other forms of treatment.

It has also been well established that the sooner a patient is treated to relieve the blockage causing the STEMI, the better the heart muscle will recover. Reducing the time from the onset of symptoms to treatment requires that there be a high degree of coordination and integration of care between that provided by EMS providers in the field and that provided by medical staff in the hospital.

As a result of these designations, EMS providers who have identified a STEMI patient may transport that patient to the closest designated Cardiac Interventional Center, bypassing non-designated hospitals in accordance with the *Maryland Medical Protocols for EMS Providers*. In instances, however, when a Cardiac Interventional Center is not within an additional 30-minute drive time, patients may be transported to the closest emergency department for rapid assessment, treatment, and then transfer to a Cardiac Interventional Center.

All Cardiac Interventional Centers submit data to the American College of Cardiology Foundation's (ACCF's) National Cardiovascular Data Registry ACTION Registry®-GWTG™ on a quarterly

basis. MIEMSS is working with American Heart Association's "Mission: Lifeline" program and the ACCF to obtain reports from the data entered into the registry.

Regional STEMI Committees were formed and continue to meet regularly to address the treatment of STEMI patients in Maryland. Regional committees were originally charged to address the following three objectives:

1. Assess the current status of STEMI care in the region, including availability of resources within and adjacent to the region.
2. Develop a regional-based plan for optimizing outcomes of STEMI patients consistent with the *Maryland Medical Protocols for EMS Providers* and COMAR Title 30.
3. Continue to meet on a regular basis, as necessary, to monitor data and the implementation of the plan.

Based on the data reported in one region, the original plan for treatment and transport of STEMI patients was modified to provide better care. The process is an excellent example of an evidence-based approach to planning and collaboration among pre-hospital and hospital providers to achieve the optimal plan of care for STEMI patients. The Regional STEMI Plans are available under the Hospitals link on the MIEMSS website.

INFORMATION TECHNOLOGY

Mission: The MIEMSS Information Technology Department strives to improve Maryland's emergency medical services (EMS) by providing leadership, support, and guidance to the Institute and Maryland's EMS community regarding the use of information technology and the meaning of collected EMS data.

Major Focus in FY 2012

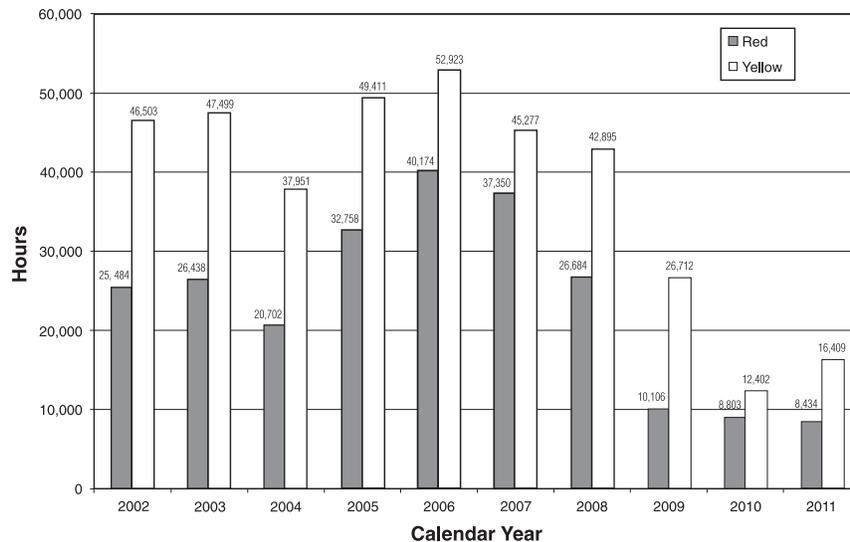
The Information Technology (IT) Department worked on four major areas of growth and improvement in FY 2012. The aim of these efforts was to improve services and resources for the emergency medical services (EMS) community and the agency, and to make those services more reliable and secure.

electronic Maryland EMS Data System

A major focus for the MIEMSS IT Department in FY 2012 has been the statewide deployment of the electronic Maryland EMS Data System (eMEDS), a modern, state-of-the-art system used to collect patient care reports from emergency medical service providers. It replaces the eMAIS® system that was deployed in 2004.

eMEDS is commercial-off-the-shelf software provided by ImageTrend, Inc., of Lakeville, Minnesota. ImageTrend is the industry leader for this type of software, currently providing statewide patient care reporting systems to 26 states and hundreds of local counties and fire departments. MIEMSS initiated the selection process for the system in 2009, receiving

State Diversion Alert Totals (Calendar Years 2002 to 2011)



bids from five vendors in early 2010. ImageTrend proved to be both technically superior and the lowest bidder. The Board of Public Works approved a contract with ImageTrend on June 9, 2010. The acquisition of eMEDS was made possible by a Maryland Highway Safety Office grant and agency funds. The system is licensed for statewide use permitting EMS Operating Programs (EMSOPs) to use eMEDS at no cost and no additional burden on local funding.

The goals of eMEDS are: (1) to improve data collection and reporting on prehospital medical care provided by emergency medical personnel; (2) to become compliant with reporting to the National EMS Information System (NEMIS); (3) to support research and improvements to medical care by analysis of better data; and (4) to support quality improvement of emergency medical care by EMSOPs by allowing medical directors and local leadership to analyze EMS response data.

The eMEDS system is a web-based program available to providers statewide at all times. There is also a client version called “Field Bridge” that runs on laptops, allowing data collection even when no internet connection is available. For reliability, the system is hosted in a secure, professional data center in Minneapolis, with a copy of the data, refreshed daily, stored at MIEMSS. Data entered into the system is available to the EMSOP, the receiving hospital, and MIEMSS immediately after it is entered.

The user interface of the system incorporates intuitive design, automatic entry of answers when possible (e.g., automatic time-stamping of medical procedures), and context-sensitive appearance of forms and data fields based on the type of case being treated. These features aim to improve the ease and speed of data entry so that emergency medical providers can focus on patient care and get back in-service quickly.

MIEMSS implemented the eMEDS system by first conducting a 30-day pilot with three counties. The EMSOPs participating in the pilot were Harford, Queen Anne’s, and Cecil Counties. MIEMSS prepared the pilot counties for eMEDS deployment by training a small group of department leadership, who in turn trained their personnel. This train-the-trainer model worked very well with these counties and is being repeated statewide. The pilot counties began collecting live data on February 1, 2011. The results were excellent, with no major problems or interruptions of service. Providers and commanders were very satisfied with the new system. The pilot jurisdictions successfully collected reports for over 35,000 ambulance calls with eMEDS.

In spring 2011, MIEMSS started the statewide deployment of eMEDS. That effort continued in earnest throughout FY 2012. At this time more than half the counties, special services, and commercial services in Maryland are active on eMEDS. All Maryland counties have expressed interest in participating in eMEDS. It is expected that the majority of county EMSOPs statewide will be utilizing eMEDS by the end of calendar year 2012. As of July 2012, 375,000 patient care reports had been collected by eMEDS. During the summer of 2012, a heat wave followed an unprecedented weather event and loss of power for many Marylanders. MIEMSS was able to use eMEDS to support the Maryland Emergency Management Agency (MEMA), the Maryland Department of Health and Mental Hygiene (DHMH), and the Office of The Governor by reporting heat-related medical incidents by location. MIEMSS personnel were stationed at the State Emergency Operations Center during this event.

MIEMSS continues to expand the capabilities of the eMEDS system. In FY 2012 the agency procured Critical Care modules to support and document Specialty Care Transport (SCT) Paramedics, the highest level of paramedic care. The agency also updated the system to accommodate new emergency medical protocols and added a dashboard feature for hospitals to keep track of patients delivered by emergency services.

Expanding Capabilities

National Study Center Collaboration

The MIEMSS IT and Data Departments continued to advance the agency’s ability to analyze and report on collected data by continuing its collaboration with the National Study Center for Trauma and Emergency Systems (NSC). The NSC has assisted MIEMSS in developing EMS system performance reports, GIS maps for evaluating ST-elevation myocardial infarction (STEMI) transport times, reports for producing evidence-based guidelines for EMS care, EMS vehicle crash data, and other important analysis projects.

Paperless Testing Systems

The IT department began working on an electronic, tablet-based system to collect test scores from Emergency Medical Technician students. This will streamline the testing process and allow results to be saved and collated for future use. Work on this system will continue in FY 2013.

Maryland Ambulance Information Database

The IT department modeled and began development of the Maryland Ambulance Information Database (MAID), a permanent application to record and update the inspection and licensing of commercial ambulances using an electronic tablet-based system. Work on this system will continue in FY 2013.

Inventory System

At the request of the agency's Director of Finance, MIEMSS IT assisted in acquiring and implementing a new network-based inventory management system. The new inventory management system will increase the accuracy of the agency's inventory records and reduce the effort associated with maintaining inventory.

Voice over Internet Protocol Phone System

MIEMSS IT completed implementation of the University of Maryland Cisco® Voice over Internet Protocol (VoIP) network phone system. This removes the liability of an aging phone system that was very difficult to support technically.

End User Services/Support Improvements

In FY 2012, the IT Department continued to apply project management services to various departmental initiatives. Help desk services were consolidated and improved, and modernization of end-user hardware and software was largely completed.

Continuing Missions

The IT Department continued to support existing programs in FY 2012. Highlights include:

electronic Maryland Ambulance Information System

The electronic Maryland Ambulance Information System (eMAIS®) was still employed by several counties and commercial services at the end of FY 2012. eMAIS® will continue to be accessible until all users are transitioned onto the new eMEDS system and will then continue to be available in a "read only" capacity to provide legal reports and historical data for analysis.

Maryland Ambulance Information System

The IT Department continued to scan the Maryland Ambulance Information System (MAIS) paper patient care report forms during FY 2012 for those jurisdictions that have not converted to electronic patient care reporting. As more jurisdictions move toward a paperless environment by utilizing the eMEDS system or other third party electronic patient

care record systems, MIEMSS expects the scanning of MAIS forms to decline and come to an end completely in FY 2013.

electronic Maryland EMS Data System

As described above, MIEMSS continues to support users, monitor, and improve the electronic Maryland EMS Data System (eMEDS) while deploying the system to all jurisdictions in the state.

County Hospital Alert Tracking System

The County Hospital Alert Tracking System (CHATS), a web-based application provided by Global Emergency Resources, shows healthcare providers the status of hospitals throughout Maryland and in surrounding jurisdictions. In FY 2010, CHATS was upgraded when the agency moved to HC Standard 3.0, making it more robust and more accessible to healthcare providers. MIEMSS IT continues to support CHATS for use by hospitals throughout Maryland.

Facility Resource Emergency Database

Facility Resource Emergency Database (FRED) 2.0, in use since 2004, alerts all health care response partners of an incident and allows them to indicate what resources they have to lend to the response. The number of users has nearly doubled with the addition of long-term care facilities. In FY 2010, FRED was migrated into the HC Standard 3.0 application, making it more robust and more accessible to healthcare providers and integrating FRED alert messages with HC Standard messaging to hospitals and healthcare providers. MIEMSS IT continues to support FRED for use by hospitals throughout Maryland.

HC Standard

The IT Department continues to support the MIEMSS Operations Department in the use and deployment of HC Standard, a patient and resource tracking system. HC Standard is an important electronic tool for Maryland's disaster preparedness. It allows instant on-site collection in a disaster situation. Data about numerous patients can be tracked and instantly updated so that MIEMSS Operations, other agencies, and hospitals are aware of the status and location of patients and various medical resources at all times.

Trauma Registries

There are three registries currently included under the Maryland State Trauma Registry reporting process: (1) The Maryland Trauma Registry,

which includes nine adult and two pediatric designated trauma centers; (2) the Maryland Eye Registry for our single designated eye trauma center; and (3) the National Trauma Registry American College of Surgeons (TRACS) American Burn Association Registry, which represents records from the designated adult burn center and will eventually include data from the two designated pediatric burn centers. The data from the registries are forwarded to MIEMSS monthly, quarterly, and annually for reporting purposes.

Help Desk and User Support

A major ongoing mission for MIEMSS IT is support of end users, both agency staff and EMS providers statewide, in using their PC equipment and applications. A dedicated and skilled support staff provides quick resolution to PC and application software issues. The IT department continued to provide technical support to EMRC/SYSCOM, in coordination with the MIEMSS Communications Department.

Project Management

MIEMSS IT provides project management (PM) services throughout the agency for consideration and development of needed applications and services. Specific PM efforts planned for FY 2013 include completing an upgrade and migration of VMware and networking services to a new server room; developing off-site backup capability; completing an Ambulance Inspection program and database, Emergency Medical Technician Skills Inspection program and database, Hospital Designation program and database, and major updates to Trauma Registries and the Provider License Registry; and an enterprise document management and data management initiative.

Initiatives for FY 2013

Continue to develop eMEDS

MIEMSS IT plans to continue work with EMSOP system managers to improve eMEDS and make sure it supports local operational needs as well as state data analysis needs. MIEMSS is seeking to build on the success of eMEDS by adding additional features that will make EMS reporting more effective. Through the Maryland Highway Safety Office, grant funds have been awarded to counties to facilitate Computer Aided Dispatch (CAD) integration so that 9-1-1 data and call times are automatically imported to patient care reports. In FY 2013, eMEDS will be integrated with the Maryland State Police Flight operations CAD and with MIEMSS' HC Standard Patient

Tracking System to facilitate patient care reporting in Mass Casualty Incident situations. MIEMSS is also working on acquisition of ImageTrend's Strategic Triggers, Alerting, and Reporting System (STAR) for eMEDS, which will enable automatic statewide alerting from eMEDS based on unusual trends in illness or injury.

Provider Database System for MIEMSS Licensure & Certification (L&C)

The Maryland Prehospital Provider Registry (MPPR) system is currently used to track the certifications, education, and affiliations of EMS providers throughout the state. The system is technologically outdated, requires extensive maintenance, and no longer meets the operational needs of MIEMSS or the EMS community. As part of the original eMEDS RFP and contract, MIEMSS secured the right to buy ImageTrend's Licensure system to replace MPPR.

In FY 2012 the IT Department was successful in completing the acquisition of ImageTrend's Licensure system. MIEMSS IT will assist MIEMSS' Department of Licensure and Certification in configuring and deploying the new system in FY 2013. The new system will provide a web-based portal for extensive self-service by the EMS community and county medical directors. It will also automate many processes now handled manually in Licensure and Certification, resulting in much greater efficiency, better customer service, and cost reduction in tracking provider certifications and training. It will automatically synchronize staff records with eMEDS so that both systems always have up-to-date information on provider certification status.

Computer Resources, Network Reliability, and Disaster Preparedness

In FY 2013, the MIEMSS IT Department plans to implement computer hardware and software to upgrade VMware and network operations, migrate all equipment and services to a new, more robust server room, and implement off-site backup capabilities for critical applications and services.

Development of Practical Information

Data analysis capability will be expanded in FY 2013 by emphasizing reporting, analyzing, and practical applications of EMS data. Some staff positions will be refocused away from hardware and programming work toward the understanding and practical application of data. MIEMSS will also continue to work with the NSC on this effort.

LICENSURE AND CERTIFICATION

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

During FY 2012, the total number of Maryland EMT-Basics, CRT/I-99s, and Paramedics continued to rise and is the highest it has been over the last five fiscal years. The breakdown of Maryland providers for the last five fiscal years is shown below.

The Office of Licensure and Certification had a steady workload in FY 2012 issuing 2,441 initial certifications and licensures and renewing 5,928 prehospital provider certifications and licensures. Licensure and Certification worked with other departments throughout the agency by supplying provider data and trends (e.g., prehospital care provider recruitment and retention) to various statewide committees for analytical purposes.

The Online Learning Management System (LMS), our distance learning system, reached 22,564 registered users in FY 2012. The registered users include not only all levels of prehospital care providers, but also other healthcare professionals such as nurses and physicians requiring access to the LMS for Base Station training. In FY 2012, there were 15,550 course completions for the required 2012 Maryland Medical Protocols Update. Additionally, providers took advantage of the following online training opportunities: Aviation and Medevac, 791 course completions; Shock Trauma Lecture Series, 1666 course completions; Pediatric content, 753 course completions; and MOLST Orientation, 12,909 course completions.

Major Focuses in FY 2012

EMS Agenda for the Future: A Systems Approach

The main focus of the Office of Licensure and Certification in FY 2012 was the implementation

of the “EMS Agenda for the Future: A Systems Approach” on July 1, 2012. Several aspects of the Agenda were finalized during FY 2012. To more closely match the National EMS Scope of Practice Model, some provider names will change effective FY 2013: First Responder becomes Emergency Medical Responder (EMR), Emergency Medical Technician-Basic becomes Emergency Medical Technician (EMT), and Paramedic remains the same. Maryland has not adopted the Advanced EMT (AEMT) level; rather, Maryland will continue to certify at the Cardiac Rescue Technician/I-99 (CRT) provider level. Additionally, the office continues to work with Educational Support Services to update Licensure and Certification and EMS Provider and Instructor Forms pages on the MIEMSS website.

Initial course criteria needed to be revised to meet the National EMS Education Standards. Licensure and Certification worked with the Basic Life Support (BLS) Committee of the State EMS Advisory Council (SEMSAC) to update the BLS programs for EMR and EMT. New criteria syllabuses, practical evaluation sheets, and the EMT Internship packet were finalized. Licensure and Certification continues to work closely with the states of the Atlantic EMS Council (AEMSC) in formulating a web-based (WebTG) test generator application. This application assures a more secure test bank and provides better data management and retrieval. Additionally, the AEMCS formulated a practice analysis for creating examinations that meet the EMS Education Standards. The Advanced Life Support (ALS) Committee of SEMSAC worked closely with the State Medical Director to guide the EMS Board-approved ALS teaching agencies with formulating new content to meet the National EMS Education Standards.

Current Provider Transition

Several mechanisms were put into place to transition current providers to meet the criteria outlined

Number of Licensed and Certified Prehospital Professionals by Fiscal Year

Level	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
EMD	794	995	1,027	1,099	1,088
FR	9,033	5,922	4,795	4,594	3,436
EMT-B	16,917	16,778	17,241	18,325	18,295
CRT-99	825	889	882	898	849
EMT-P	2,437	2,529	2,713	2,753	2,924
TOTAL	20,179	20,196	20,836	21,976	22,068

NOTE: All figures include Current, Extended, Jeopardy, Military Status, and Inactive professionals. Total reflects only EMT-Bs, CRT-99s, and EMT-Ps.

in the Agenda. The requirements were provided to each approved teaching agency for the various pre-hospital care levels. At the basic level, the EMR and EMT core refresher syllabus was revised for FY 2013 to meet the requirements for transitioning. As BLS providers renew their certifications over the next few years, they will meet the transition requirements. At the ALS level, the teaching agencies were given the requirements necessary to include in their core CRT and Paramedic refresher programs beginning FY 2013. As ALS providers renew their certifications over the next few years, they will meet the transition requirements. Course completion certificates for submission to the National Registry of Emergency Medical Technicians have been made available to the teaching agencies to supply to providers as necessary. BLS providers are expected to be transitioned by March 31, 2016, and Paramedics by March 31, 2017. For further details, refer to the MIEMSS Transition Timeline available at <http://bit.ly/TransitionTimeline>.

Provider Cards

Many providers have voiced concern over the wear occurring to the provider cards issued as part of the certification/licensure letter. In a continued effort to supply the best cards possible to our EMS providers, MIEMSS will modify the design of provider cards issued in FY 2013. The new cards will remain part of the certification/licensure letter, but will have a self-laminating feature to better protect the printed information. The directions on how to self-laminate the provider card will be printed on the letter.

Initiatives for FY 2013

Provider Database System for Licensure and Certification

The Office of Licensure and Certification will work closely with the Information Technology (IT) Department on implementation of the new MIEMSS certification/licensure program. The ImageTrend, Inc., licensure product was awarded the state contract in late FY 2012. The product will be a web-based portal, allowing providers and teaching agencies more access to the system for updating. Additionally, since ImageTrend provides eMEDS, the state's patient care reporting system, there will be better integration between the two systems to afford more seamless affiliation updates and current provider certification/licensure status.

Paperless Practical

Licensure and Certification is working on a mechanism to allow for the EMT practical examination to be administered using a nearly paperless process. The practical examination forms will be uploaded onto computer tablets and completed by the examination station evaluators. These forms will then be transferred to the examination coordinator for review. The final product will allow a summary sheet to be printed for the course instructor. The implementation of paperless practical will produce a more efficient practical evaluation. Some of the positive aspects include: an electronic record with no paper filing required, a more consistent practical evaluation, better access to the practical files, and better data retrieval.

Projected Upcoming LMS Offerings

In addition to the 2013 Maryland Medical Protocols Update, the Office of Licensure and Certification, working in conjunction with other departments within the agency, various statewide committees, EMS Board-approved teaching agencies, and EMS Operational Programs and Commercial Services, project to offer the following LMS courses: medication reviews, eMeds updates, online EMT-P to Paramedic Transition, ALS Protocol Review, and various pediatric content.

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, 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 stress management. 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 St. Mary's County SWOT (Strengths, Weaknesses, Opportunities, and Threats) review continues in partnership with that county's Emergency Medical Services Operational Program (EMSOP). Richard Alcorta, MD, the State EMS Medical Director, and the MIEMSS Region V Office have been working with the Task Force over the last several months focusing on goals identified for the SWOT assessment.

The 17th Annual EMS Medical Directors' Symposium was held at the James N. Robey Public Safety Training Center in Marriottsville, Maryland, on April 11, 2012. It was attended by the Regional, Jurisdictional, and Commercial Ambulance Service Medical Directors, Base Station physicians and coordinators, the highest jurisdictional officials, Quality Assurances officers, and MIEMSS personnel. This year's guest speaker was Justin Dillard, Project Evangelist from ImageTrend, Inc. Mr. Dillard's presentation, entitled "The Answer to Life, the Universe and Everything: What eMEDS Can Do For You," provided attendees a more in-depth understanding of the electronic Maryland EMS Data System (eMEDS) and its capabilities with special focus on the eMEDS Report Writer tool kit. This reporting tool allows individual physicians and EMS managers to query their own data and establish automated benchmarking reports. Other Symposium presentations included:

- "State of the State" and "Federal Regulation of EMS: What a Medical Director Needs to Know," presented by MIEMSS Executive Director, Robert R. Bass, MD
- "EMS as the Newest Medical Subspecialty: Implications for Maryland's EMS Systems," presented by Roger Stone, MD, and Debra Lee, MD
- "EMS-C: Updates from the Field and from the Streets," presented by Cyndy Wright-Johnson, MSN, RN
- The EMS Agenda for the Future: Maryland's Transition Update," presented by Rae Oliveira, BS, NREMT-P, RN
- Helicopter Utilization Database Review; Under Triage; Number of Cases Audited and Trends," presented by Richard Alcorta, MD, FACEP

eMEDS, the ImageTrend, Inc., electronic patient care reporting system that is built upon the National EMS Information System (NEMSIS) data set, has been implemented by 18 EMSOPs and 21 commercial companies. The Office of the Medical Director continued to support its development and revision which included significant expansion of validation rules, data dictionary definitions, the inclusion of a tablet-based patient initiated refusal-of-care form, and modifications based on the 2012 protocol changes. Dr. Alcorta has also been working closely with NEMSIS Technical Assistance Center in an effort to address current national database issues and the future transition of the data definition to align with ICD-10CM codes.

In June 2012, the Office of the Medical Director met with physicians from Korea who were visiting the University of Maryland Medical Center and included MIEMSS as part of their tour. One of the physicians is a transplant surgeon who met with Dr. Alcorta and explained that he is pursuing an EMS grant from his government. Dr. Alcorta provided the physicians with an overview of the Maryland EMS system and gave them a tour of SYSCOM/EMRC.

Dr. Alcorta presented "Shake, Rattle & Roll: Earthquakes, Hurricanes and Their Consequences" at Miltenberger Emergency Services Seminar 2012 and EMS Care 2012. This presentation focuses on EMS preparedness, management, and types of injuries associated with different naturally occurring disasters.

MIEMSS and the Office of Health Care Quality (OHCQ) continued conducting multiple train-the-trainer programs across Maryland as well as providing on-line learning management training for EMS providers on the Medical Orders for Life Sustaining Treatment (MOLST) order form. The MOLST form, established as part of the Health Care Decisions Act, effective October 1, 2011, will be replacing the MIEMSS EMS/DNR form. This past fiscal year, OHCQ, MIEMSS staff (Dr. Alcorta), and the Attorney General's Office performed 19 train-the-trainer programs. Over 1,400 trainers representing every hospital and nursing home organization in the state have completed the program and taken the MOLST educational package back to their institutions. The MOLST law requires nursing homes, assisted living facilities, dialysis centers, and hospitals, for certain inpatients, to complete a MOLST form for their patients. These orders address essential patient wishes and will accompany the patient across the spectrum of health care.

The Office of the Medical Director, in collaboration with the Jurisdictional Medical Directors, continues to monitor and provide feedback to EMSOPs on the Helicopter Utilization Database. The jurisdictional EMS Medical Directors have reported tight compliance with the Medevac Utilization Protocol and that the use of this resource has dramatically saved time and been of clinical benefit in getting patients to the appropriate destinations.

The 2012 protocol updates became available February 1, 2012, and were offered on the MIEMSS Online Training Center or individual EMSOPs' learning management systems. All EMS personnel were expected to complete the 2012 protocol update by June 1, 2012. The 2012 *Maryland Medical Protocols for EMS Providers* pocket protocols were printed and distributed to the EMSOPs. This year, the full-sized protocol books were printed with single-page placeholders in lieu of multi-page, rarely-used optional protocols. This resulted in a reduction in printing of over 10%. The unabridged version of the *Maryland Medical Protocols for EMS Providers* is available on the MIEMSS website at www.miemss.org.

The Office of the Medical Director continued to support the Maryland Regional National Disaster Life Support (NDLS) Coalition. This year, courses were held at the R Adams Cowley Shock Trauma Center and Maryland Fire and Rescue Institute Headquarters. There were two Basic Disaster Life Support (BDLS) classes with a total of 109 students, one Advanced Disaster Life Support (ADLS) class with 41 students, and one ADLS Instructor class with approximately 40 students.

During FY 2012, 12 hospitals applied for redesignation as MIEMSS-approved Base Stations. The MIEMSS Base Station communications course was taught and, as a result, 514 Base Station certificates were issued to Emergency Department providers with five new Base Station Physician Instructors credentialed.

The Office of the Medical Director dealt with a number of nationwide medication shortages that affected the ability of some EMSOPs to stock certain vital medications. Dr. Alcorta worked with federal, interstate, intrastate, and local partners to provide solutions. Ketamine, Diazepam, and Fentanyl were emergently added to the *Maryland Medical Protocols for EMS Providers* for EMSOPs unable to stock etomidate, midazolam, and morphine, respectively.

QUALITY MANAGEMENT

Mission: To support both MIEMSS and the emergency medical services (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 an emergency medical services (EMS)-specific, Juran-based program. Over the years, MIEMSS had taken advantage of state-supported resources and drawn upon other individuals who practice quality management principles within their respective EMS setting or other work settings. These diversified resources continue to help Maryland's EMS community in its efforts to improve services and customer relationships.

Managing for Results

For the past 14 years, MIEMSS, like all State agencies, has been required to submit Managing for Results (MFR) updates along with its fiscal year budget requests to the Maryland Department of Budget and Management. This phased-in planning process began with the establishment of the MIEMSS Vision, Mission, and Principles statement through a customer-focus strategic planning process. MIEMSS has again met those requirements which include re-evaluation of key goals, establishment of subsequent objectives and strategies, development of associated action plans, and creation and monitoring of performance indicators.

MIEMSS has identified two strategic goals and three associated objectives. Two objectives are outcome-oriented and the third is quality-based. Each objective includes 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 Increase by 5% annually the number of prehospital acute ischemic stroke patients receiving tPA medication upon hospital arrival and within three hours of symptom onset.

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

Objective 2.1 Transport at least 89% of seriously injured patients to a designated trauma center throughout 2012.

Team EMS

An innovative approach to Quality Management education and application in the real world of EMS management was developed in collaboration with the MIEMSS Region V administration; the strategy was implemented in 1996 and has been updated to reflect present standards. MIEMSS staff and a cadre of volunteer instructors from the EMS community developed ways for company and jurisdictional managers to plan for, measure, maintain, and improve quality services. Techniques taught range from brainstorming causal relationships to data analysis interpretation; topics include quality improvement team creation and meeting quality assurance standards established under state law. Jurisdictions and Regional EMS Advisory Councils have utilized this training for planning purposes, and more than 500 providers have attended statewide and special training sessions for Emergency Medical System Operational Programs (EMSOPs) on a variety of subjects from indicator development to data interpretation.

Beginning in 2002, and in accordance with COMAR Title 30 regulations, all Maryland jurisdictional programs have implemented their own quality assurance (QA) and quality improvement (QI) plans. During this evolutionary process, Team EMS has provided the skill sets for effective and continued success in meeting the goals of these plans. Particular interest has focused on the role of jurisdictional and local QA/QI managers and the skills to be an effective quality leader. To help strengthen the role of this important link to quality services, Title 30 was amended in October 2007 to define and mandate the functions of this officer at the operational program level. The two-day core curriculum was modified and presented this year at four EMSOP educational seminars.

electronic Maryland EMS Data System Implementation

MIEMSS was awarded second, third, and fourth year grants from the Maryland Highway Safety Office for the implementation and upgrade of a new electronic Patient Care Record (ePCR) solution known as the electronic Maryland EMS Data System (eMEDS). The number one goal was to have Maryland's prehospital care data meet the gold compliance standards set forth by the National Emergency Medical Services Information System (NEMSIS). Beginning February 2011, three pilot EMSOPs implemented eMEDS as their primary ePCR. Presently, we have 18 EMSOPs utilizing eMEDS for direct prehospital patient care data entry and self-report writing for program monitoring, evaluating, and improving. Additionally a matching grant program for all EMSOPs using the eMEDS application and wanting to link their EMS Computer Aided Dispatch (CAD) records was continued for a second year. Five EMSOPs were awarded funds and seven others will be implementing this feature by the end of CY 2012.

EMS Surveillance Measures

MIEMSS has maintained several EMS system surveillance priorities based on routine data review, customer requests, and research outcomes. Hospital yellow alert demand is monitored at state, regional, jurisdictional, and hospital-specific levels through our online County Hospital Alert Tracking System (CHATS). Monitoring on this system keeps all entities updated on system response capabilities and historical trends. This monitoring (especially during the winter months and flu season) and hospital strategy to address high demand for emergency department services help improve the availability of this vital service system-wide. Additionally, yellow alert data form one measurement in the State Department of Health and Mental Hygiene's syndromic surveillance programs.

The Helicopter Utilization Database was created after field protocols were revised for helicopter scene request transports in 2008. This database accounts for all helicopter requests for transport, independent of actual transport mode outcome, and permits the requesting EMS managers/medical directors to conduct case reviews. The primary goal is to utilize this transportation resource for only the most severe, time-critical, scene incident patients statewide.

Data Confidentiality

MIEMSS maintains or has access to eight confidential databases used in ensuring quality EMS care delivery. The Data Access Committee (DAC) was formed to ensure that all data and requests for information are expedited efficiently and accurately while ensuring patient and provider confidentiality at all times. Since January 2000, over 1,475 requests have been tracked and facilitated.

REGIONAL PROGRAMS AND EMERGENCY OPERATIONS

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

Regional Programs/Emergency Operations consists of five offices located throughout the state. Each office consists of at least one regional administrator and a supporting staff member. They are responsible for monitoring the operation of the regional EMS system, acting as advocates for the services in their region in the development of State policies, and representing MIEMSS in the implementation and maintenance of those policies. In the event of a large-scale incident, regional administrators are expected to be available to local resources to assist in the response. In many cases, they will be the first State representatives on the scene.

It is with great sadness that MIEMSS notes the loss of a dear friend, colleague, co-worker, and superb EMS advocate: Richard C. Meighen, the Region II Administrator, passed away in February 2012. Region I and many other MIEMSS employees have stepped in to assist while the Region II Administrator position is vacant.

Regional EMS Advisory Councils

Each region has a Regional EMS Advisory Council that provides the focal point for the coordination of EMS planning and activities between the jurisdictions. The councils provide a means for neighboring jurisdictions to collaborate on many issues such as conferences, training, quality improvement processes, emergency response exercises, and mutual aid activities. The regional offices act as staff for those councils to schedule meetings, manage records, research information, facilitate discussions, and represent MIEMSS at their meetings.

Grant Programs

Regional offices facilitate the distribution of funds to support local programs from several sources. For an accounting of the funds administered through the regional EMS offices, see page 32. Enhancements to local programs that were made as a result of those funds include the following:

Department of Health and Human Services – Hospital Preparedness Program

The Hospital Preparedness Program (HPP) provides funding to local EMS agencies to enhance their emergency preparedness, especially for biological events. The complete accounting of expenditures, according to the priorities prescribed by HPP, can be found on page 65. This past fiscal year, funds were used to enhance and expand patient tracking systems, upgrade communications systems, and increase caches of critical equipment required to provide care to special needs patients.

The Region I office is the contact for HPP grant funding, ensuring applications are completed, submitted, and funds are expended appropriately.

Urban Area Security Initiatives

The Region III Health and Medical Task Force, a subcommittee of the Baltimore Area Urban Workgroup led by Christina Hughes of MedStar Franklin Square Hospital Center, continues to work towards several preparedness objectives throughout the region. The group continued to focus on the sustainment and expansion of three of the previous year's projects, including two state-of-the-art Medical Ambulance Buses, a Regional Alternate Care Site cache of equipment ranging from tents to medical supplies, and procurement of hardware for expansion of the State's electronic patient tracking system.

Public Safety Interoperable Communication Grant

The Region III office, in conjunction with the MIEMSS Communications Engineering Department, completed work associated with the statewide Public Safety Interoperable Communications (PSIC) grant project, provided to connect hospitals, 9-1-1 centers, emergency operations centers, and state police barracks to the Public Safety Intranet (PSInet) using Voice over Internet Protocol (VoIP) technology. This was funded by the Department of Homeland Security (DHS) PSIC grants. The Region III hospitals were previously connected through a UASI grant.

Radio Grant Program

The Regions worked closely with MIEMSS' Communications Engineering Office to identify priorities for replacement of wideband EMS radios in order

to be compliant with the Federal Communications Commission’s narrowbanding requirements. The MIEMSS Radio Grant program provided funding to upgrade the radios.

The Region I office ensured the completion of the MIEMSS Radio Grant process that made certain all EMS radios in all ambulances were compliant with the upcoming Federal narrowbanding regulations.

Computer Aided Dispatch Interface Grant Program

MIEMSS offered computer aided dispatch (CAD) interface grants with funding provided by the Maryland Highway Safety Office and the National Highway Transportation Safety Administration. The CAD Interface Grant was a 60/40 matching grant program allowing MIEMSS to reimburse an EMS Operational Program (EMSOP) 60% of the costs associated with services performed by Image Trend, Inc., to establish a CAD interface to the electronic Maryland EMS Data System (eMEDS).

Other MIEMSS-Funded Grants

MIEMSS provides funding from its budget for several programs. The Advanced Life Support (ALS) Training program provides funds to support initial and continuing education for ALS providers and candidates. The Emergency Medical Dispatch (EMD) program provides funding for similar programs for EMS dispatchers. The 50/50 Matching Equipment Grants support the purchase of Automated External Defibrillators (AEDs), defibrillators, and diagnostic equipment by local EMS agencies and companies. Region V Council met and prioritized AED 50/50 grant requests, HPP bioterrorism grants, and ALS training funds. HPP funds were used to purchase various items for the region to include pediatric transport devices, EZ-IO needles, and transport ventilators.

Inventory and Administration

Each regional office is responsible for tracking the activity and progress of all grants that its region receives. This includes ensuring that periodic reports are completed and inventorying any physical assets gained as a result of the grants, per state and federal requirements. This also includes an annual inventory of state equipment on loan to the local jurisdictions and the ongoing inventory of equipment obtained from previous grants.

Medical Direction

STEMI Designation and Planning

In FY 2010, the regional programs assisted in a process to plan for the designations of the S-T Elevation Myocardial Infarction (STEMI) centers and the new protocols requiring transports to these centers. The Cardiac Intervention Centers (CIC) were designated on April 1, 2011. Each regional office continues to work closely with their established CIC Medical Review Committee (MRC) to evaluate the STEMI data from across the state.

Region I STEMI Committee continues to meet quarterly, since July 2010, to review the Regional STEMI Plan, evaluate the data set for STEMI cases, and assess outcomes of STEMI patients. Region I has an effective activation from the field initiative that allows ALS providers to activate the Cardiac Cath Intervention Team at a hospital while assessing the patient at the scene. This activation from the field by EMS providers significantly reduces EMS-to-balloon (E2B) times in the rural setting of Western Maryland and ensures increased survivability and positive outcomes for STEMI patients. Additional focus is currently on the STEMI transfer center and reducing E2B times for these patients. The Region I Administrator has been actively attending the Western Maryland Regional Medical Center’s Door-to-Balloon Committee, decreasing communication barriers between prehospital providers and hospital staff.

MIEMSS Grant Disbursements (FY 2012) by Region

	50/50 Matching Fund Grant for AEDs, Monitor Defibrillators and Upgrades	ALS Training Funds	Emergency Dispatch Programs	HPP Bioterrorism Grants BT-IX (FFY 2011)	DOT Highway Safety CAD Interface Grants (FFY 2011-2012 to date)	Totals By Region
Region I	\$46,790	\$31,269	\$0	\$9,697	\$30,643	\$118,399
Region II	\$51,560	\$36,932	\$8,430	\$15,238	\$14,950	\$127,110
Region III	\$113,370	\$102,434	\$14,825	\$53,333	\$26,707	\$310,669
Region IV	\$91,220	\$70,758	\$10,477	\$43,636	\$46,818	\$262,909
Region V	\$99,060	\$88,000	\$16,272	\$38,095	\$12,806	\$254,233
Total	\$402,000	\$329,393	\$50,004	\$159,999	\$131,924	\$1,073,320

NOTE: Does not include other grants described on pages 31 and 32.

Region II continues to work closely with their regional STEMI committee. Frederick Memorial Hospital and Washington County Hospital are working closely with local EMS jurisdictions on quality assurance matters. They are expanding membership to include a community cardiologist and emergency department staff. The committee continues to review the issue of time between notification of the 9-1-1 center-to-balloon time for STEMI patients.

The Region III STEMI Committee was dissolved mid-year and efforts were resumed by the Cardiac Intervention Center Region III MRC. This committee (formerly referred to as the Quality Assurance/Quality Improvement (QA/QI) Subcommittee) worked diligently to define data elements necessary for the evaluation of the Region's STEMI programs. Data continues to be collected and evaluated on a quarterly basis.

The Region IV STEMI QA/QI Committee continued to meet and work on ways to improve 9-1-1 center-to-balloon times. The large geographic area and limited number of STEMI centers brought unique challenges to the region. However, with the full support of all hospitals in the region and out-of-state partners, recommendations are scheduled to be submitted to the EMS Board for approval that will expedite the treatment of both 9-1-1 and walk-in STEMI patients. Based on data, changes in transport patterns are being developed and implemented.

Base Stations

In cooperation with the Office of the State EMS Medical Director, the regional offices assist with the site visits required to approve hospitals that provide physicians' orders to prehospital providers. The regional offices also have taken the lead in the coordination of scheduling and supporting "Base Station Courses," which are required for the physicians and hospitals already designated as Base Stations.

In Region IV, a Base Station site visit was conducted at Atlantic General Hospital and it received another five year designation.

Stroke Centers

The Region IV Administrator assisted with the Stroke Center site visits at Atlantic General Hospital in Berlin and Memorial Hospital at Easton. Both facilities were renewed as Stroke Centers for another five years.

Quality Assurance Committee—MIEMSS

The Regional IV Administrator provides staff support to the Regional Jurisdictional QI Committee. The office also coordinates initial quality improvement training and continuing education across the state.



Quality Improvement

In Region I, both Allegany and Garrett Counties have continued work on their QA and QI Committees and have been meeting regularly to ensure proper EMS coverage in the region. Both counties continue to implement Strengths, Weaknesses, Opportunities, and Threats (SWOT) initiatives. Allegany County completed a revisit of the previous SWOT, which will determine progress and show a clear path forward for their EMS Operational Program. The successful introduction of the new Emergency Services Board for Garrett County, which has met several times since the supporting legislation was passed, is a testament to the SWOT initiative.

The Region III Medical Directors' Committee continued to make great strides during the past year to standardize the jurisdictional QA reporting processes. Dr. Eric Nager, the Region III EMS Medical Director, has been instrumental in coordinating a common QI process for the region and encouraging jurisdictions to work to attain the highest feedback standards. Dr. Nager's term concluded on June 30, 2012. Dr. Timothy Chizmar became the new Region III Medical Director on July 1, 2012.

The Region IV EMS Advisory Council has formed a QA/QI subcommittee to better assist the jurisdictions in Region IV in meeting the needs for quality assurance. Medical Directors' agreements, QA and QI plans, and quarterly QA reports are submitted to the State EMS Medical Director.

The SWOT analysis in St. Mary's County continues and is expected to be finalized by the beginning of FY 2013. Also in Region V, the Council accepted applications for and approved the appointment of Dr. Mike Somers as the new Regional Medical Director, effective July 1, 2012.

Communications Systems

Narrowbanding has been completed in EMS Region IV. Along with the operational start-up of the Region IV EMRC in April 2012 in conjunction with the MIEMSS Communications Department, narrowbanding signifi-

cantly enhanced communications in the region. All stakeholders did an outstanding job in bringing this project to completion.

electronic Maryland EMS Data System

In October 2011, Allegany and Garrett Counties began using the new electronic Maryland EMS Data System (eMEDS), an electronic patient care reporting system that replaced eMAIS®. This was an enormous undertaking with numerous training classes including administrator training, train-the-trainer, and provider-level courses. The Region I office, along with the eMEDS implementation team, ensured a successful and efficient transfer to the new reporting system.

The Region II office assisted Washington County in their efforts to implement eMEDS and coordinated of the many classes needed to assist EMS in using the new reporting system.

Voluntary Ambulance Inspection Program

The regional offices continue to perform inspections of ambulances under the Voluntary Ambulance Inspection Program (VAIP). These inspections ensure that each unit is stocked with specific equipment and meets the response criteria developed by the VAIP Committee. Statewide, 318 units were inspected this year. The inspections are valid for a period of two years. The VAIP Standards Committee reconvened this year and updated the standards to coincide with current *Maryland Medical Protocols for EMS Providers*. In the past two years MIEMSS has standardized the process of inspection and interpretation of the standards. Now all regional offices cooperate to inspect units across the state to ensure a consistent assessment of the units.

Both counties in Region I are actively participating in the Voluntary Ambulance Inspection Program and continue to embrace this process. In Region II, both Washington and Frederick Counties are actively participating in the VAIP Process. Anne Arundel, Carroll, Harford, and Howard counties in Region III are fully VAIP-certified. Participation in Region IV has expanded to four counties in full participation; many other units were certified individually. Three of the five jurisdictions in Region V have met countywide requirements for VAIP.

Conferences and Training

EMS Care 2012 was held in Ocean City from April 12 through April 15, 2012. The pre-conference workshops began on Thursday, April 12, and included a 12-hour EMT-B Skills course. The full conference included lectures from nationally recognized speakers and experts. The conference continued to expand and was, once again, a huge success. Planning is underway for next year's conference.

The 10th Annual Miltenberger Emergency Services Seminar, held in March 2012, was another success. Teamwork between the Region I office, the local hospitals, and other local agencies and institutions has developed a supportive learning environment that offers fire, EMS, EMD, and nursing topics. Work has already begun for the 11th annual program for next year, to be held March 15 and 16, 2013.

The Peninsula Regional Medical Center (PRMC) hosted its 21st Annual Trauma Conference in September 2011 in Ocean City (Region IV). The conference provides physicians, nurses, and prehospital providers the opportunity to hear speakers on current critical issues in the field of trauma care. In addition, PRMC and Shore Health Systems (Memorial Hospital at Easton) each coordinated a stroke conference to provide prehospital providers with additional training to better recognize stroke patients. These institutions not only assisted in the training of prehospital providers, but also offered outreach programs to the community to better educate the public regarding the risks, signs, and symptoms of stroke. As a result of their efforts, EMS units are able to more quickly identify patients at high risk of stroke and transport them to treatment.

Talbot County EMS, in conjunction with Shore Health Systems and the Region IV office, hosted the 15th Annual Winterfest Conference on Tilghman Island. This is one of the most successful regional conferences held throughout the state. The Winterfest Conference continues its successful run of providing both pre-conference and conference participants the opportunity for continuing education while meeting recertification needs of providers.

Pyramid 2011, a one-day conference held at Huntingtown High School in Region V, took place on October 22, 2011, and was attended by over 60 participants.

Support for Education Programs

In addition to the conferences described above, the regional offices support many other educational programs that are innovative and geared to address issues specific to a particular region. Some arise from needs identified through quality improvement processes. Many of the regions support the Protocol Rollout classes.

The regional offices also act as daily resources for local educational programs and institutions, ensuring there are adequate resources and basic training programs available. Often the regional offices coordinate courses with community colleges, fire academies, and local hospital and association programs. Some regions have education committees and councils staffed by the regional offices to bring the program coordinators together and identify priorities for training. In FY 2012, due to changes in services at Chester River Health System, the

Region IV office provided additional training to pre-hospital providers and worked closely with hospital administration during the transitions.

The regional offices are also responsible for conducting the written certification and licensure examinations. This year they conducted 32 First Responder and 104 EMT-Basic exams for classes, as well as 391 individual exams in their offices.

The Region I office continues to participate in the testing of local providers, distribution of protocols, and completion of protocol updates by providers. The Region I Administrator has participated in various training activities with the most recent being certification as a Maryland ALS Provider. The Administrator is now the Maryland State EMS Representative to the Joint Committee for Rural Emergency Care.

Illness and Injury Prevention

All Regional Programs continue to support a variety of education and prevention activities through their EMS Advisory Councils.

Health and Medical Emergency Preparedness Responses and Activations

The regional offices are the first line of response by MIEMSS to support local jurisdictions during significant emergency incidents and pre-planned mass gatherings. This year MIEMSS supported State agencies and local EMS jurisdictional programs during several major events.

- Region III and SOCALR assisted in the emergency evacuation of a 150+ bed skilled nursing facility in Havre de Grace due to flooding resulting from Hurricane Lee. The electronic patient tracking system and the Region III Medical Ambulance Bus from Howard County were employed during the event.
- The roles and responsibilities of MIEMSS and the Region IV office were utilized fully from August 26 through August 29, 2011, during Hurricane Irene. A nursing home and a hospital facility were evacuated during this time period.
- MIEMSS personnel were activated to staff the State Emergency Operations Center (SEOC) in the aftermath of a significant severe weather event on June 29, 2012, resulting in the loss of power to thousands of residents and health care facilities statewide. The event coincided with an extended heat wave, creating an even greater need for assistance.

- Region V office responded to several incidents including bus crashes in the metropolitan areas and heat emergencies in Southern Maryland. Work completed during after-action conferences on the Regency Furniture Store Stadium heat incident last year improved the local and regional response to the more recent heat incidents. The improvement plan from the Regency Furniture storm continues to be implemented.

Health and Medical Committees

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

The Region I office supported local jurisdictions by serving on following committees: the Local Emergency Planning Committee, Surge Planning, Disaster Planning, and Mass Fatality Planning. The Region I office ensured timely communication of relevant EMS issues by participating in the Allegany-Garrett Counties Volunteer Fire and Rescue Association, the Region I ALS Advisory Committee, the Region I and II Hospital Preparedness Council, the Allegany County EMS Committee, the Allegany County Emergency Services Board, the Garrett County Emergency Services Board, and the Garrett County Fire and Rescue Association. The Western Emergency Medical Resource Center, located at the new 9-1-1 Communications Center in Allegany County, was established. Cooperation between the MIEMSS Communications Department staff, the Allegany County 9-1-1 Center, Garrett County Emergency Management, Washington County EMS, and the Region I and II offices has made possible the EMS communications system that provides for Garrett, Allegany, and recently-integrated Washington County.

Regions I and II continue to support the Region I and II Health Care Council which conducts comprehensive regional Emergency Support Function (ESF) #8 planning and coordinates grant application activities for regional hospitals, Maryland Department of Mental Health and Hygiene facilities, Public Health Departments, and EMS Regional Councils.

The Region III Health and Medical Task Force continues to coordinate work on health and medical UASI projects. As the Hospital Preparedness Program has taken on a more regional focus, the Task Force continues to include federally-qualified health clinics and skilled nursing facilities. As a result of their collaborative efforts, the Region III Health and Medical Task Force was the 2012 recipient of the Homeland Security Award for Outstanding Practice. The award was presented at the 2012 Homeland Security Conference in Columbus, Ohio.

MIEMSS also cooperated closely with the Metropolitan Washington Council of Governments to coordinate activities across the National Capital Region. This included participation in multiple regional exercises, coordination of emergency communication procedures, and expansion to the patient tracking system and integration of HC Standard into the District of Columbia.

Emergency Response Exercises

MIEMSS regional offices supported more than 24 exercises during the past fiscal year. Some of the more notable exercises included:

- MIEMSS participated in the “Bridge Over Troubled Waters” NDMS exercise at the Baltimore/Washington International Thurgood Marshall Airport (BWI) on May 12, 2012.
- The MIEMSS Region III office assisted with an active shooter exercise held at Upper Chesapeake Medical Center in November 2011.
- The Region I office assisted Garrett County in preparation for a full-scale exercise in the fall of 2012. The Region I Administrator assisted in preparation for large-scale flood planning in conjunction with the neighboring states of West Virginia and Pennsylvania. He also attended the NDMS exercise at BWI airport in May.
- Exercises conducted in Region V included a Mass Fatality Tabletop with the Prince George’s County Health Department and a SYSPHUS exercise at Andrews Air Force Base.

The Region II office is assigned to maintain records and coordinate support services for exercises that take place across the state.

Chempack

MIEMSS continues to coordinate the Chempack portion of the Strategic National Stockpile in Maryland. This includes monitoring access to the sites and coordinating the multiple site visits for the Centers for Disease Control. To update the medications and inspect the facilities, the Chempack program places chemical agent antidotes into forward locations to ensure there can be rapid deployment should there be an exposure of a large group of people.

Health and Medical Monitoring Application

The regional offices made great strides in enhancing the participation of the online use of the County Hospital Alert Tracking System (CHATS). Nearly all hospital and 9-1-1 centers are using online methods to change their own status and get alerts about other status changes. The use of the Patient Tracking portion of HC Standard continues to be expanded and utilized. This year it supported the evacuation of nursing homes during tropical storms and also planned events such as the Baltimore Grand

Prix. The Facility Resource Emergency Database (FRED) function of the system was activated over 60 times this year to alert health and medical response partners of incidents and exercises and was used to assess resource availability for beds, medications, and other supplies needed for the response. More enhancements are planned for the next fiscal year to include long-term care facilities and a Psychiatric Bed Registry.

Preparedness Planning

MIEMSS continues to cooperate with the Governor’s Homeland Security Advisor to achieve the Governor’s 12 Homeland Security goals. We continue to work through the regional health and medical task forces and coalitions to accomplish these goals. The Department of Health and Human Services (DHHS) released new guidelines for preparedness capabilities; we are aligning the assessment of MIEMSS’ “mass casualty” goal with the new measures in the DHHS documents.

The Maryland-1 Disaster Medical Assistance Team (MD-1 DMAT) is a multidisciplinary team of medical professionals that is a member of the National Disaster Medical System within the DHHS Assistant Secretary for Preparedness and Response Office. The team’s purpose is to provide mass casualty medical care during a disaster or any event that overwhelms a region’s healthcare infrastructure. The team currently has approximately 90 active members, is on-call to be deployed nationwide, and is dual-designated by the federal government as both a medical response asset as well as a hazardous materials decontamination team dedicated to the National Capital Region.

New EMS Operational Program

Region V welcomed one new EMSOP: Naval Support Activity Bethesda was approved as an EMSOP in August 2011.

Special Programs and Projects

The Region IV Administrator assisted in several special projects. In FY 2012, Shore Health Systems held a series of listening sessions in the five-county mid-shore area to hear issues and topics as they relate to their own campuses and to plans for the construction of a new regional hospital. The Administrator was asked to serve on a Caroline County Community Needs Assessment by the Caroline County Commissioners and Shore Health System. This committee will develop recommendations for enhancing the level of healthcare services in Caroline County.

The Regional Program staff and the Region IV Administrator also continue to assist with and comply with all National Incident Management System Capability Assessment Support Tool (NIMSCAST) requirements.

STATE OFFICE OF COMMERCIAL AMBULANCE LICENSING AND REGULATION

Mission: To provide leadership and direction regarding the commercial (private) ambulance industry in Maryland to protect the health, safety, and welfare of persons utilizing these services. This includes the development and modification of statewide requirements for commercial ambulance services and vehicles and the uniform and equitable regulation of the commercial ambulance industry throughout Maryland.

Operating Statistics:

July 2011-May 2012:

- 1 New Basic Life Support Services License Issued
- 82 Intra-Cycle Vehicle Licenses Issued
 - 8 Semi-Annual Vehicle Licenses
 - 3 Basic Life Support (BLS) Vehicles
 - 5 Advanced Life Support (ALS) Vehicles
 - 36 New Vehicles Added
 - 26 Basic Life Support (BLS) Vehicles
 - 8 Advanced Life Support (ALS) Vehicles
 - 2 Neonatal (NEO) Vehicles
 - 38 Vehicle License Changes
 - 6 Licensing Downgrades (ALS to BLS)
 - 25 License Transfers (BLS to BLS, ALS to ALS)
 - 7 Licensing Upgrades (BLS to ALS, SCT to NEO)

Annual Inspection—June 2012:

- 41 Commercial Ambulance Service Licenses Issued (BLS, ALS, SCT, NEO, AIR)
 - 37 Ground Ambulance Services
 - 9 Basic Life Support Services (BLS)
 - 28 Advanced Life Support Services (ALS)
 - 12 Specialty Care Services (SCT)
 - 7 Neonatal Services (NEO)
 - 4 Air Ambulance Service Licenses
- 428 Vehicles Inspected & Licensed
 - 265 Basic Life Support (BLS) Vehicles
 - 141 Advanced Life Support (ALS) Vehicles
 - 20 Neonatal (NEO) Vehicles

The State Office of Commercial Ambulance Licensing and Regulation (SOCALR) marked its nineteenth year of operation serving the commercial ambulance industry. The department's trend of repeated annual growth validates the value and need for commercial ambulance services in Maryland. Since FY 2011, the total number of commercial vehicles operating has increased:

- 10% increase in Basic Life Support (BLS) vehicles
- 16% increase in Advanced Life Support (ALS) vehicles
- 100% increase in Neonatal (NEO) vehicles

SOCALR also continues to play a vital role in the emergency medical services (EMS) community beyond the licensing capacity. Regular duties include compliance with federal, state, and local laws; quality assurance and quality improvement; and ambulance safety.



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 page 39.) 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, Baltimore City
- Suburban Hospital, Bethesda

Level III Trauma Centers

- Meritus Medical Center, Hagerstown
- Peninsula Regional Medical Center, Salisbury
- Western Maryland Regional Medical Center, Cumberland

SPECIALTY REFERRAL CENTERS

Burns

- Baltimore Regional Burn Center/The Johns Hopkins Bayview Medical Center, Baltimore City
- Burn Center/MedStar Washington Hospital Center, Washington, DC
- Pediatric Burn Center at Children's National Medical Center, Washington, DC
- Pediatric Burn Service at Johns Hopkins Children's Center

Cardiac Interventional Centers

- Region I
 - Western Maryland Regional Medical Center
- Region II
 - Frederick Memorial Hospital
 - Meritus Medical Center
- Region III
 - Anne Arundel Medical Center
 - Baltimore Washington Medical Center
 - Carroll Hospital Center
 - MedStar Franklin Square Hospital
 - Howard County General Hospital
 - Johns Hopkins Bayview Medical Center
 - Johns Hopkins Hospital
 - Sinai Hospital
 - St. Agnes Hospital
 - St. Joseph Medical Center
 - MedStar Union Memorial Hospital
 - University of Maryland Medical Center
 - Upper Chesapeake Medical Center
- Region IV
 - Peninsula Regional Medical Center
- Region V
 - Holy Cross Hospital
 - Prince George's Hospital Center
 - Shady Grove Adventist Hospital
 - Southern Maryland Hospital
 - Suburban Hospital
 - Washington Adventist Hospital

- Out-of-State Cardiac Interventional Centers
 - Bayhealth Medical Center, Dover, DE
 - Christiana Hospital, Newark, DE
 - MedStar Washington Hospital Center, Washington, DC

Eye Trauma

- The Wilmer Eye Institute/The Johns Hopkins Hospital, Baltimore City

Hand/Upper Extremity Trauma

- The Curtis National Hand Center/MedStar 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
- MedStar Franklin Square Hospital Center
- Frederick Memorial Hospital
- Greater Baltimore Medical Center
- Holy Cross Hospital
- Howard County General Hospital
- Johns Hopkins Bayview Medical Center
- Johns Hopkins Hospital
- Mercy Medical Center
- Peninsula Regional Medical Center
- Prince George's Hospital Center
- St. Agnes Health Care

- St. Joseph Medical Center
- Shady Grove Adventist Hospital
- Sinai Hospital
- University of Maryland Medical System

Poison Consultation Center

- Maryland Poison Center/University of Maryland School of Pharmacy, Baltimore City

Designated Primary Stroke Centers

- Anne Arundel Medical Center
- Atlantic General Hospital
- Baltimore Washington Medical Center
- Calvert Memorial Hospital
- Civista Medical Center
- MedStar Franklin Square Hospital Center
- Frederick Memorial Hospital
- MedStar Good Samaritan Hospital
- Greater Baltimore Medical Center
- MedStar Harbor Hospital Center
- Harford Memorial Hospital
- Holy Cross Hospital
- Howard County General Hospital
- Johns Hopkins Bayview Medical Center
- Johns Hopkins Hospital
- Maryland General Hospital
- Memorial Hospital at Easton
- Mercy Hospital Center
- Meritus Medical Center
- MedStar Montgomery General Hospital
- Northwest Hospital
- Peninsula Regional Medical Center
- Shady Grove Adventist Hospital
- Sinai Hospital
- Southern Maryland Hospital
- St. Agnes Hospital
- St. Joseph Medical Center
- MedStar St. Mary's Hospital
- Suburban Hospital
- Union Hospital of Cecil County
- MedStar Union Memorial Hospital
- University of Maryland Medical Center
- Upper Chesapeake Medical Center
- Washington Adventist Hospital
- Western Maryland Regional Medical Center

Primary Adult Resource Center

R Adams Cowley Shock Trauma Center, University of Maryland Medical System

Located in Baltimore City, the R Adams Cowley Shock Trauma Center, which serves as the State's Primary Adult Resource Center (PARC), reported receiving 6,846 trauma patients from June 2011 to May 2012, according to the Maryland State Trauma Registry. (See pages 66 to 71 for additional patient data.) Thomas M. Scalea, MD, FACS, FCCM, serves as the Physician-in-Chief for the Program in Trauma. Karen E. Doyle, MBA, MS, RN, NEABC, is Vice-President of Nursing & Operations. During FY 2012, the Center received a total of 8,628 patients.

As the highest-volume trauma center in the United States, teams of providers are standing by 24/7 to receive, stabilize, and treat those whose lives are threatened by time-sensitive injuries. These include, but are not limited to, thoracic, intra-abdominal and facial trauma, spinal cord and column injuries, brain injury, and acute complex orthopedic injury. In addition, patients who develop life-threatening respiratory failure, multiple organ dysfunction, soft tissue infection, and sepsis may be transferred to Shock Trauma

where expert clinicians and sophisticated technology such as advanced hemodynamic monitoring, continuous renal replacement therapy, and extracorporeal membrane oxygenation are readily available. With 13 resuscitation bays, multiple trauma-dedicated operating rooms, injury-specific inpatient floors, and a hyperbaric chamber that can accommodate up to 23 patients, Shock Trauma continues to be the nation's premier trauma center, advancing care and developing new life-saving techniques. It also serves as a referral center for Maryland in neurotrauma and hyperbaric medicine. Today, 97% of patients brought to the Shock Trauma Center survive.

The Shock Trauma/Critical Care Fellowship is the largest and one of the most prestigious programs of its kind. The goal of the fellowship is to produce physician leaders in academic surgery in the area of critical care and trauma. Under the guidance of skilled faculty, fellows master the cutting-edge techniques of critical care medicine. Shock Trauma also provides exceptional teaching opportunities for nurses and other healthcare professionals. Since 2001, US Air Force surgeons, nurses, and technicians have been coming to Shock Trauma for training through the Center for the Sustainment of Trauma and Readiness Skills (C-STARS) program.

The Shock Trauma Center EMS Office staff provides ongoing educational opportunities for prehospital staff. In FY 2012, evening educational

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	

programs open to prehospital and hospital care providers were held seven times and linked via live broadcasts to 13 remote sites across the state. Broadcast locations included the Western Maryland Regional Medical Center (Cumberland), Meritus Medical Center (Hagerstown), Carroll County Community College, Suburban Hospital (Bethesda), Prince George's Hospital Center (Cheverly), Civista Medical Center (LaPlata), Calvert County Advanced Life Support (ALS) Training Center, St. Mary's Hospital (Leonardtown), Cecil County Department of Emergency Services, Kent County Department of Emergency Services, Queen Anne's County Department of Emergency Services, Memorial Hospital (Easton), and the Peninsula Regional Medical Center (Salisbury). Tours were given to 42 groups. One hundred and sixty-eight emergency medical services (EMS) providers participated in 13 ALS Advanced Airway Cadaver Skills Labs. The Observation Program provided experiences for 258 EMS providers in the Trauma Resuscitation Unit and 135 EMS providers in Critical Care. Twenty-six onsite clinical educational programs were held at firehouses, training academies, and regional EMS conferences. The EMS Office attends many fire department open houses, providing hundreds of Marylanders with EMS and prevention education materials. In addition to the local and regional EMS conferences, Shock Trauma continued its collaboration with the *Journal of EMS* (JEMS) to provide speakers, courses, observations, and tours for "EMS Today," a national and international conference.

In keeping with the mission of preventing severe injury and death, the Shock Trauma Center established the Center for Injury Prevention and Policy (CIPP) in 2011. The CIPP, led by Mayur Narayan, MD, MBA, MPH, and Tara Carlson, MS, RN, is a multidisciplinary team focused on identifying injury trends and developing prevention education programs for the State of Maryland. The established mission of the CIPP is "to reduce preventable injuries and violence and reduce the consequences while establishing a culture of injury prevention in Maryland." The vision is to put an end to preventable injuries for Maryland citizens. This initiative is part of a defined partnership with the community, school systems, legislators, and businesses to keep Marylanders and all Americans safe from preventable injuries and violence.

Geared to research, evaluate, and modify implementation techniques in teaching trauma prevention, the CIPP consists of multiple programs including the Violence Prevention Program, the Domestic Violence

Task Force, the Department of Trauma Prevention, Minds of the Future Program, and the Trauma Survivor's Network.

The Shock Trauma Center's Violence Prevention Program (VPP) consists of several components.

- The Violence Intervention Program (VIP) is designed to identify patients who are victims of personal violence in an effort to intervene and disrupt the cycle of violence. The program utilizes a multidisciplinary approach employing social workers, case workers, nurses, and physicians, along with staff from parole and probation, to provide resources and education for these patients. It is one of the few hospital-initiated violence intervention programs in the country, with compelling data to support its effectiveness. Goals of the program are to interrupt the cycle of violence, teach non-violent coping strategies, connect clients to community providers, reduce risk-taking behavior and re-injury, reduce criminal behavior, and prevent further injury from violence and criminal activity. In FY 2012, the program had 47 off-campus visits and engaged more than 872 people.
- Promoting Health Alternatives for Teens (PHAT) is another dimension of the VPP. This program aims to: talk to youth about the "power of choice" and decisions, have youth and professionals talk about career paths, introduce youth to former victims/perpetrators of violence, and talk about positive life lessons. For FY 2012, the PHAT program provided 15 tours for 224 students.
- My Future My Career (MFMC), the third and final component of the VPP, exposes at-risk youths to various career paths over sessions at the University of Maryland, Baltimore. The ultimate goal is to re-engage youth with school. In May 2012, eight students participated for one day a week in the four-week long MFMC program.

The Domestic Violence Task Force is a coordinated effort to educate Baltimore's health care community about domestic violence. A comprehensive approach is utilized to address this serious problem through two objectives: (1) education through in-service training for the Shock Trauma Resuscitation Unit nursing personnel on the screening process for domestic violence patients and (2) community outreach achieved by hosting an annual domestic violence seminar during Domestic Violence Month in October.

The Department of Trauma Prevention provides education and awareness to the community regarding high-risk behaviors that often lead to traumatic injuries. The focus is geared toward impaired and inattentive driving (that is, drunk, drugged, or distracted driving) with attention to its consequences and prevention strategies. The program offered to all of Maryland's counties and Baltimore City has existed for more than 20 years. This program works in partnership with juvenile justice departments, schools, state attorneys' offices, and the judicial system. The targeted population includes high-risk teenagers, adult DWI/DUI offenders, and the general public. There are two components to this program: (1) on-site classes, which instructed hundreds of teens and more than 500 adult DWI/DUI offenders in FY 2012, and (2) community outreach focused on the consequences of distracted and impaired driving delivered at high school assemblies to more than 16,862 students. Recently the department partnered with WBAL-TV's "3-D Project, Don't Drive Distracted." A Distracted Driving video was produced with the Maryland State Police (MSP), MIEMSS, Chestnut Ridge Volunteer Fire Department, and Baltimore County EMS. The video will be shown to high school students throughout the State of Maryland and in driver education classes offered by the Maryland Motor Vehicle Administration.

The Minds of the Future Program has introduced more than 900 students with an interest in health care careers to the real world of health care at the R Adams Cowley Shock Trauma Center. This three-hour educational program introduces junior and senior high school students to various careers in the hospital setting. Specifically, it includes presentations from a physician, nurse, and rehabilitation therapist as well as talks provided by volunteer services and the Living Legacy Foundation. In addition to the presentations, students participate in breakout sessions with the MSP, Rehabilitation Services, Trauma Prevention Programs, and the Maryland Advanced Simulation, Training, Research, and Innovation Center (MASTRI).

The Trauma Survivors Network (TSN) is a unique program offered by the American Trauma Society in partnership with the R Adams Cowley Shock Trauma Center. This Program offers an opportunity for former and current trauma patients and their families to connect with one another and rebuild their lives after a serious injury. To date, the TSN has over 20 trained volunteers who have visited over 100 patients. Monthly support group meetings attended by 15 to 20 survivors are also held.

Because of the large number of trauma patients with a variety of injuries that are served, a wealth of clinical and research experience has been accumulated at the Shock Trauma Center. Staff expertise is shared with other health care providers through numerous presentations at regional, national, and international professional meetings and publications in peer-reviewed journals and books. Shock Trauma Center staff are also frequently called upon as consultants to develop or improve trauma centers and systems in the United States and around the world.

The Charles "McC." Mathias Jr. National Study Center for Trauma and EMS (NSC) is an Organized Research Center (ORC) designed to further basic, translational, and clinical studies in injury research. With this designation, the Shock, Trauma, and Anesthesiology Research (STAR) ORC is a world-class, multidisciplinary research and educational center focusing on brain injuries, critical care and organ support, resuscitation, surgical outcomes, patient safety, and injury prevention. STAR encompasses the research activities of the University of Maryland School of Medicine's Program in Trauma and Department of Anesthesiology along with the existing NSC, established in 1986 by the US Congress. In FY 2012, the annual extramural funding generated by STAR amounted to over \$11.5 million.

As part of STAR's portfolio, the research program at the Shock Trauma Center is an integrated multidisciplinary program that seeks to answer important questions concerning issues affecting trauma patients. The R Adams Cowley Shock Trauma Center researchers participate in large national and international multi-institutional projects, and are conducting projects funded by the National Institutes of Health, the Department of Defense, and various industry sponsors. The US Air Force (USAF) is currently a major sponsor of research at STAR with eight active projects funded for over \$5.8 million. Clinical projects conducted at the Shock Trauma Center that are funded by the USAF include the construction of a state-of-the-art simulation center, as well as a study of continuous noninvasive monitoring and the development of predictive triage indices for outcome following trauma. Another project pending USAF funding will be aimed at predicting blood product needs using prehospital vital signs. Overall, there were 42 funded projects underway at STAR in FY 2012, with 19 projects directly involving patients at the Shock Trauma Center. For additional information pertaining to research at the Shock Trauma Center, refer to the section on The National Study Center for Trauma and EMS (page 82).

Level I

The Johns Hopkins Hospital, Adult Trauma Center

Located in Baltimore City, Johns Hopkins Hospital Adult Trauma Center reported receiving 2,120 trauma patients from June 2011 to May 2012 according to the Maryland State Trauma Registry. (See pages 66 to 71 for additional patient data.) David T. Efron, MD, FACS, serves as Director of Adult Trauma and Chief of Acute Care Surgery and Kathy Noll, MSN, is the Trauma Program Manager. Elliott R. Haut, MD; Adil H. Haider, MD, MPH; Kent A. Stevens, MD, MPH; Albert Chi, MD; and Amy Rushing, MD are the division's full-time trauma surgeons. Leigh Slater, MD, and Luis Garcia, MD, are the Trauma/Acute Care Surgery Clinical Fellows. Catherine Velopulos, MD, is the Trauma/Acute Care Surgery Research Fellow. Marla Johnston, MSN, CEN, is the Trauma Performance Improvement/Injury Prevention Coordinator. Two full-time nurse practitioners, Patricia Freeman, CRNP, and Suzette Heptinstall, CRNP, and one Physician Assistant, Shaunda Smith, PA-C, further enhance the continuum of care.

Johns Hopkins Hospital opened its new patient towers on May 1, 2012. The Sheikh Zayed Adult Tower provides expanded trauma capabilities that include six state-of-the-art trauma rooms, a radiology suite with CT, MRI, and ultrasound, 96 intensive care beds, and 33 new operating rooms. This brand new state-of-the-art facility has brought to new heights our capability to care for the injured patient.

Johns Hopkins Hospital Adult Trauma Center continues to provide 24-hour a day in-house trauma attending surgeon coverage. A core group of seven trauma/surgical intensivists maintain responsibility for clinical pathways and processes of care. Improved survival, triage time, and length of stay among critically injured patients have been documented with this approach.

True to the mission of Johns Hopkins School of Medicine, the Trauma Program is dedicated to research that will improve access to care and outcomes for trauma patients. The Trauma Division maintains a unique relationship with the Johns Hopkins Bloomberg School of Public Health, encompassing all facets of ongoing research. In addition to its standing interest in violence and injury prevention, the division has broadened its academic focus to identify ethnic and gender disparities in outcomes among critically injured patients. Specific faculty interests

include deep vein thrombosis prevention; benchmarking of population-based outcomes related to trauma care; quality of care studies; violence and injury prevention, both domestically and internationally; and implementation and improvement of trauma care in the developing world.

One of the most exciting projects is being spearheaded by Dr. Albert Chi, who is currently working with the Johns Hopkins University Applied Physics Lab (JHU/APL), Walter Reed Army Medical Center, and the Washington, DC, National Rehabilitation Hospital to evaluate the performance, usability, and patient/clinician acceptance of the JHU/APL Modular Prosthetic Limb (MPL) in patients who have undergone targeted muscle reinnervation surgery.

Targeted muscle reinnervation (TMR) is a new surgical procedure that reassigns nerves that once controlled the arm and the hand. By reassigning existing nerves, it is possible for people who have had upper-arm amputations to control their prosthetic devices by merely thinking about the action they want to perform. Dr. Chi has dedicated his research efforts to advancing this new surgical technique.

Developed through funding provided by the Defense Advanced Research Projects Agency, the MPL supports intuitive, non-invasive control schemes for commanding up to 17 independent joints in a robotic prosthetic arm. The MPL arm includes three degrees of freedom (DOF) in the wrist, 10 DOF in the hand, and four DOF in the upper arm. It is modular in both its physical and control configurations, accommodating the full range of amputation levels from wrist to shoulder. Currently Dr. Chi is working with APL to design control schemes that will be derived from advanced electromyography-based pattern recognition algorithms designed for patients after TMR.

The burden of injury and injury prevention in the developing world has been the research focus of Dr. Kent Stevens. As the Associate Director for Clinical Services and Trauma Care in the International Injury Research Unit at the Johns Hopkins Bloomberg School of Public Health, Dr. Stevens oversees the ongoing efforts to define, prevent, and treat injury in the developing world. Current projects include the Road Safety 10 project which, in collaboration with the World Health Organization (WHO), seeks to reduce injury and death associated with road traffic injuries in 10 low- to middle-income countries. Dr. Stevens is also assisting the WHO in the development of a Trauma Checklist with hopes of improving care and outcomes of the injured patient. Additional projects include evaluating childhood drowning in Bangladesh and defining causes of and risk factors for injury in Cameroon. Dr. Stevens is also working on trauma registry development in Uganda and South Africa.

Racial disparities in health care is a widely debated topic. As Director of the Center for Surgery Trials and Outcomes Research at Johns Hopkins, Dr. Adil Haider has received national attention for his research into understanding the mechanisms that lead to disparities in trauma outcomes and was recently funded by the National Institutes of Health for a four-year Mentored Patient Orientated Research Career Development Award. This year he was the lead author on a manuscript in the *Journal of the American Medical Association* analyzing the potential for racial bias in medical student trainees. He holds a secondary faculty appointment in the Johns Hopkins Bloomberg School of Public Health.

Dr. Elliott R. Haut is currently working under a four-year grant from the Agency for Health Research and Quality entitled “Does screening variability make DVT an unreliable quality measure of trauma care?” This project aims to determine if deep vein thrombosis (DVT) rates truly relate to quality of medical care at trauma centers. Dr. Haut, in cooperation with a multidisciplinary focus group, has published multiple articles related to this work. Most recently this team published a study showing the benefits of computerized clinical decision support for DVT prophylaxis in trauma patients.

Dr. Amy Rushing joined the full-time staff as an assistant professor. Dr. Rushing has a clinical interest in complex abdominal wounds.

Dr. Catherine Velopulos completed her trauma fellowship here and is currently pursuing a master’s degree in the Graduate Training Program in Clinical Investigation at the Johns Hopkins Bloomberg School of Public Health. With this training in developing clinical outcomes research, she plans to focus on addressing violence recidivism and integrating personal and social responsibility. She also has a special interest in international surgical education.

Advancing the science of trauma care education nationally has been another goal of the trauma center faculty. Dr. David Efron currently serves as the Vice Chair of the Maryland Committee on Trauma (of the American College of Surgeons). He is a Course Director for Advanced Trauma Life Support, Advanced Trauma Operative Management, Advanced Surgical Skills for Exposure in Trauma, and the Rural Trauma Team course, all of which are from the curricula of the American College of Surgery Committee on Trauma. These courses are taught in conjunction with the faculty at the University of Maryland. Dr. Haut is a member of the Board of Directors of the Eastern Association for the Surgery of Trauma (EAST). He serves as the chair of the Practice Management Guidelines Committee at EAST which

is the premier organization publishing guidelines of trauma care. These are freely available to all interested in trauma care at www.EAST.org, a website garnering over 5,000 hits monthly.

Community outreach and prevention efforts at Johns Hopkins Hospital have supported the development of an Alcohol Screening and Brief Intervention (ASBI) program. The relevance of ASBI in trauma centers was originally identified by Gentilello, et al. (1999) in *The Annals of Surgery*¹, who published that 50% of trauma patients screen positive for alcohol use and ASBI is an effective means to decrease trauma recidivism. In 2005, the American College of Surgeons mandated inclusion of ASBI in trauma centers. The ASBI program for the Adult Trauma Service, although not currently mandated by the State of Maryland, provides a professional staff member who interviews and educates using personalized information to identify the need for ongoing resources and/or additional counseling. The program has been highlighted as a part of the curriculum of the Johns Hopkins Bloomberg School of Public Health’s Summer Institute on Injury Prevention. Additionally, a hospital-wide, multidisciplinary group that includes the Adult Trauma Service is developing an alcohol withdrawal syndrome protocol to be piloted in three intermediate and intensive care units.

The Johns Hopkins Hospital launched its Safe Streets Hospital Initiative on August 1, 2009. Since that time, the Adult Trauma Service, in collaboration with the Baltimore City Health Department and the Departments of Social Work, Pastoral Care, and Emergency Medicine, has worked to formalize this initiative aimed at reducing shootings and homicides within the East Baltimore community. Safe Streets utilizes conflict mediation, outreach, and community mobilization as its core elements to target high-risk individuals. Hospital Safe Streets responders are notified when a shooting victim arrives in the Emergency Department and respond to the hospital within 30 minutes to discuss alternatives to retaliation with the patient and family. The program is based on the successful Chicago “Cease-Fire” program and has been receiving ongoing evaluation by the Johns Hopkins Bloomberg School of Public Health.

Partnership for a Safer Maryland continues to enjoy the leadership of Marla Johnston, MSN, on the Steering Committee and Adil Haider, MD, MPH, as a member of the Advisory Board. In 2011, the Partnership awarded one of its annual injury prevention awards to Johns Hopkins Hospital’s Alcohol Screening and Brief Intervention Program.

Dr. Efron serves as the Vice Chair of TraumaNet, the Maryland trauma center consortium, and is

1 Gentilello LM, Rivara FP, Donovan DM, et al. Alcohol interventions in a trauma center as a means of reducing the risk of injury recurrence. *Annals of Surgery*. 1999;230:473-480.

slated to ascend to Chair this coming year. Kathy Noll serves as the Chair of the Maryland Trauma Registry/Education/Prevention Committee as well as the Maryland State Chair for the Society of Trauma Nurses. Marla Johnston serves as the Chair of the Maryland Trauma Quality Improvement Committee.

Level II

Johns Hopkins Bayview Medical Center Trauma Center

Located in Baltimore City, the trauma center at Johns Hopkins Bayview Medical Center entered 1,573 trauma patients into the Maryland State Trauma Registry from June 2011 to May 2012. (See pages 66 to 71 for additional patient data.) Nathaniel McQuay Jr, MD, FACS, is the clinical medical director for the trauma service and co-director of surgical critical care. Robert Dice, MS, RN, is the program manager.

The trauma center at Johns Hopkins Bayview Medical Center (JHBMC) is designated by MIEMSS as a Level II adult trauma center. It serves the citizens of eastern Baltimore City, eastern Baltimore County, and southern Harford County. The trauma center is committed to providing access to emergency surgical care for acutely injured patients with time-sensitive injuries.

The trauma center continued to grow this past year with the addition of Dr. Diane Schwartz, MD, to its faculty. Dr. Schwartz completed her trauma/critical fellowship training at the Memorial Hermann-Texas Medical Center, Houston. This addition to the trauma division at JHBMC is an example of the medical center's commitment to provide the necessary resources for a successful trauma program.

The trauma center at JHBMC provides patient-centered comprehensive care to all trauma patients utilizing a team-oriented, multidisciplinary approach. Under the collaborative leadership of specialized physicians, nurses, and members of the healthcare team, the trauma program continues to advance with implementation of protocols to address patient and institutional needs. An example is the updated trauma diversion policy. As a result of this policy, the trauma center remains open to receive patients an average of 98% of available hours each month, which ranks among the top Level II trauma centers in Maryland.

The JHBMC trauma center uses a multidisciplinary program dedicated to the management of the adult trauma patient and the community as a whole. It is through the dedicated support from the members of the anesthesia, orthopedics, neurosurgery, and rehabilitation departments, as well as our trauma nurses and

support staff, that JHBMC is able to achieve its goal: to optimize the care of the acutely injured patient through collaborative research and the application of evidence-based practices with the goal of providing high quality care for the citizens it serves.

For the past four years, the trauma center at JHBMC successfully submitted records to the American College of Surgeons' National Trauma Data Bank (NTDB), the largest aggregation of US trauma registry data ever assembled. JHBMC's participation in the NTDB is voluntary and allows the trauma program to benchmark against national norms and to participate in trauma-related research. It is this type of self-assessment and performance improvement that is partially responsible for JHBMC's annual survival rate of 97% for the past six years.

Johns Hopkins Bayview Medical Center continues its designation as an EMS Base Station by supporting activities to meet state requirements. Successful designation as a Base Station is a requirement for JHBMC to maintain its designation as a trauma center and as a burn center.

Level II

Prince George's Hospital Center

Located in Cheverly, Maryland, the Prince George's Hospital Center's Trauma Center continues to provide a high level of quality trauma care to the ever increasing volume of trauma patients it receives.

According to the Maryland State Trauma Registry, Prince George's Hospital Center (PGHC) received 3,524 trauma patients from June 2011 through May 2012. (See pages 66 to 71 for additional patient data.)

Mark Arsenault, RN, MSA, is the Vice President of Dimensions Healthcare Services Emergency Services which includes executive oversight of the hospital's Trauma Services; Carnell Cooper, MD, FACS, continues to serve as the Medical Director and Chief of Trauma Services; Gabriel Ryb, MD, MPH, FACS, serves as the Assistant Medical Director; Sandra Waak, RN, CEN, is the Trauma Program Manager; and Deborah Brown, RN, is the Assistant Department Manager. Data collection is supported by two Trauma Registrars.

The Prince George's Hospital Center is the primary adult trauma center for Prince George's, Calvert, Charles, St. Mary's, and Southern Anne Arundel counties. Parts of Montgomery and Howard counties, as well as the eastern region of Washington, DC, are also included in its trauma care catchment area.

Due to dedicated efforts to keep our patients safe from hospital-acquired conditions (such as infections), Prince George's Hospital Center (PGHC) has improved significantly over the last two years. The most recent state-issued report says that PGHC is now the ninth safest hospital, out of 44 in the state, in preventing these problems. The Critical Care Center (CCC) has instituted measures to minimize the chance of patients acquiring a Central Line-Associated Bloodstream Infection (CLABSI). We are pleased to report that the CCC went over a year with ZERO CLABSIs.

The Critical Care Center continues to work closely together with the Washington Regional Transplant Community (WRTC). The relationship gets stronger every year. This past year, to better recognize the Gift of Life that our donors have made available, WRTC provided the hospital with a "Legacy of Heroes" tree. This three-dimensional bronze, brass, and copper artwork hangs proudly outside the CCC. Individual leaves are inscribed with the names of many of our past generous donors, and the sculpture has plenty of room to add the names of future donors. Participation in the sculpture is decided by the donors' family members.

In November 2011, PGHC welcomed a new addition to the Department of Orthopaedics, Dr. Christina Boulton. She is fellowship-trained in Trauma Orthopaedics and also works at the University of Maryland Shock Trauma Center. Patients that were previously transferred out of PGHC for management of complicated orthopaedic injuries, especially pelvis and acetabular fractures, are now often able to be managed at PGHC under the special care of Dr. Boulton. Transfers for other orthopaedic specialty care have been cut by 50% since Dr. Boulton joined our team. In addition, Dr. Boulton has also delivered presentations on Orthopaedic Emergencies for hospital Grand Rounds as well as the Trauma Morbidity and Mortality Conference.

Our trauma volumes have significantly increased. We provided trauma care to 15% more patients this year than we did the previous year. The PGHC Emergency Department (ED) has also had an increase in numbers. They experienced a growth in patient volume of 4%. In August 2012, the ED physician group and leadership will undergo a transition. The University of Maryland/Maryland Emergency Medicine Network (MEMN) will assume leadership and staffing of the Dimensions Emergency Department. Dr. Doug Mayo is the designated Department Director at PGHC. He will also fill the role of the Dimensions Regional Medical Director covering the three Dimensions Emergency Departments. MEMN assumed leadership of the Laurel Regional Emergency Department in July 2012

and will assume the Bowie Emergency Department in January 2013. We are excited about the continued development of strong partnerships with the University of Maryland.

Our Vice President, Mark Arsenault, RN, MSA, has been the Chair of the Prince George's County Emergency Preparedness Coalition for the past two years and has been recently appointed as the Chair of the Region V Health and Medical Task Force. These coalitions work with the regional hospitals, health departments, fire/EMS, and other partners in regional emergency preparedness.

The hospital continues to host the Trauma Nursing Core Course several times each year. This provides an opportunity for nurses from PGHC and other area hospitals to learn more about caring for the injured patient. Medical students from Ross University also rotate through the Trauma Service where they not only learn about trauma, but where they also get first-hand experience caring for traumatic injuries.

In the summer of 2012, a press conference to release the Prince George's County Health Impact Study brought together a large group of community, business, and political leaders to show their support for Dimensions Health System efforts and to agree on the plan giving PGHC the resources to provide necessary services and to make our community healthier.

We at Dimensions Health System and Prince George's Hospital Center are excited about the vision and commitment of the Governor, Lt. Governor, Prince George's County Executive and County Council, and the community to superior health care in Prince George's County. We are meeting unexpected challenges while also improving our care and service to patients every day. We look forward toward continued growth of our relationship with the University of Maryland Medical System and the University System of Maryland to bring comprehensive and responsive health care to Prince George's County.

Level II

Sinai Hospital Trauma Center

Located in Baltimore City and serving the northwest corridor of the Greater Baltimore Metropolitan area, Sinai Hospital reported receiving 1,722 trauma patients from June 2011 through May 2012, according to the Maryland State Trauma Registry. (See pages 66 to 71 for additional patient data.) Thomas Genuit, MD, MBA, FACS, has continuously served as Trauma Director since 2003. Elwood Conaway, BSN, CCRN, CEN, currently serves as the trauma nurse coordinator.

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

Quality of care is of the utmost importance to the Trauma Program at Sinai Hospital. Ongoing quality management is provided through weekly trauma case reviews by the Trauma Coordinator, Data Coordinator, and Trauma Director; monthly departmental Continuing Medical Education (CME)-approved Trauma Morbidity and Mortality Conferences; and the monthly faculty peer-review meetings.

The Accreditation Council for Graduate Medical Education (ACGME)-approved surgical residency program is currently in its sixth year, with full accreditation. All residents are Advanced Trauma Life Support (ATLS)-and Advanced Cardiovascular Life Support (ACLS)-certified, and all residents, post-graduate year III and above, receive additional training in Advanced Trauma Operative Management (ATOM), Focused Abdominal Sonography in Trauma (FAST), and an 8-week rotation at the R Adams Cowley Shock Trauma Center.

In addition to the established Neuro-Critical Care program, Sinai has added capacities and hired specialists in concussion management and acute trauma rehabilitation. All injury victims are screened for potential consultation with these specialists.

The hospital continues its active participation in regional and national initiatives to improve patient care, including the Maryland Trauma Quality Improvement Council, the National Surgical Quality Improvement Program by the American College of Surgeons, and the CDC/CMS National Surgical Infection Prevention Program. Within the state, the Trauma Center maintains active involvement in the Trauma Center Collaborative (TraumaNet) to advance all aspects of trauma care. Sinai and its Trauma Center place a high value on maintaining an excellent working relationship and open communications with EMS and its providers in the Greater Metropolitan area.

Recently, the hospital and its Department of Surgery have reorganized the areas of Trauma and Critical Care and Emergency Surgery Services into a comprehensive division of Acute Care Surgery. Drs. Brian Brewer, Yassar Yousseff, and Lingxiang Ye have become the newest members of the Trauma/Acute Care Surgery team and a new, separate Trauma/Acute Care Surgery service is taking up operation in October 2012.

Under the leadership of Dr. Mark Katlic, the Chief of Surgery, the Sinai Hospital Center for Geriatric Surgery is rapidly taking shape. Joanne

Coleman, RN, PhD, was hired to help lead the organization and research effort, which will include special efforts to address issues related to the management of trauma in the elderly.

In addition, Sinai's emergency facility, ER-7, has seen continued growth. To accommodate the more than 82,000 patients per year, the Emergency Department will see significant expansion and renovation of its physical space over the next 12 months. As a commitment to trauma, all emergency medicine attending providers involved in the care of injured patients have expressed special interest in the field and are certified in ATLS, ACLS, and Pediatric Advanced Life Support (PALS).

Level II

Suburban Hospital – Johns Hopkins Medicine

Located in Bethesda, Maryland, the Suburban Hospital Trauma Center is the only designated trauma center in Montgomery County, serving the residents of Bethesda, Potomac, Kensington, Rockville, Silver Spring, Germantown, and Gaithersburg. It also provides back-up support to the trauma centers of Frederick, Washington, and Prince George's counties.

From June 2011 through May 2012, 1,693 trauma patients were treated at Suburban, according to the Maryland State Trauma Registry. (See pages 66 to 71 for additional patient data.)

Dany Westerband, MD, FACS, is the Medical Director of Suburban Hospital's Trauma Services. Melissa Meyers, RN, BSN, MBA, is its full-time Trauma Program Director. The trauma program staff also includes trauma data analyst Cathy Pierce, BS, and two trauma nurse case reviewers, Patricia Baker, RN, and Taryn Giza, RN, BSN, CEN.

The Suburban Hospital Trauma Center continues to strive in the provision of the highest level of quality trauma care. A driving force in the quality management program at Suburban is the daily concurrent and retrospective review of trauma care. Through a careful process that involves a thorough review of all records, clinical and system issues are rapidly identified, addressed timely, and further discussed at monthly multidisciplinary and intradepartmental meetings which often lead to the development of new policies and treatment guidelines. Furthermore, significant complications and management challenges are also brought up for discussion at monthly formal morbidity and mortality conferences which serve as educational forums for the trauma surgeons, emergency department physicians, intensivists, surgical residents, nurse practitioners, physician assistants, registered

nurses, and many other clinicians involved in trauma care. In addition, case presentations of interest are also held frequently, within and outside the trauma center, to further enhance trauma continuing education in the region.

With a significant percentage of trauma patients as older adults, Suburban has also demonstrated over the past few years an organization-wide commitment to provide the best medical care possible to older patients. In September 2011 the hospital earned the coveted Nurses Improving Care for Healthsystem Elders (NICHE) designation from the Harford Institute for Geriatric Nursing at New York University College of Nursing.

This past spring, Suburban Hospital was also chosen by the US Department of Health and Human Services (DHHS) to receive the Silver Medal of Honor at the 7th National Learning Congress for the Donation and Transplantation Community of Practice. The Silver Medal Award is recognition of Suburban in meeting the national standards for excellence in organ donation, as set by the Centers for Medicare & Medicaid Services.

Suburban Hospital remains an intimate component of the Montgomery County Collaborative on Emergency Preparedness (MOCEP) and the Bethesda Hospitals' Emergency Preparedness Partnership (BHEPP), whose mission is the advancement of emergency preparedness and research for the National Capital Region. While BHEPP includes the National Institutes of Health (NIH), the National Library of Medicine, and the Walter Reed National Military Medical Center, MOCEP rallies all Montgomery County Hospitals, the Kaiser Permanente Health Plan, the Public Health Administration, Emergency Medical Services (EMS), and Homeland Security. Through these solid alliances and expanded participation in local, state, and national disaster drills, Suburban Hospital – Johns Hopkins Medicine remains one of the most “Highly Prepared” Trauma Centers in the nation and proudly represents Region V in Emergency Support Function (ESF) #8 activities for the National Capital Region. In the spring of 2012, Suburban won the National Innovation in Disaster Preparedness Award from DHHS for its outstanding patient tracking system during disasters.

Meanwhile, Suburban Hospital has kept its status as a designated ST-elevation myocardial infarction (STEMI) Center in the State of Maryland. With strong support from the Heart, Lung, and Blood Institute of the NIH and Johns Hopkins Medicine, the hospital continues to offer easy access to cardiac surgery and other advanced cardiovascular treatment. The Suburban Hospital – NIH Stroke Center is also doing very well, providing advanced care to stroke

patients as a Primary Stroke Center certified by the Joint Commission and as a specialty referral center designated by MIEMSS for stroke.

Injury prevention–related activities include the hospital's “Fall Prevention and Balance” programs organized by the Physical Medicine Department and presented at Montgomery County senior centers. These programs include trained physical therapists from Suburban Hospital who initiate fall-risk screenings and ensure community education on same-level falls by offering diverse lectures and classes to seniors on balance exercises and safety strategies.

Dany Westerband, MD, FACS, Medical Director of Trauma Services and Surgical Residency Liaison Director for Suburban Hospital, remains heavily committed to trauma education. As the current Chair of the Maryland Committee on Trauma of the American College of Surgeons, he is closely involved in the dissemination and teaching of all ACS-sponsored trauma courses, including Advanced Trauma Life Support, Advanced Trauma Operative Management, Advanced Surgical Skills for Exposure in Trauma, Disaster Management and Emergency Preparedness, and Trauma Outcome and Performance Improvement Course. In addition, Dr. Westerband continues to serve on the 12-member State EMS Board, is an active member of the DC chapter of the American College of Surgeons' Committee on Trauma, the American Association for the Surgery of Trauma, and the Eastern Association for the Surgery of Trauma.

Melissa Meyers, RN, BSN, MBA, the Trauma Program Director, is an active Instructor of Advanced Trauma Nursing Course. She is also the current Chair of the Maryland Trauma Center Network and a board member of the Maryland Division of the American Trauma Society. In addition, Ms. Meyers continues to serve on the State Emergency Medical Services Advisory Council (SEMSAC), other state-level trauma committees, and is an active member of the Society of Trauma Nurses.

Both Dr. Westerband and Ms. Meyers are often invited to participate in specific EMS education programs held at county fire stations and the Montgomery County Fire and Rescue Training Academy. The Emergency Department is also a training site for prehospital care providers through an agreement with Montgomery County Community College and the Montgomery County Training Academy. The hospital sponsors an Emergency Medical Technician to Certified Nursing Assistant bridge-program, free of charge, for prehospital care providers interested in working as Emergency Department Technicians.

In November 2011, a four-hour seminar, “Update on Critical Issues in Trauma,” was held at Suburban

Hospital Trauma Center. This program, which included speakers from other academic medical centers, was offered free of charge to the Region's trauma community. The conference was attended by over 250 trauma care providers, including physicians, registered nurses, physician assistants, and EMS providers.

To ensure that trauma and other vital health care services are available to the community at all times, the administration of Suburban Hospital remains fully committed to maintaining hospital diversion hours to a minimum. This is made possible through a special hospital-wide "Code C" team response which involves many top-level administrators and supervisors, nurse managers, physicians, transportation, and housekeeping support as well as multiple members of the emergency department and inpatient units. The goal is to keep Suburban doors open 24/7 while offering safe, dedicated, and high quality trauma and emergency care to all patients.

Level III

Meritus Medical Center Trauma Center

Key staff includes: Karl P. Riggle, MD, FACS, Director; Marc E. Kross, MD, PhD, FACS, Surgeon-in-Chief; Susie Burlison, RN, MSN, MBA, Trauma/EMS Manager; and Corey Thomas, LPN, Trauma Registrar. Located in Hagerstown, Maryland, the Trauma Center at Meritus Medical Center continues to provide trauma services to residents of Washington and Frederick Counties, Southern Pennsylvania, and the Eastern Panhandle of West Virginia. From June 2011 to May 2012, the center received 1,155 trauma patients, according to the Maryland State Trauma Registry. (See pages 66 to 71 for additional patient data.) Vehicle crashes and injuries among the elderly account for the majority of trauma in the tri-state area; however, the incidence of penetrating injuries is increasing. Over 95% of the trauma patients treated at Meritus Medical Center arrived via ground emergency medical services (EMS).

Our EMS Partners

The Trauma Center values its working relationship with EMS providers throughout the region. It serves as a clinical site for paramedic programs in Maryland by providing opportunities for prehospital education through case presentations and other educational opportunities. In addition, the Trauma Center staff regularly attends EMS jurisdictional and Region II EMS Advisory Council meetings. Recently, Meritus Medical Center's Trauma Center honored

crews from Washington and Frederick Counties (Maryland) and Franklin County (Pennsylvania) for outstanding EMS care.

Community Impact

The dedicated staff of Meritus Medical Center's Trauma Center continues to advocate for injury prevention throughout the community. In coordination with the Safe Kids Washington County Coalition, safety events focusing on child passenger safety, bicycle safety, and injury prevention were held at the Children's Safety Village of Washington County and in targeted neighborhoods. The Trauma Center also joined the Safe Communities Coalition to designate Hagerstown as a Safe Community. The Safe Communities America Network consists of communities that have demonstrated leadership in safety promotion and injury prevention. Each community has made an investment to ensure that it is a safe place to live, work, and visit.

Trauma Center staff actively participates in Meritus Health's annual Medical Academy for high school students interested in medical careers. Students spend a week taking part in activities that would provide care to a trauma patient including shadowing EMS teams, flight crews, and staff from various units, such as the operating room, emergency department, physical therapy, laboratory, and infection control.

Following the state and national trend, Washington County saw an increase in injuries related to distracted driving. *Stay Alive! Don't Text and Drive* was created as an injury prevention and public awareness campaign targeted at teens and their families to increase the awareness of the devastating effects of distracted driving, especially texting and driving. This campaign won an injury prevention award from The Partnership for a Safer Maryland in June 2012, as well as a 2012 Communicators Award, and continues to be supported by our EMS partners, regional businesses, public school systems, law enforcement, and community leaders.

Education and Outreach

In partnership with Hagerstown Community College, the Trauma Center hosted two multidisciplinary trauma conferences for direct-care providers. Plans are in place to continue this semiannual event in upcoming years. Members of the Trauma Center staff, such as Dr. Marc E. Kross, Surgeon-in-Chief, have spoken on trauma-related topics to local health-care and community groups. Dr. Kross served on the planning committee for the Maryland Committee on Trauma Symposium and was on the faculty for numerous EMS case presentations.

The W. L. Riggle Memorial Trauma Nurse Education Fund continues to provide scholarship money for trauma nursing continuing education.

Trauma Center staff celebrated Trauma Awareness Month with an art contest for Washington County elementary school students on the dangers of distracted driving. In addition, public education was provided in Meritus Medical Center's dining room for both staff and visitors to learn more about trauma and how to prevent injuries. To further celebrate the contributions and dedication of the Trauma Center staff, the hospital held an annual Trauma Team Recognition Day and recognized a trauma nurse for providing exceptional care.

Level III

Peninsula Regional Medical Center Trauma Center

Located in Salisbury, 30 miles west of Ocean City, Peninsula Regional Medical Center Trauma Center (PRMC) is the only Trauma Center located on the Eastern Shore of Maryland.

PRMC received 1,487 trauma patients from June 2011 to May 2012, according to the Maryland State Trauma Registry. (See pages 66 to 71 for additional patient data.) Walter P. Lischick, MD, serves as the Trauma Medical Director and Kari Cheezum, RN, BSN, CEN, as the Trauma Program Manager. In addition to being designated as a Level III Trauma Center, PRMC is also a Joint Commission on Accreditation of Healthcare Organizations (JCAHO)-certified Acute Myocardial Infarction (AMI) and Stroke Center, as well as a Maryland Primary Stroke Center and a Cardiac Interventional Center for the State of Maryland. In October 2011, PRMC was named among the Best 100 hospitals in the nation for cardiac, stroke, pulmonary, gastrointestinal, critical care, and general surgery.

The Peninsula Regional Medical Center Trauma Center (PRMC) continues to coordinate and participate in community-based injury prevention initiatives. During the pre-homecoming and pre-prom periods in fall 2011 and spring 2012, Trauma Center nurses and staff assisted with mock-crash scenarios at local area high schools. In addition, the nurses of PRMC continue to work together to participate in venues with the Maryland Division of the American Trauma Society, Safe Kids Lower Shore Coalition, and the Worcester, Wicomico, and Somerset Highway Advisory Committees, as well as local community wellness events. Tonya Craft, trauma registrar, and Kimberly Fischer, trauma nurse registrar, are certified by Safe Kids Worldwide as Child Passenger Safety

Seat technicians.

Peninsula Regional Medical Center continues to assist in planning, coordinating, and sponsoring regular educational events. A multidisciplinary group continues to coordinate and sponsor the annual "Topics in Trauma" Conference, which is in its twenty-second year. Conference topics are applicable to the daily practice of prehospital care, as well as to advanced inpatient trauma care. This regional, annual conference continues to attract nurses and emergency medical services (EMS) providers from Maryland, Delaware, Pennsylvania, and Virginia.

Educational classes for EMS providers from Worcester, Wicomico, and Somerset counties continued to be provided by PRMC in FY 2012. Classes for Pediatric Education for Prehospital Providers (PEPP), Prehospital Basic Trauma Life Support (PHBTLS), Advanced Life Support (ALS) Paramedic Re-certifications/Refreshers, 12-lead EKG interpretation classes for prehospital providers, and ALS Skills are just a few of the classes offered. In addition, the fifth annual Stroke Conference for EMS providers was held in May 2012 and, similar to previous years, there was positive feedback from the EMS community. Peninsula Regional Medical Center continues to promote open communication between the Medical Center and the surrounding EMS community. Our EMS nurse liaison, Douglas Walters, RN, EMT-I, attends EMS jurisdiction, MIEMSS Region IV EMS Advisory Council, and Quality Assurance meetings on a regular basis to offer feedback to the EMS populations we serve.

Level III

Western Maryland Regional Medical Center

Located in Cumberland, the Trauma Center at Western Maryland Regional Medical Center received 620 patients from June 2011 to May 2012, according to the Maryland State Trauma Registry. (See pages 66 to 71 for additional patient data.) Juan Arrisueno, MD, serves as the Trauma Director; Chuck Barrick, RN, is the Trauma Nurse Coordinator; and Kathy Witt is the Trauma Registrar.

The Western Maryland Health System's Regional Medical Center (WMHS) completed its second year in existence. The Emergency Department welcomes nearly 56,000 patients through their doors annually, with nearly 650 of those being trauma patients. The Trauma Center welcomed Dr. Milton Lum to its staff as a Trauma Surgeon and General Surgeon. Dr. Birat Dungal will also join the WMHS surgical ranks in August 2012, taking a similar role.

Educating Cumberland and the surrounding area on the capabilities of the WMHS Trauma Center began in 2011 with a joint venture between the Center and the WMHS Foundation. The collaboration video is entitled the “Tour of a Lifetime,” and depicts emergency medical services (EMS) involvement with WMHS Trauma, the Emergency Department, Surgery, and Intensive Care Units. Groups of 10 to 15 people are invited to the hospital to meet the CEO and take a tour of the Trauma Center guided by Trauma Nurse Coordinator, Chuck Barrick, RN. A 14-minute video, including a case review and an interview with a surviving patient and her mother that highlights the efforts of the Regional Medical Center’s dedicated staff members, is shown at the end of the tour.

Injury prevention efforts have been stepped up this past year to include safe play in sports. The Health System sponsored a coaches’ clinic for fall sports, such as football and soccer. Through award funds, the WMHS was able to provide Trainer’s bags, which are provided to schools to help keep kids safe while engaging in contact sports, to five area high schools. The Trainer’s bags were stocked and donated by the Trauma Service. Trauma Coordinator Chuck Barrick delivered a lecture on Head Injuries in Sports at the Allegany College of Maryland’s Mini-Med School lecture series. This series focuses on providing health education, written for the layperson, for members of the community.

There are some changes at the WMHS with Jamie Karstetter, RN, BSN, assuming the responsibility for the Emergency Department and becoming the Trauma Program Director. Dr. Juan Arrisueno remains in his position as Trauma Medical Director, as does Kathy Witt, the program’s Trauma Registrar. Another addition is an Emergency Department Nurse Manager, a role that has been filled by James Westfall, RN, BA.

The Western Maryland Health System’s Trauma Program continues to offer programs to the staff of the Medical Center through guest speakers and the telemedicine link to the R Adams Cowley Shock Trauma Center. These lectures have been beneficial to their audiences. Captain James Pyles of the Maryland State Police was able to add a local perspective to one of these lectures regarding the growing problem of abused synthetic drugs. WMHS is looking to partner with area groups on education and efforts to stop this problem that is growing across the state. The Trauma Program took center stage in the 2012 Miltenberger Emergency Services Seminar, which is named after former Trauma Director, Fred Miltenberger, MD. The lecture this year was a case review panel discussion that showed the similarities and differences between

trauma centers. Dr. Roy Chisholm from WMHS was partnered with Shock Trauma’s Dr. Mayur Narayan and Prince George’s Hospital Trauma Director Dr. Carnell Cooper. The lecture was moderated by Chuck Barrick and offered a perspective to the audience on how patients are cared for at each level of the Maryland Trauma System. The WMHS was a sponsor of this event that educated nearly 300 attendees.

The Trauma Program provided medical tents to local sporting events to care for athletes, including the Rocky Gap Triathlon on June 4, 2012, and the two-day Savage Man Triathlon that took place at Deep Creek Lake in McHenry, Maryland, the weekend of September 10 and 11, 2011. The Trauma Center again hosted a medical tent on June 5, 2012, for the 75th Anniversary of Fort Hill High School that welcomed thousands to the event.

Moving out of 2012 and into 2013, the Western Maryland Health System is looking forward to providing superior care to all we serve. The Trauma Center is anticipating the upcoming renewal of its trauma designation by MIEMSS to be able to continue giving the care it has provided for nearly 30 years as a designated trauma center. The Trauma Program is where it is today due to the many staff members who have dedicated decades to serving this community. One of these was Sheri Troutman, RN, who passed away in June of 2012. Sheri served as Trauma Nurse Coordinator to the Health System and helped to make the Trauma Program one of the most respected in the Tri-State area.

Adult Burns

Johns Hopkins Burn Center Johns Hopkins Bayview Medical Center

The Johns Hopkins Burn Center is comprised of two units with a total of 20 beds. The higher acuity patients are treated and cared for in the Burn Intensive Care Unit (BICU). The BICU is a 10 bed unit with mixed acuity—critical care and intermediate care. Patients with less demanding clinical needs and acuity are transferred or admitted directly to the Burn–Wound Unit. Stephen Milner, MD, DDS, is the director of the Burn Center. Dr. Milner is a professor of plastic surgery, Chief of the Division of Burns and Plastic Surgery, Director of the Michael D. Hendrix Burn Research Center, as well as the Surgical Director of the Wound Healing Center on the Johns Hopkins Bayview Medical Center campus. Carol Miller, RN, MSN, is the patient care manager for the Burn Center and the surgical intensive care unit (See pages 72 to 74 for additional patient data.)

The Johns Hopkins Burn Center realizes the importance of community outreach and burn prevention, as well as clinical education for health care professionals throughout the region. Many programs currently exist to serve the community and our fellow health care colleagues. Examples of these community outreach efforts include:

- Fire Safety & Burn Program for senior citizens and adults;
- Kiwanis Community Burn Prevention Program for school age children;
- Safe Babies Program for newborns and their parents;
- Juvenile Fire-setter Program for at-risk youth;
- New Life Burn Society Survivor Support Group;
- School Re-entry Program for burn survivor children;
- Image Enhancement Program for burn survivors;
- Survivors Offering Assistance in Recovery (SOAR) Program; and
- annual participation in numerous statewide health and safety fairs.

Examples of the clinical education programs currently provided by the Burn Center include:

- Advanced Burn Life Support (ABLS) provider certification courses;
- Emergency Department (ED) Burn Poster Program;
- Military Burn Education Program;
- EMS/Firefighter Burn Course; and
- on-site clinical training for medical, nursing, rehabilitation, psychology, and dietitian students and EMS/Firefighters.

We also currently teach at numerous schools of nursing throughout the region and participate in the ED Consortium and many annual trauma update courses for both EMS and other healthcare professionals.

In keeping with the mission and vision of Johns Hopkins Medicine, translational research is a key focus for the Johns Hopkins Burn Center. Currently there are multiple collaborations with many disciplines. The Michael D. Hendrix Research Laboratory actively studies the non-healing wound environment. At the bedside, studies are being sponsored by pharmaceutical companies and the US Department of Defense to improve wound and burn healing, including placental stem cell research. The purpose of this research is to study Burn Center methods and techniques in order to reduce mortality of burn victims in the field who are unable to reach medical facilities.

Adult Burns

The Burn Center at MedStar Washington Hospital Center

The Burn Center at MedStar Washington Hospital Center is the adult regional burn center for the District of Columbia, Southern Maryland, Northern Virginia, and eastern West Virginia. The Burn Center is verified by the American Burn Association and the Committee on Trauma of the American College of Surgeons.

The Burn Center provides comprehensive, acute, and rehabilitative burn care through a multidisciplinary team approach. The burn surgeons are board-certified general surgeons with extensive experience in burn care, surgical treatment, and burn reconstruction. The Burn Team members—physicians, nurses, rehabilitation therapists, respiratory therapists, nutritionists, and social workers—are specially trained and experienced to address the special needs of burn patients.

This 20-bed facility features an intensive care unit with its own operating room and an intermediate care/rehabilitation unit, both of which provide wound care and progressive rehabilitation. With more than 500 admissions annually, the Burn Center provides care for an array of thermal, electrical, and chemical injuries as well as soft tissue lesions. The Burn Clinic provides outpatient burn care for more than 700 patients annually.

Pediatric Burns

Johns Hopkins Children's Center

From June 2011 to May 2012, the Pediatric Burn Service at the Johns Hopkins Children's Center saw 240 burn cases, of which 111 children with severe burn injuries were admitted. (See pages 79 to 81 for additional pediatric burn data.) Dr. Stephen Milner is the Director of the Johns Hopkins Burn Center. Dr. Richard Redett, Dr. Paul Colombani, Dr. Dylan Stewart, and Dr. Jeffrey Lukish serve as Pediatric Burn Surgeons. Susan Ziegfeld, CRNP-Pediatric, is the Program Manager.

Johns Hopkins state-of-the-art 205-bed Charlotte R. Bloomberg Children's Center building opened May 1, 2012. Families and visitors now enter a world designed for 21st century pediatric medicine. From its soaring lobby, large operating rooms equipped for the most technically complex procedures imaginable, spacious patient rooms, and welcoming family facilities, the new building provides a hospital experience that matches the world-class medicine it affords. Critically injured burn patients are managed in the 40-bed Pediatric Intensive Care Unit, while the rest of the children are managed on the 20-bed unit

specifically designed for the care of burned children and their families. Each unit has specific rooms designated for the care of burn patients and their families. Additionally, more than 300 outpatient burned children are treated each year in the Pediatric Outpatient Burn Clinic located in the David M. Rubenstein Child Health Building. Follow-up care is offered three times a week in the burn clinic. Specialized pediatric home nursing can be arranged for those who need additional outpatient care.

Burns in children require special expertise and pose a unique set of medical and psychological challenges. The unique synergy of multiple pediatric sub-specialties under one roof at Hopkins Children's offers the best treatment uniquely designed for each burned child. In addition to reconstructive and plastic surgery, general surgery, critical care, infectious disease control, psychology, and pain management, Hopkins Children's offers Child Life support services and counseling for all burn patients.

Research is an integral part of the Pediatric Burn Center. Rosemary Nabaweesei is responsible for the design, construction, and analysis of surgery databases as determined by the director, manager, and respective principal investigators in the department of surgery. She develops reports to meet the department's goal of providing Hopkins and State decision-makers with clinical, operational, and statistical data analysis. Furthermore, she is responsible for Johns Hopkins Pediatric Burn Center's management of clinical/research and operational data systems.

Susan Ziegfeld is a Master's Prepared Nurse who serves full-time as the Burn Program Manager. In this capacity, she assumes all administrative functions of the program, including organizing systems for a multidisciplinary approach to care. In addition to her direct supervision of the Pediatric Burn staff she functions as a Pediatric Nurse Practitioner within Johns Hopkins Hospital assisting with the care of both in- and out-patients. She is also very involved with injury prevention initiatives, as well as education, participating in a variety of committees and meetings on local, state, and national levels.

Quality care is of utmost importance to the Pediatric Burn Center. Katie Manger, BSN, the Burn Coordinator, assumes day-to-day responsibility for the process and performance improvement activities, as well as chairing the Performance Improvement Committee along with the Trauma Director. She reviews all pediatric resuscitation documentation and monitors all Quality Improvement (QI) filters on a daily basis. In addition to her development of the QI process, she functions as EMS liaison. She

corresponds with the EMS providers, giving written and verbal feedback on patient status and care rendered in accordance with MIEMSS protocols. Ms. Manger serves on the Maryland Trauma Registry Education and Prevention (MTREP) Committee, is the co-chair for the Trauma QIC, chairs the hospital's Burn Mortality & Morbidity Committee, and serves on several other committees. She provides pediatric burn education throughout Johns Hopkins Children's Center, including orientation and ongoing continuing education.

Pediatric burn center staff provides burn-related education to EMS providers and other hospitals throughout the country. Specialized pediatric burn nurses also educate elementary school students on burn and fire prevention initiatives.

Pediatric Burns

Children's National Medical Center

From June 2011 to May 2012, Children's National Medical Center, as a pediatric burn specialty referral center, treated a total of 527 children from Maryland. Sixty-one Maryland children with burn injuries were admitted as inpatients. (See pages 79 to 81 for additional pediatric burn data.) Randall S. Burd, MD, PhD, is the Chief of the Trauma & Burn Service; Jennifer Fritzeen, MSN, RN, PCNS-BC, is the Trauma & Burn Program Manager; Elaine Lamb, MSN, CPNP, Elizabeth Leachman, MSN, CPNP, Catherine Walsh, MSN, CPNP, and Elizabeth Waibel, MSN, CPNP, are the Trauma and Burn Nurse Practitioners; Sally Wilson, BSN, RN, is the Injury Prevention, Education, and Outreach Coordinator; Elizabeth Carter, PhD, is the Trauma Epidemiologist; Yu Yan, MSN, RN, is the Trauma Registry Coordinator.

The Children's National Medical Center has served as a Pediatric Burn Center for the State of Maryland for over three decades and will be surveyed by the State in early 2013 to serve as a Maryland Burn Center. Children's National is dedicated to the care of children in Region V, which includes Montgomery, Prince George's, Calvert, Charles, and St. Mary's Counties.

The interdisciplinary team of pediatric specialists provides comprehensive emergency, critical, acute, and follow-up care for children who are burned by flames, scalded, or suffering from electrical burns. During the past year, 61 children from Maryland have been admitted to the Burn Service. The number of outpatient burn clinic visits totaled 838. In addition,

136 Maryland children were treated for minor burn injuries and discharged from the Children’s National Medical Center Emergency Department. A child’s burn wound can be treated under Non-Operating Room Anesthesia (NORA), significantly reducing pain during the treatment of a burn injury. In FY 2012, there were 33 Maryland children who received burn wound care utilizing NORA.

Working jointly with the Safe Kids District of Columbia, Safe Kids USA, the DC RISK WATCH® Champion Management Team, and the Injury Free Coalition for Kids of the District of Columbia (Injury Free DC), the Pediatric Trauma and Burn Center provides fire and burn safety education to communities in Washington, DC, as well as Maryland and Northern Virginia. In addition, the Pediatric Burn Center staff provides emergency medical services (EMS) and emergency department education at surrounding hospitals and at EMS conferences.

The Curtis National Hand Center At MedStar Union Memorial Hospital

Located in Baltimore City, The Curtis National Hand Center at MedStar Union Memorial Hospital serves as the State’s referral center for the specialized care of injuries to the hand, wrist, and elbow. In FY 2012, 1,560 patients with traumatic hand injuries were cared for at the Center. The unique nature of the services provided also draws patients from a broad geographic region including Pennsylvania, Delaware, Virginia, West Virginia, and Washington, DC.

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 Congressional designa-

tion as the National Hand Center in 1994, the Center remains one of the world’s premier facilities for the clinical care and study of the hand and upper extremity in addition to being an advanced training center for orthopedic, plastic, and general surgeons in the field.

The Curtis National Hand Center and MedStar Union Memorial Hospital remain committed to handling acute injuries and providing reconstructive surgery for Maryland’s trauma victims. The focus on complex hand, wrist, and elbow injuries has long been part of the well-developed Maryland Trauma Care System since Dr. Raymond M. Curtis, the Center’s founder, collaborated with Dr. R Adams Cowley and others during the inception of Shock Trauma and the Maryland EMS System.

The repair of amputated and seriously injured upper extremities requires a coordinated effort of rapid transport, proper handling of injured limbs, precise surgical repair, physical and occupational therapy, and, most of all, a motivated patient. Thirty-six percent of traumatic hand cases are transported through the MIEMSS system (Chart 1). The addition of an onsite helipad in 2009 has reduced travel time and improved the speed of intervention for the most critically wounded.

The Center’s expertise in challenging bone and soft tissue trauma treatment is supplemented by advanced microsurgery skills. The handling of fractures, complex soft tissue coverage problems, and amputations requiring replantation attempts continue to be major focuses of the Hand Surgery Service at MedStar Union Memorial Hospital (www.unionmemorial.org).

The acute trauma unit is staffed by specialists in orthopedic and plastic surgery with subspecialty training in hand and upper extremity surgery. The team is available 24/7 to respond to a variety of injuries ranging from severing or crush injuries to infections and snake bites. Most hand injuries treated

Chart 1. Transport Mode

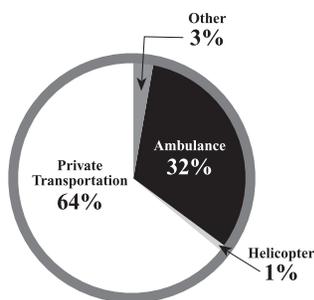


Chart 2. Injury Type

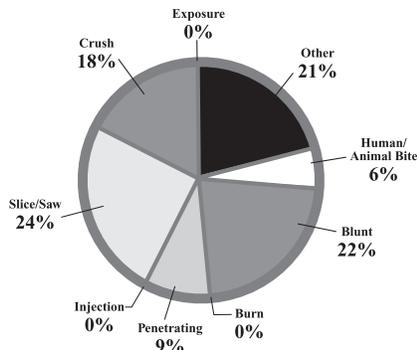


Chart 3. Scene of Injury

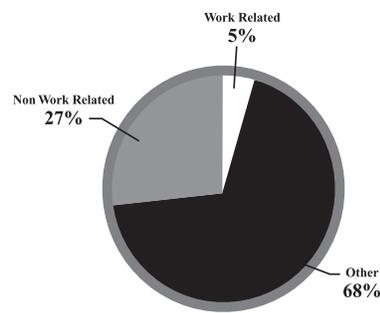
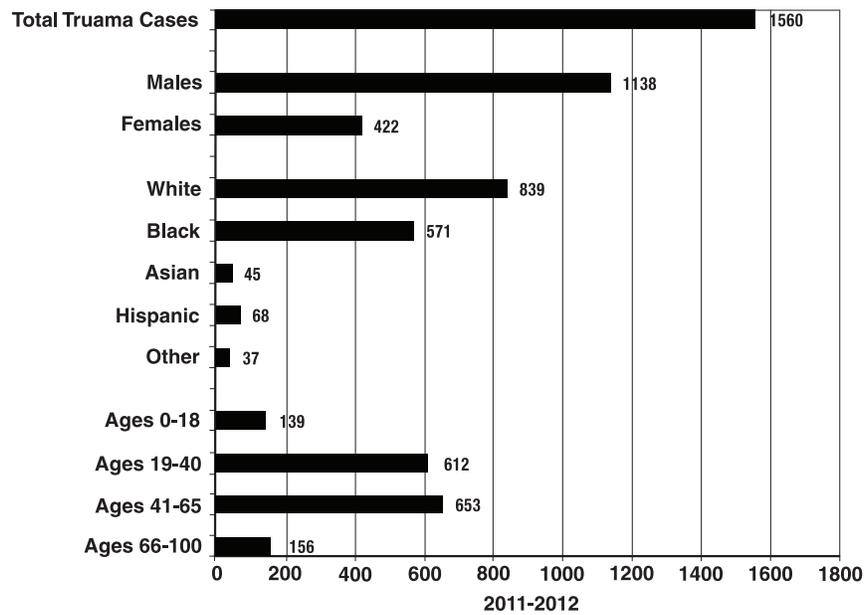


Chart 4.



MedStar Union Memorial Hand Trauma Demographics

at the Center are the result of accidents with power saws, lawn mowers, snow blowers, or other machines that can cut, crush, or break hands (Chart 2) and occur outside of the work place (Chart 3). The majority of patients seeking services are white males over the age of 40 (Chart 4).

The Curtis National Hand Center is one of the largest training centers for hand surgery in the country. 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.

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 and soft tissue problems, and reconstruction after significant trauma. Collaborations with the region's scientists and other investigators promote current thinking and new development in this vital area.

Maryland maintains the nation's premier network of institutions and physicians for trauma care in part because of the unique capabilities and availability of all trauma providers, including Specialty Referral Centers. The Curtis National Hand Center at MedStar Union Memorial Hospital is proud to be part of the network and supports the efforts to provide advanced care for Maryland's citizens.

Hyperbaric Medicine Center R Adams Cowley Shock Trauma Center

The Center for Hyperbaric Medicine at the R Adams Cowley Shock Trauma Center of the University of Maryland Medical System is the statewide referral center for victims of diving incidents, carbon monoxide poisoning, smoke inhalation, and gas gangrene. Established in 1965, 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.

Located within the highest volume trauma center in the United States, the Center for Hyperbaric Medicine at the R Adams Cowley Shock Trauma Center is the only multi-place chamber in Maryland. Internationally recognized for its leadership and expertise in the clinical application of hyperbaric therapy, the Center is capable of accommodating 10 stretcher patients or 23 seated patients simultaneously. Conditions treated at the Center for Hyperbaric Medicine Center include: carbon monoxide poisoning and smoke inhalation, acute gas embolism, decompression sickness (the bends), necrotizing acute soft tissue infections, osteoradionecrosis, gangrene, late effects of radiation, compromised skin grafts and flaps, and crush injuries.

All hyperbaric treatments are supervised by specially trained physicians. Nursing care is provided by critical care nurses who undergo atmospheric compression within the chamber at the patient's bedside. Because of the chamber's unique design and staffing, severely critically ill patients can receive hyperbaric treatment without any interruption in care.

The Center for Hyperbaric Medicine participates in a national registry of carbon monoxide patients run by the Centers for Disease Control and Prevention. Physicians, nurses, and technical members of the Center for Hyperbaric Medicine regularly lecture on hyperbaric medicine at regional and national conferences. Their audiences include a variety of healthcare professionals such as nurses, physicians, and emergency medical responders.

Maryland Eye Trauma Center The Wilmer Eye Institute at Johns Hopkins

The Wilmer Eye Institute (WEI) is located within Johns Hopkins Hospital campus in East Baltimore and is the first statewide eye trauma center in the United States. The Wilmer Eye Institute carries the tripartite mission of Johns Hopkins Hospital and remains committed to providing resources needed for the care of orbital and ocular trauma in the United States. Strategic imperatives on patient care, teaching, and research are incorporated into the eye trauma program. New treatment and procedures for eye trauma are also part of its goals. Michael P. Grant, MD, PhD, FACS, is the Director of the Center; the Associate Director for FY 2013 is Derek Welsbie, MD; Shailaja Chopde, MSN, RN, is the Eye Trauma Coordinator.

The Wilmer Eye Institute has expertise in all aspects of eye disease as they relate to eye trauma, including Oculoplastic Surgery, Neuro-Ophthalmology, Pediatric Ophthalmology, Anterior Segment, Glaucoma, Uveitis, Retinal Surgery, and Eye Pathology. For years, WEI has established itself as “the premier eye care center in the world,” including eye trauma. With their new facility, Bendann Surgical Pavilion, which opened in 2009, it has further enhanced efficiency and care for eye trauma patients. The WEI nurses have an organized all-day Ocular Trauma Workshop, an eight-hour ocular trauma course with six hours of CEUs, which is offered quarterly to nurses within Hopkins. The core curriculum for this workshop has been approved by MIEMSS.

In FY 2012, the total number of serious eye injuries was 247 (see the Eye Injury Registry of Maryland/JH table, page 56). Out of this number, the age range of 10-19 years still recorded the most number of injuries, with the age range of 20-29 years coming in second. These two categories accounted for 41.9% of total eye traumas. Of these traumas, 23.5% have shown to happen at home, which is a slight drop

of 2.1% from the previous year. The data for injury source indicated that blunt objects still remain by far the most common method of eye injury and has increased to 47.8% as compared to 45.2% last year. Most of the injuries were unintentional (67.6%), followed by assault (27.9%). Eye injuries occurring due to patients' not wearing eye protection continues to remain high at a 97.2%. For this reason the Wilmer nurses continue to utilize and coordinate outreach programs within the community to educate the public on the importance of eye protection.

On May 20, 2012, the Wilmer nurses coordinated an educational event for the local community on firework safety and eye injury prevention, including the importance of eye protection. A poster was displayed and handouts distributed. This event was a huge success and had a turnout of more than 500 people from the Baltimore Chinese School. The Director, Dr. Michael Grant, presented public service messages on WBAL, a local radio station, preceding the July 4th holiday. Faculty have presented on topics related to eye and orbital trauma at all major national and international meetings over the past year including the American Society of Oculoplastic and Reconstructive Surgery, American Society of Plastic Surgery, Asian Pacific Association of Ophthalmology, and a series of instructional courses sponsored by the AO Foundation.

Neurotrauma Center R Adams Cowley Shock Trauma Center

The Neurotrauma Center at the R Adams Cowley Shock Trauma Center of the University of Maryland Medical System provides comprehensive management for patients with brain-, spinal cord-, and spinal column-related injuries. Bizhan Aarabi, MD, FACS, FACSC, is the Director of the Neurotrauma Center.

As the state's designated referral center for head and spinal injuries, the Neurotrauma Center at the R Adams Cowley Shock Trauma Center's multidisciplinary team of clinical experts utilizes evidence-based treatment strategies to care for patients with traumatic brain injuries and spinal column and spinal cord injuries. From June 2011 to May 2012, the Neurotrauma Center provided care to 1,662 patients with traumatic brain injury, 236 patients with spinal column or spinal cord injuries, and 457 patients who suffered from both brain and spinal column or spinal cord traumatic injuries.

Those with severe brain injury receive a multisystem assessment with intracranial pressure and cerebral oxygenation parameters closely monitored



This analysis reflects the United States Eye Injury Registry's database, (N=247) and contains reports of serious eye injuries

Age

Range 1-96 years
Mean: 29.09 years. Median: 28 years.
52% were less than 30 years old.

Age	Percentage	Male:Female Ratio
0-9	10.1%	2.3:1
10-19	22.4%	2.1:1
20-29	19.5%	2.2:1
30-39	18.7%	3.6:1
40-49	11.8%	2.6:1
50-59	7.7%	2.2:1
60-69	4.5%	1.2:1
≥ 70	5.3%	1.2:1
	100%	2.3:1

Race	Percentage	Intention	Percentage
Caucasian	= 47.6%	Assault	= 27.9%
Black	= 38.6%	Self inflicted -	= .4%
Hispanic	= 8.1%	Unintentional	= 67.6%
Asian	= 1.6%	Unknown	= 2.4%
Native American	= 0%		
Unknown	= .4%		
Other	= 3.7%		

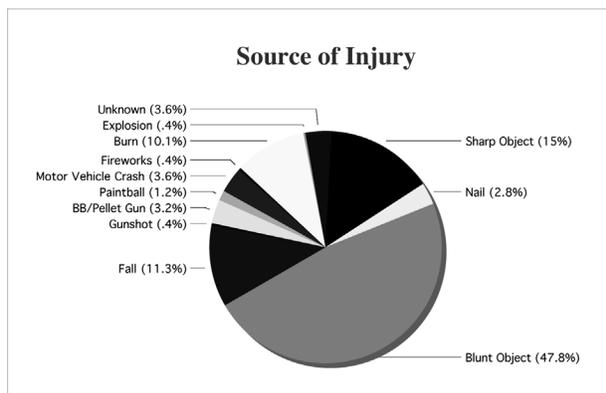
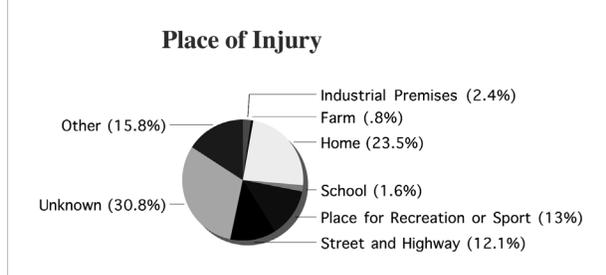
Bystanders = 8.13% (M:F) 1.5:1
Reported alcohol Use when injured = 20%

When Injured	Percentage	Eye Protection	Percentage
Winter	= 26.4%	None	= 97.2%
Spring	= 17.9%	Regular	= 1.6%
Summer	= 31.7%	Safety	= .4%
Fall	= 24%	Sun	= 0%

Bilateral Injuries = 5%
Leading Source of Bilateral Injury = Burn
Open Globe Injuries = 19%
Injured Eye: OD = 50.6% OS = 49.4% Unknown = 0%

Work Related Injuries = 12.15%
Leading Reported Occupation: = UNKNOWN
Leading Reported Injury Source: = Burn

Sports Injuries	Percentage
Baseball	= 33.3%
Soccer	= 22.2%
Football	= 11.1%
Tennis	= 11.1%
Golf	= 5.6%
Lacrosse	= 5.6%
Racquetball	= 5.6%
Softball	= 5.6%
Other	= 0%



In every publication / presentation / media interview / handout etc., appropriate credit to the USEIR must be given, using the following language:
"Data provided by the American Society of Ocular Trauma / United States Eye Injury Registry, through funding by the Helen Keller Foundation, Birmingham, Alabama, USA."

so that factors that may cause secondary brain injury are rapidly recognized and treated, thus optimizing patient outcomes. Neurosurgeons are readily available to intervene if necessary and perform craniotomies for hematoma evacuation and gunshot wound debridement, elevation of depressed skull fractures, decompressive craniectomies, and cranioplasties.

Patients with spinal cord injury, often with cervical spine injuries, are treated using sophisticated respiratory care protocols and, when appropriate, implantation of a diaphragmatic pacer that enables successful weaning of most patients from mechanical ventilation. A study conducted in the Neurotrauma Critical Care Unit lead to the development of evidence-based interventions routinely used by the multidisciplinary team to prevent multisystem complications prevalent in many spinal cord patients. Surgical interventions for spinal column injuries include discectomies, laminectomies, arthrodesis, and open reduction internal fixations.

Educational programs for medical students, residents, fellows, and nurses seek to improve the care and outcome of patients in the aftermath of neurotrauma. The Neurotrauma Center's emphasis on early patient mobilization as the beginning of the rehabilitative process helps to decrease the morbidity associated with neurologic injury. Post-acute inpatient and outpatient services are provided by the University Rehabilitation Network.

In collaboration with other medical centers, the Neurotrauma Center has an important role in advancing the medical community's understanding of severe head and spinal trauma. Ongoing multisite studies focus on pharmacologic support of patients with head and spinal cord injury and on the mechanism of vasospasm, a potentially devastating complication of traumatic subarachnoid hemorrhage.

Pediatric Trauma Center at the Johns Hopkins Children's Center

From June 2011 to May 2012, the Pediatric Trauma Center (PTC) at the Johns Hopkins Children's Center admitted 389 out of 694 severely injured children seen, under the age of fifteen years. (See pages 75 to 78 for additional pediatric trauma data.) Dylan Stewart, MD, is the Director of Pediatric Trauma Service. Susan Ziegfeld, CRNP-Pediatric, is the Program Manager.

Johns Hopkins state-of-the-art 205-bed Charlotte R. Bloomberg Children's Center building opened May 1, 2012. Families and visitors now enter a world designed for 21st century pediatric medicine. From its soaring lobby, large operating rooms equipped for the most technically complex procedures imaginable, spacious patient rooms, and welcoming family facilities, the new building provides a hospital experience that matches the world-class medicine it affords.

Dr. Dylan Stewart, Director of Pediatric Trauma Service, began his surgical training at the University of Maryland. He received a competitive National Institutes of Health grant to pursue research in pediatric surgery, and then accepted a fellowship in pediatric surgery in the Johns Hopkins/University of Maryland fellowship program. Dr. Stewart is proud to be one of the founding members of The Healing Hands Foundation, a non-profit organization that provides medical services to children around the world.

Members of the Pediatric Trauma Team continue to be very active in educational activities. Since its inception in 2003, the Pediatric Trauma Center (PTC) has provided the course director and instructors for the Advanced Trauma Care for Nurses (ATCN) program as well as the Advanced Trauma Life Support (ATLS) program for physicians. This program has been endorsed by the Maryland Chapter of the American College of Surgeons – Committee on Trauma as well as the Society of Trauma Nurses. Benefits of ATCN include an educational, collaborative, synchronized team approach to trauma care with the participants of the concurrently-taught ATLS course. Courses are held monthly in collaboration with the R Adams Cowley Shock Trauma Center and the United States Air Force Center for Sustainment of Trauma and Readiness Skills (C-STARS). Air Force Nurses, as part of the C-STARS program, receive specialized training in pediatric trauma and burn care before they are deployed. Members of the Pediatric Trauma and Burn Team provide local, regional, and national education to the health care community.

The Hopkins Outreach for Pediatric Education (HOPE) Program, managed by Rose Stinebert, is home to the Pediatric Advanced Life Support (PALS) provider and renewal courses. The HOPE Program continues to be the only PALS affiliate in the region that offers courses at multiple locations throughout the state. In the past year, the HOPE Program also began offering a new American Heart Association course called Pediatric Emergency Assessment, Recognition, and Stabilization (PEARS®). The PEARS® course focuses on the priorities in assessment and management of the ill or injured child in the first few minutes of an emergency until the arrival of the rapid response team. Furthermore, the HOPE Program provided clinical experience in the Pediatric Intensive Care Unit for 42 EMT-P students from Anne Arundel Community College.

Research is an integral part of the PTC. Rosemary Nabaweese is responsible for the design, construction, and analysis of surgery databases. She graduates in August 2012 with a DrPH in Health Policy and Management from the Johns Hopkins Bloomberg School of Public Health. Ms. Nabaweese develops

reports to meet the department's goal of providing Hopkins and State decision-makers with clinical, operational, and statistical data analysis. In addition to management of clinical research and operational data systems, she analyzes the performance of the trauma triage activation protocol used at our PTC and makes recommendations to the Pediatric Trauma Team on making improvements. She serves on the policy subcommittee with Partnership for a Safer Maryland, the Maryland Trauma Registry Education and Prevention (MTREP) Committee, Trauma Quality Improvement Committee (QIC), and participates in ongoing subcommittees as needed.

Quality care is of utmost importance to the PTC. Katie Manger, BSN, the Trauma Coordinator, assumes day-to-day responsibility for the process and performance improvement activities, as well as chairing the Performance Improvement Committee along with the Trauma Director. She reviews all pediatric resuscitation documentation and monitors all Quality Improvement (QI) filters on a daily basis. In addition to her development of the QI process, she functions as EMS liaison. She corresponds with the EMS providers, giving written and verbal feedback on patient status and care rendered in accordance with MIEMSS protocols. She also provides pediatric trauma education throughout Johns Hopkins Children's Center, including orientation and ongoing continuing education. Ms. Manger coordinates and facilitates the preparation of protocols and policies that reflect evidence-based practices in pediatric trauma care. Ms. Manger serves on the MTREP Committee, is the co-chair for the Trauma QIC, chairs the hospital's Trauma Mortality & Morbidity Committee, and serves on several other committees. She is also an ATCN instructor.

Susan Ziegfeld is a Master's Prepared Nurse who serves full-time as the Trauma Program Manager. In this capacity, she assumes all administrative functions of the program, including organizing systems for a multidisciplinary approach to care. In addition to her direct supervision of the Pediatric Trauma staff, she functions as a Pediatric Nurse Practitioner within Johns Hopkins Children's Center, assisting with the care of both in- and out-patients. She is also very involved with injury prevention initiatives, as well as education, participating in a variety of committees and meetings on local, state, and national levels. At the state level, she serves on the MTREP Committee, the QIC, and is on the Executive Committee for the Maryland Trauma Network, Inc., (TraumaNet). At the national level, she serves on the Society of Trauma Nursing – Pediatric Special Interest Group and is an active member of the Eastern Association for the Surgery of Trauma and the newly

formed Pediatric Trauma Society. Ms. Ziegfeld is also a course director for ATCN.

Other significant resources available to Johns Hopkins PTC patients include:

- *Children's Safety Centers (CSC)*. The CSC is a partnership between the Johns Hopkins Center for Injury Research and Policy and the Johns Hopkins Department of Pediatrics, including the PTC. The CSC provides free, personalized education by a safety health educator, access to reduced-cost safety products, and specialized injury prevention services, such as car safety seat installations or checks. Injury prevention topics covered by the CSC include the broad variety of home, pedestrian, and child passenger safety important to children's health. The CSC has been providing services to the larger Hopkins community since 1997.
- *"Children Are Safe (CARES)" Mobile Safety Center*. Introduced in 2004, CARES Safety Center is a 40-foot vehicle built as a house on wheels, which has interactive exhibits and low-cost safety products. It travels to Baltimore neighborhoods to teach parents and caregivers about the injury risks that children face at home and ways to make the home a safer place. Led by the Center for Injury Research and Policy, CARES was created through a partnership with the Baltimore City Fire Department, the Maryland Institute College of Art, the Maryland Science Center, and Johns Hopkins PTC. Together, the CSC and CARES are significant resources to children and families, providing education and injury prevention supplies, such as car seats and bike helmets, at a reduced cost.
- *Simulation Center*. The PTC has greatly benefitted from the creation and rapid growth of the Johns Hopkins Simulation Center. The Simulation Center is becoming a national model for healthcare provider training and education, and is an emerging tool for improving patient safety. Hopkins residents, nurses, and techs regularly participate in trauma simulations in very realistic conditions, followed by didactic and feedback sessions. The surgical residency program at Hopkins is approved by the Accreditation Council for Graduate Medical Education. Additionally, we train pediatric surgical fellows and pediatric trauma fellows. Residents from the University of Maryland and St. Agnes Hospital also receive their pediatric surgical training at Hopkins.

Pediatric Trauma Center Children's National Medical Center

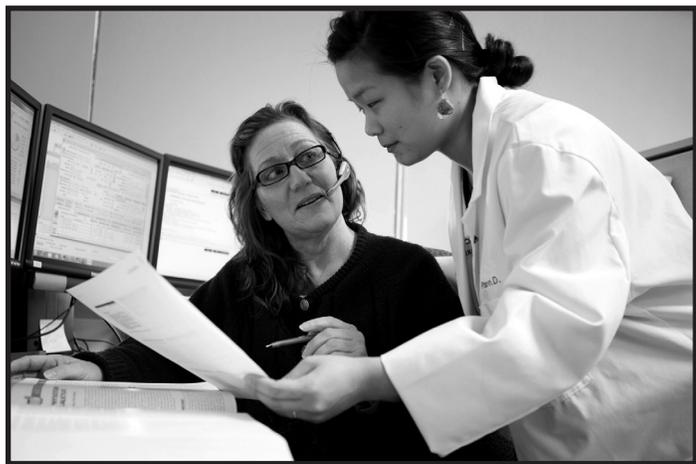
From June 2011 to May 2012, the Children's National Medical Center, as a pediatric specialty referral center, treated 854 Maryland children for trauma injuries. Of these, 411 children had multiple trauma injuries, with 260 of the 411 brought directly to Children's National Medical Center by Maryland EMS. The remaining 151 multiple trauma patients were transfers to Children's National after stabilization in another Maryland Emergency Department. (See pages 75 to 78 for additional pediatric trauma data.) The staff at Children's National Medical Center includes: Randall S. Burd, MD, PhD, Chief, Trauma & Burn Services; Jennifer Fritzeen, MSN, RN, Program Manager; Amy Wright, BSN, RN, Trauma Coordinator; Elaine Lamb, MSN, CPNP, Elizabeth Leachman, MSN, CPNP, Catherine Walsh, MSN, CPNP, and Elizabeth Waibel, MSN, CPNP, Trauma and Burn Nurse Practitioners; Sally Wilson, BSN, RN, Injury Prevention, Education, and Outreach Coordinator; Elizabeth Carter, PhD, Trauma Epidemiologist; Yu Yan, MSN, RN, Trauma Registry Coordinator.

A Level I Pediatric Trauma Center, Children's National Medical Center 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.

Children's National Medical Center provides pediatric emergency and trauma education to physicians, nurses, and prehospital providers. Thirteen courses in Pediatric Advanced Life Support (PALS) are offered annually; Advances in Pediatric Emergency Medicine is a course offered annually to community physicians. Numerous pediatric trauma outreach educational programs are offered to all levels of providers throughout the Maryland emergency medical services (EMS) system.

The trauma service at Children's National Medical Center has a robust trauma research program focusing on the care of children and trauma team performance. The trauma research team is in year two of a grant funded by MIEMSS' Emergency Medical Services for Children (EMSC) and the Health Resources and Services Administration to develop a trauma checklist to be used in the assessment and evaluation of pediatric trauma patients during resuscitation. Drs. Randall Burd and Elizabeth Carter have acquired additional funding through the National Institutes of Health to investigate various technologies for use in treating pediatric trauma.

Community education and outreach has continued to expand at Children's National Medical Center. Through our outreach program we have provided education to thousands of families in Maryland covering various top-



ics including burn prevention, pedestrian safety, abuse prevention, and car seat safety. Children's has recently expanded its outreach to partner with Johns Hopkins Pediatrics with a focus the prevention of children falling out of windows.

Since its inception in 1987, Safe Kids Worldwide or SKW (formerly the National SAFE KIDS Campaign), the injury prevention mission of Children's National Medical Center, has contributed to a 45% decrease in child fatalities from unintentional injuries to children ages 14 and under by promoting changes in attitudes, behaviors, laws, and the environment to prevent unintentional injury to children. In the United States, this reduction has saved an estimated 38,000 children's lives. Working through 350 Safe Kids coalitions in the United States and 18 other countries, Safe Kids delivers proven programs at the grassroots level to prevent unintentional injury. By mobilizing communities at the local level, SKW provides public education programs, facilitates engineering and environmental modifications, encourages the enforcement of laws and regulations, and conducts research to drive our programs and determine the efficacy of our efforts. Safe Kids activities for the State of Maryland are available on www.safekids.org or www.miemss.org/EMSCwww/SafeKidsHome.htm.

The EMSC National Resource Center was established in 1991 to assist the federal EMSC program to improve the pediatric emergency care infrastructure in the United States and its territories. The program provides funding to implement programs to enhance the quality of medical and trauma care provided to children and youth. Much of the program's focus since 2005 has been on helping states to achieve defined performance measures and reduce gaps in pediatric emergency care. These measures address availability of pediatric on- and off-line medical direction, availability of pediatric equipment on ambulances, hospital facility recognition programs for pediatric emergency and trauma care, hospital pediatric inter-facility transport agreements and guidelines, and pediatric educational requirements for the recertification of prehospital emergency care providers. Resources developed for grantees, community leaders, and parents include fact sheets on the program as well as performance

measures, the EMSC Program Strategic Plan, a project implementation guide, a Family Advisory Network tool kit, and more. All resources may be found on Children's EMSC website (www.childrensnational.org/emsc).

Poison Consultation Center Maryland Poison Center

The Maryland Poison Center (MPC) is a certified regional poison center that provides 24/7 emergency poison information to the general public and health professionals in the state. The MPC is accessed by calling the nationwide Poison Help telephone number: 800-222-1222. A division of the University of Maryland School of Pharmacy, the MPC is designated by the Maryland Department of Health and Mental Hygiene as a regional poison center for Maryland. MPC also serves as a consultation center for MIEMSS. Bruce D. Anderson, PharmD, DABAT, is Director of Operations, and Suzanne Doyon, MD, ACMT, is Medical Director.

In calendar year 2011, the Maryland Poison Center (MPC) received 63,081 calls. While 35,635 of these calls involved a human exposure, the remaining 27,446 were animal exposures and requests for information where no exposure occurred. Forty-six percent of poison exposures involved children under the age of six. Sixty-eight percent of the cases reported to the MPC were managed at a non-healthcare facility site, such as the home, school, or workplace. Maryland emergency medical services (EMS) providers consulted with the MPC on 2,064 cases in 2011. In 401 of those cases, transportation by EMS to a healthcare facility was not deemed necessary based on poison center advice. Safely managing patients at the site of the exposure saves millions of dollars in unnecessary healthcare costs. It also allows more efficient and effective use of limited health care resources.

Poison specialists who work in the MPC are pharmacists and nurses who are certified as specialists in poison information by the American Association of Poison Control Centers. Managing at least 2,000 human exposure poisoning cases and passing a national certification examination are required to become a certified specialist. The 13 specialists at the MPC have over 230 years of combined poison center experience, ensuring that callers have access to experienced, qualified, and well-trained staff. Their work has not gone unnoticed: the Maryland Poison Center was named a finalist in the *Daily Record's* 2011 Health Care Heroes Awards in the community outreach category.

The Maryland Poison Center continues to work closely with the National Capital Poison Center and state and national agencies to monitor for possible

chemical and biological weapons exposures and public health events throughout Maryland and the Washington, DC, region. The MPC's data collection system allows data to be submitted in real time to a nationwide poison center surveillance system. An automated symptom and substance outlier detection strategy is used to identify evolving patterns or emerging clusters of exposures.

Research is conducted by Maryland Poison Center staff to advance the prevention, diagnosis, and treatment of poisonings. In 2011, Drs. Wendy Klein-Schwartz and Suzanne Doyon (Maryland Poison Center), along with Dr. John D. Sorkin (University of Maryland School of Medicine), received the Ronald D. Mann Best Article award for manuscripts published in 2010 in the journal *Pharmacoeconomics and Drug Safety*. Their article, "Impact of the voluntary withdrawal of over-the-counter cough and cold medications on pediatric ingestions reported to poison centers," was published in the August 2010 issue of the journal. Drs. Klein-Schwartz and Patrick Dougherty (former MPC Toxicology fellow) won the Best Platform Award at the 2011 North American Congress of Clinical Toxicology for their research presentation, "Comparison of octreotide and dextrose only for treatment of sulfonyleurea overdose in children." Other areas of research in 2011 included citalopram versus other SSRI overdoses in children, comparison of toxicity of the nonmedical use of buprenorphine and methadone, the poison center as a reporting agency to the medical examiner, and non-toxic to toxic risk stratification changes after acute acetaminophen overdose.

The Maryland Poison Center's public education efforts are intended to help increase awareness of the poisons that are found in every home, business, and school and to help prevent poisonings from occurring. The MPC strives to make sure that everyone knows that they can quickly and easily get information by contacting the Maryland Poison Center, 24/7, if a poisoning occurs. In 2011, the MPC provided speakers and/or materials for 101 programs and health affairs in 19 Maryland counties, Baltimore City, and Washington, DC. The programs and events led by MPC staff were attended by more than 4,800 people. Several organizations partnered with the MPC to provide education to their patients, customers, clients, and students. These organizations included fire departments, hospitals, health departments, schools, police departments, child care agencies, pharmacies, hospital perinatal education programs, CPR instructors, parish nurses, Red Cross, and Head Start and Healthy Start programs. The Maryland Poison Center provided trainings for school nurses in Caroline County in 2011. As a result, 15 Caroline County school systems/daycare cen-

ters used educational materials from the MPC in their classrooms. The MPC also partnered with the Frederick County Health Department and Frederick County Public Schools to conduct a Pharmacist Adopt-A-School program. In this program, local volunteer pharmacists are trained to present a poison and medicine safety program to first grade students. In the spring of 2011, 22 Frederick County elementary schools participated in the program, reaching over 1,900 first grade students and their families. All total in 2011, there were more than 175,000 pieces of educational material (brochures, magnets, telephone stickers, Mr. Yuk stickers, teacher's kits, and other pieces) that were distributed at programs, in classrooms, by organizations, or mailed to people and groups who requested them. In an effort to provide additional poison prevention information to the public, the MPC publishes "Poison Prevention Press," a bi-monthly e-newsletter highlighting various poison prevention topics.

National Poison Prevention Week (March 20 to 26, 2011) activities included mailings to emergency departments and pharmacies throughout the state. A Poison Prevention Week poster contest for public schools in Carroll County was co-sponsored by the MPC and Safe Kids Carroll County. The grand-prize winning poster has been used throughout the state to promote poison safety.

Professional education is targeted toward the special needs of health professionals. Programs and materials are designed to help the clinician better manage poisoning and overdose cases. In 2011, 58 programs were conducted at hospitals, fire departments, colleges, conferences (state, regional, and national), and through webinars. These programs were attended by more than 9,900 EMS providers, physicians, nurses, pharmacists, physician assistants, and others. Monthly podcasts were recorded for broadcast on two websites devoted to continuing education for EMS providers and nurses: MedicCast.com and NursingShow.com. The Maryland Poison Center also provides on-site training for health professionals. In 2011, more than 85 EMS providers, paramedic students, physicians, and pharmacists came to the MPC to learn more about the assessment and treatment of poisoned patients. The MPC publishes *ToxTidbits*, a monthly newsletter for health professionals that contains important toxicology information, updates, and news. Some of the topics addressed in 2011 include: Bath Salts, Unintentional Insulin Errors, Chlorine Inhalation, and Acute Metformin Overdose. *ToxTidbits* is emailed to subscribers and faxed to every emergency department in our service area. Current and past issues of *ToxTidbits* and information on how to sign up to receive all of the MPC's e-newsletters can be found on the MPC's website at www.mdpoison.com.

Reason for Poisoning (CY 2011)

Circumstance	Number of Patients	Percentage
Unintentional	26,983	75.7
Intentional	6,989	19.6
Adverse Reaction	1,129	3.2
Other & Unknown	534	1.5
TOTAL	35,635	100.0

Medical Outcome of Poisoning (CY 2011)

Circumstance	Number of Patients	Percentage
No Effect / Minor Effect	31,605	88.7
Moderate Effect	2,141	6.0
Major Effect	217	0.6
Death	42	0.1
Other & Unknown	1,630	4.6
TOTAL	35,635	100.0

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

Location of Poisoning Exposure by Region (CY 2011)

Region	Number of Exposures	Percentage
Region I (Garrett, Allegany)	899	2.5
Region II (Washington, Frederick)	2,944	8.3
Region III (Carroll, Howard, Harford, Anne Arundel, Baltimore County, Baltimore City)	22,207	62.3
Region IV (Cecil, Kent, Queen Anne's, Talbot, Caroline, Dorchester, Wicomico, Worcester, Somerset)	4,102	11.5
Region V (*Montgomery, *Prince George's, Charles, Calvert, St. Mary's)	3,563	10.0
Unknown County/ Other state	1,920	5.4
TOTAL	35,635	100.0

*NOTE: Routing for the nationwide telephone number automatically connects callers from Montgomery and Prince George's counties to the National Capital Poison Center in Washington, DC. Some callers from these counties reach the Maryland Poison Center by dialing local telephone numbers still in service. This report reflects calls to the Maryland Poison Center only. An additional 13,519 human exposures in Maryland were reported to the National Capital Poison Center in 2011.

Rehabilitation

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

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

Rehabilitation services are provided in hospitals, acute inpatient rehabilitation hospitals, long-term care facilities, home care, outpatient services, and community-based rehabilitation programs. During FY 2012, trauma centers in Maryland referred 1,919 trauma patients ages 15 and over to inpatient rehabilitation services. The ten rehabilitation facilities receiving the most patients are listed below.

Top Ten Destinations of Patients (Ages 15 & Over) Who Went to Inpatient Rehabilitation Facilities (June 2011 to May 2012)

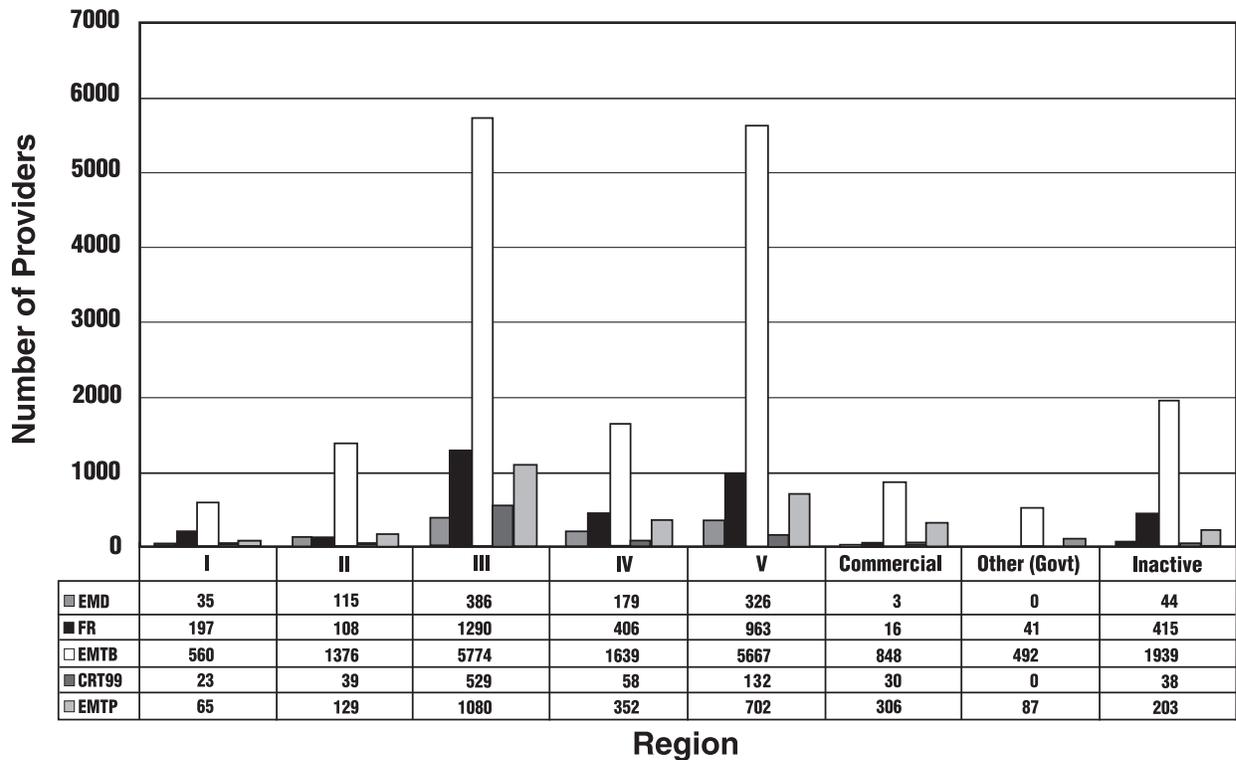
Source: Maryland State Trauma Registry

Rehabilitation Center	Number
Adventist Health Care	53
Future Care	45
Genesis Long-Term Care Facilities	196
Good Samaritan Hospital of Maryland	51
HCR Manor Care	27
Kernan Hospital	575
Lorien Health Systems	32
National Rehabilitation Hospital Washington, DC	52
Sinai Rehabilitation Hospital	56
University Specialty Center	60

Note: Total patients ages 15 and over who went to rehabilitation centers = 1,919.

MARYLAND EMS STATISTICS

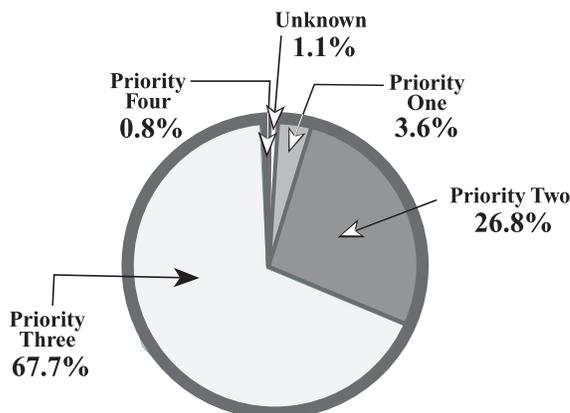
Number of EMS Providers (Primary Affiliation) by Region



Types of EMS Calls

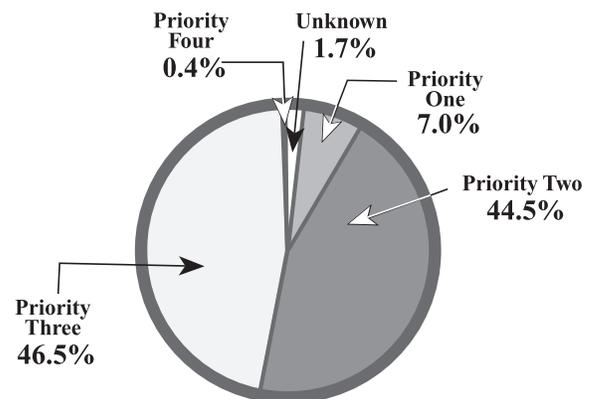
Patient Priority For Injury Calls

Calendar Year 2011



Patient Priority For Medical Calls

Calendar Year 2011



Source: Paper and electronic Maryland Ambulance Information System Data and electronic Maryland EMS Data System (eMEDS)

Priority 1 - Patient Critically Ill or Injured (Immediate / Unstable)
Priority 2 - Patient Less Serious (Urgent / Potentially Life Threatening)

Priority 3 - Patient Non-Urgent
Priority 4 - Patient does not require medical attention

Public Safety EMS Units

Patient Transportation Vehicles

Region	Ambulances						Ambu Buses		
	BLS			ALS			Type I	Type II	Type III
	Inservice	Ready Service	Reserve Unstocked	Inservice	Ready Service	Reserve Unstocked	20 + Pts	19 - 20 Pts	< 10 Pts
Region I	0	0	1	32	0	0	0	0	0
Region II	32	2	4	36	2	2	0	0	0
Region III	18	0	18	163	27	54	0	2	0
Region IV	19	2	1	132	11	0	0	0	0
Region V	112	9	29	54	7	11	3	0	0
STATEWIDE TOTAL	181	13	53	417	47	67	3	2	0

Source: Vehicle data reported by the Jurisdictional Programs

Patient Transportation Vehicle Definitions

Basic Life Support (BLS) Transport Vehicle: A vehicle equipped to carry and treat a patient per EMT-Basic Protocols

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

- **Inservice:** Fully stocked and staffed unit ready to be dispatched
- **Ready Reserve:** Fully stocked, but not staffed, unit. Could replace an Inservice unit or be added to Inservice fleet by calling in additional personnel
- **Reserve Unstocked:** Ambulance outfitted to accept cots and equipment. Can be used to replace an Inservice unit by transferring supplies, equipment, and personnel. Can be added to Inservice fleet with additional supplies, equipment, and personnel

Ambu Bus: A passenger bus configured or modified to transport as many as 20 patients on stretchers

Public Safety/Non-Transport Vehicles

Region	Non-Transport Support					Disaster Supplies*		
	BLS First Response	Suppression BLS First Response	ALS Chase			MCSU Type I (100+ Pts)	MCSU Type II (50 Pts)	MCSU Type III (25 Pts)
			Non-Supervisory	Supervisory	ALS Engines			
Region I	17	13	6	2	6	0	1	0
Region II	55	13	22	5	1	0	3	1
Region III	54	266	13	31	3	2	2	0
Region IV	125	55	24	19	5	100	1	5
Region V	56	160	13	8	35	5	3	26
STATEWIDE TOTAL	307	507	78	65	50	107	10	32

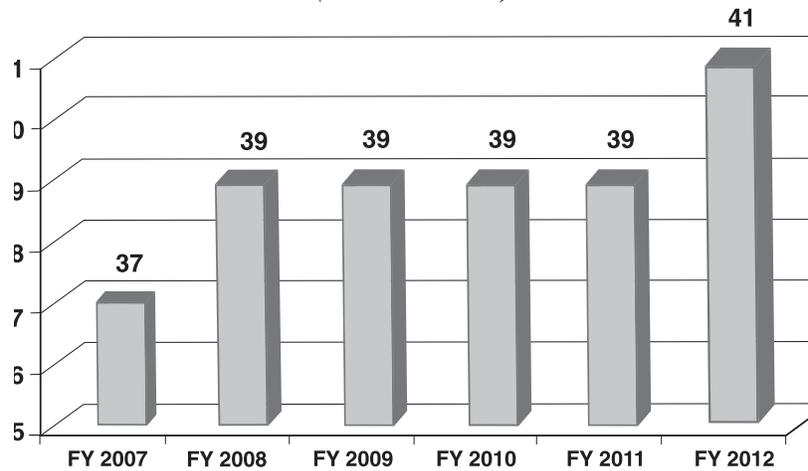
Source: Vehicle data reported by the Jurisdictional Programs

* MCSU = Mass Casualty Support Unit

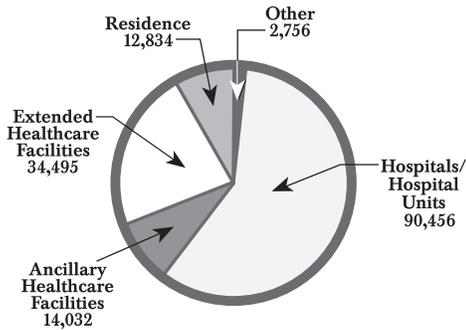
For more detailed definitions of vehicle types, please visit MIEMSS website, and click on Forms and Documents

Commercial Ambulance Services

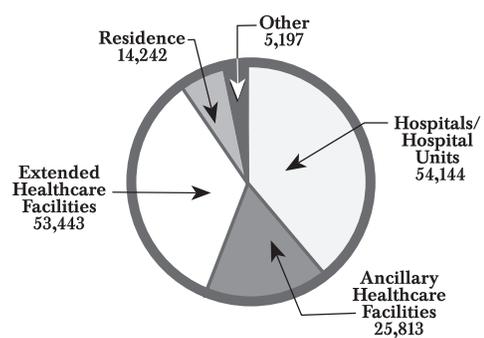
Commercial Ambulance Services (Ground & Air) (FY 2007 - FY 2012)



Commercial Origin Location Types CY 2011



Commercial Destination Location Types CY 2011



Source: Commercial Maryland Ambulance Information System (CMAIS)

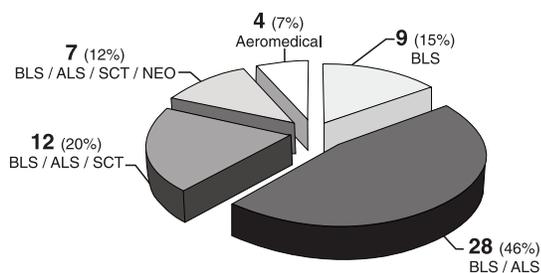
Notes:

Hospitals = Hospitals and Hospital Emergency Departments, Critical Care Units, and Perinatal Units

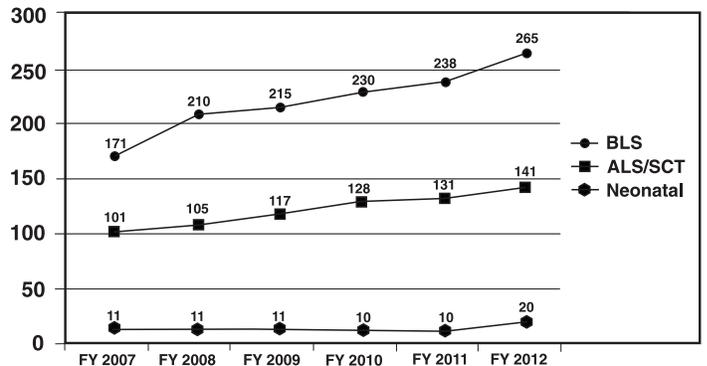
Ancillary Healthcare Facilities = Diagnostic Center, Physician's Office, MRI, Mental Health Facility, Dialysis Center

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

Commercial Services by License Type (FY 2012)

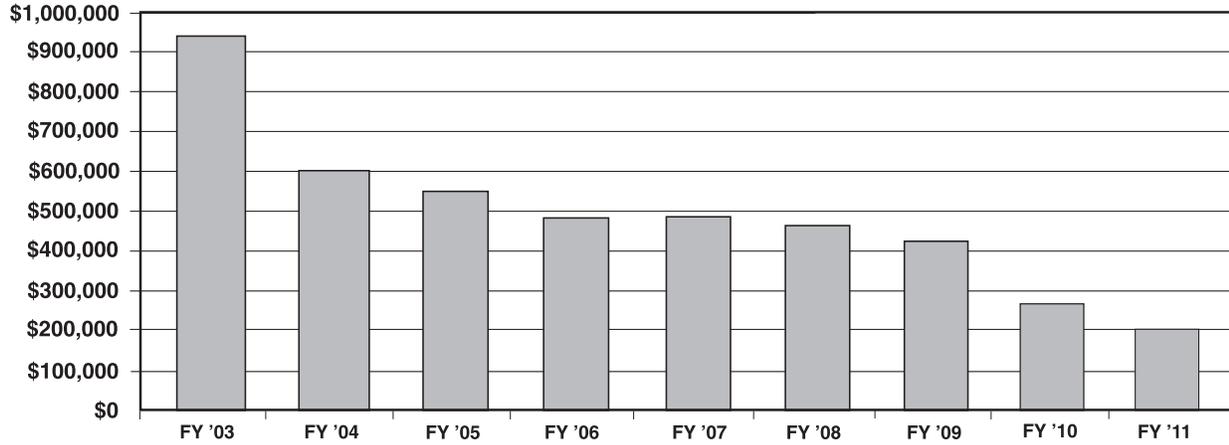


Commercial Ground Ambulance Vehicles by Type (FY 2007 - FY 2012)

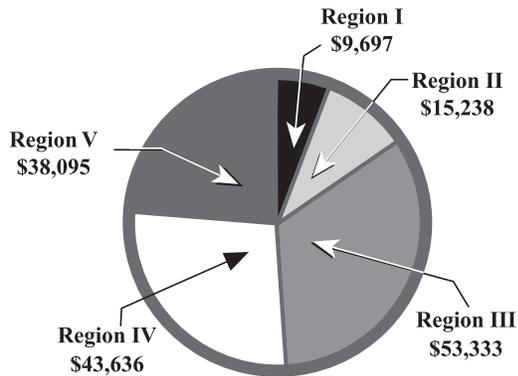


**Health Preparedness Program (HPP)
Bioterrorism Funding for Maryland EMS
(Federal FY 2003 – FY 2011)**

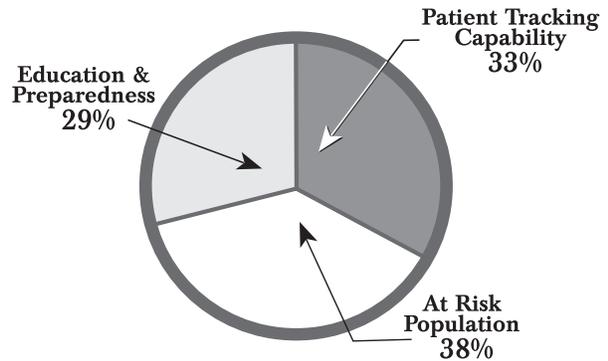
**HPP Bioterrorism Funding Totals
(Federal FY 2003 – FY 2011)**



**HPP Bioterrorism Funding Allocation
By Maryland EMS Region
(Federal FY 2011)**



**HPP Bioterrorism Funding Categories
(Federal FY 2011)**



MARYLAND TRAUMA STATISTICS*

Age Distribution of Patients Treated at Pediatric or Adult Trauma Centers

(3-Year Comparison)

Source: Maryland State Trauma Registry

Age Range	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Under 1 year	243	184	180
1 to 4 years	589	513	549
5 to 9 years	517	465	559
10 to 14 years	752	637	648
15 to 24 years	4,854	4,859	4,890
25 to 44 years	6,547	6,496	6,748
45 to 64 years	4,987	4,976	5,523
65 + years	2,626	2,775	3,184
Unknown	9	16	13
TOTAL	21,124	20,921	22,294

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

ADULT TRAUMA

Legend Code

The Johns Hopkins Bayview Medical Center	BVMC	R Adams Cowley Shock Trauma Center	STC
Johns Hopkins Medical System	JHH	Sinai Hospital of Baltimore	SH
Meritus Medical Center	MMC	Suburban Hospital – Johns Hopkins Medicine	SUB
Peninsula Regional Medical Center	PEN	Western Maryland Regional	WMRMC
Prince George's Hospital Center	PGH	Medical Center	

Total Cases Reported by Trauma Centers

(3-Year Comparison)

Source: Maryland State Trauma Registry

Trauma Center	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
The Johns Hopkins Bayview Medical Center	1,813	1,504	1,567
Johns Hopkins Medical System	2,071	2,008	2,120
Meritus Medical Center	798	953	1,154
Peninsula Regional Medical Center	1,412	1,181	1,493
Prince George's Hospital Center	2,993	3,069	3,524
R Adams Cowley Shock Trauma Center	6,473	6,659	6,846
Sinai Hospital of Baltimore	1,637	1,762	1,726
Suburban Hospital	1,614	1,620	1,697
Western Maryland Regional Medical Center	631	727	617
TOTAL	19,442	19,483	20,744

* Maryland Trauma Statistics are based on patient discharge data from June 2011 to May 2012

Occurrence of Injury by County: Scene Origin Cases Only

(June 2011 to May 2012)

Source: Maryland State Trauma Registry

County of Injury	Number
Allegany County	339
Anne Arundel County	1,101
Baltimore County	1,979
Calvert County	163
Caroline County	67
Carroll County	308
Cecil County	66
Charles County	302
Dorchester County	84
Frederick County	401
Garrett County	40
Harford County	493
Howard County	389
Kent County	66
Montgomery County	1,560
Prince George's County	2,346
Queen Anne's County	175
St. Mary's County	160
Somerset County	87
Talbot County	54
Washington County	800
Wicomico County	479
Worcester County	266
Baltimore City	5,183
Virginia	57
West Virginia	148
Pennsylvania	132
Washington, DC	226
Delaware	95
Other	2
Not Indicated	649
TOTAL	18,217

Note: Scene origin cases represent 87.8 % of the total trauma cases treated statewide.

Residence of Patients by County: Scene Origin Cases Only

(June 2011 to May 2012)

Source: Maryland State Trauma Registry

County of Residence	Number
Allegany County	314
Anne Arundel County	1071
Baltimore County	2,488
Calvert County	188
Caroline County	69
Carroll County	359
Cecil County	75
Charles County	333
Dorchester County	75
Frederick County	424
Garrett County	30
Harford County	566
Howard County	389
Kent County	52
Montgomery County	1,518
Prince George's County	2,173
Queen Anne's County	117
St. Mary's County	111
Somerset County	98
Talbot County	49
Washington County	663
Wicomico County	488
Worcester County	209
Baltimore City	4,274
Virginia	350
West Virginia	220
Pennsylvania	434
Washington, DC	499
Delaware	198
Other	347
Not Indicated	36
TOTAL	18,217

Note: Scene origin cases represent 87.8 % of the total trauma cases treated statewide.

Patients with Protective Devices at Time of Trauma Incident: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

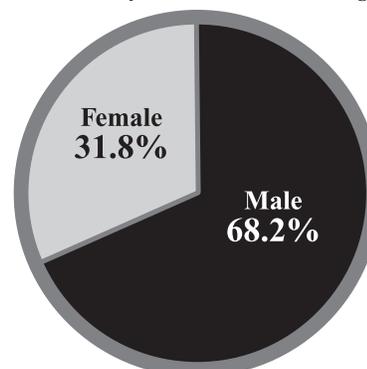
Protective Device	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
None	24.7%	22.7%	22.7%
Seatbelt	28.4%	25.8%	24.6%
Airbag & Seatbelt	21.2%	21.8%	23.0%
Airbag Only	4.1%	4.5%	4.3%
Infant/Child Seat	0.2%	0.2%	0.2%
Protective Helmet	13.7%	14.6%	15.1%
Padding/Protective Clothing	0.1%	0.1%	0.1%
Other Protective Device	0.0%	0.1%	0.1%
Unknown	7.6%	10.2%	9.9%
TOTAL	100.0%	100.0%	100.0%

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

Gender Profile: Primary Admissions Only

(June 2011 to May 2012)

Source: Maryland State Trauma Registry



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

Mode of Patient Transport to Trauma Centers: Scene Origin Cases Only

(June 2011 to May 2012)

Source: Maryland State Trauma Registry

Modality Type	BVMC	JHH	MMC	PEN	PGH	SH	STC	SUB	WRRMC	TOTAL
Ground Ambulance	94.0%	84.2%	80.1%	77.9%	79.9%	96.9%	75.2%	95.8%	78.3%	83.0%
Helicopter	0.1%	0.5%	1.6%	8.5%	15.0%	0.0%	24.6%	0.5%	12.4%	10.8%
Other	5.9%	15.3%	18.3%	13.6%	5.1%	3.1%	0.2%	3.7%	9.3%	6.2%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: Only patients brought directly from the scene to a trauma center are included in this table.

Origin of Patient Transport to Trauma Centers

(June 2011 to May 2012)

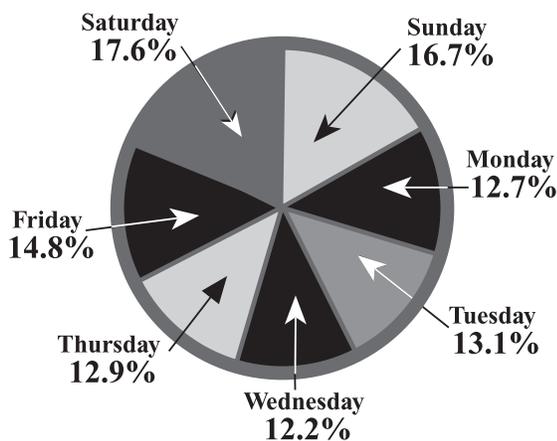
Source: Maryland State Trauma Registry

Origin Type	BVMC	JHH	MMC	PEN	PGH	SH	STC	SUB	WRRMC	TOTAL
Scene of Injury	99.4%	93.0%	97.2%	88.2%	96.1%	98.1%	72.9%	96.1%	94.6%	88.0%
Hospital Transfer	0.0%	6.3%	1.2%	3.2%	2.0%	0.9%	27.1%	3.0%	1.3%	10.6%
Other	0.6%	0.7%	1.6%	8.6%	1.9%	1.0%	0.0%	0.9%	4.1%	1.4%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Emergency Department Arrivals by Day of Week: Primary Admissions Only

(June 2011 to May 2012)

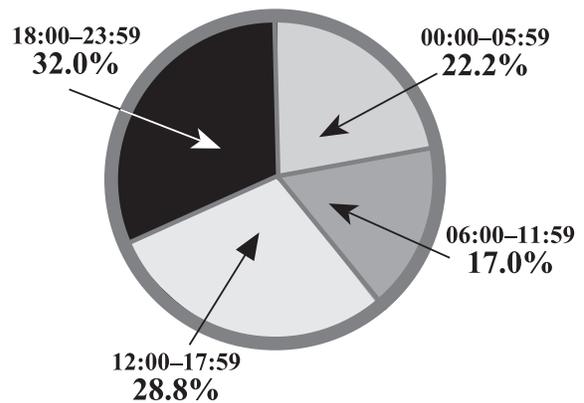
Source: Maryland State Trauma Registry



Emergency Department Arrivals by Time of Day: Primary Admissions Only

(June 2011 to May 2012)

Source: Maryland State Trauma Registry



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

Number of Deaths by Age

(3-Year Comparison)

Source: Maryland State Trauma Registry

Age	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Under 1 year	0	0	1
1 to 4 years	2	1	1
5 to 14 years	6	9	3
15 to 24 years	135	150	137
25 to 44 years	201	177	189
45 to 64 years	147	148	158
65+ years	183	184	238
Unknown	4	5	0
TOTAL	678	674	727

Deaths Overall as a
Percentage of the Total
Injuries Treated

3.5% 3.5% 3.5%

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

Number of Injuries by Age

(3-Year Comparison)

Source: Maryland State Trauma Registry

Age	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Under 1 year	32	42	40
1 to 4 years	121	120	118
5 to 14 years	306	253	291
15 to 24 years	4,814	4,805	4,827
25 to 44 years	6,547	6,496	6,748
45 to 64 years	4,987	4,976	5,523
65+ years	2,626	2,775	3,184
Unknown	9	16	13
TOTAL	19,442	19,483	20,744

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

Number of Injuries and Deaths by Age

(June 2011 to May 2012)

Source: Maryland State Trauma Registry

Age	Number of Injured Patients		Number of Deaths	
	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	40	36	1	1
1 to 4 years	118	110	1	1
5 to 14 years	291	242	3	3
15 to 24 years	4,827	4,293	137	119
25 to 44 years	6,748	5,938	189	167
45 to 64 years	5,523	4,872	158	141
65+ years	3,184	2,875	238	218
Unknown	13	13	0	0
TOTAL	20,744	18,379	727	650

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: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

Etiology	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Motor Vehicle Crash	31.7%	30.6%	29.7%
Motorcycle Crash	5.8%	6.4%	6.7%
Pedestrian Incident	5.6%	4.9%	5.3%
Fall	26.7%	28.1%	29.9%
Gunshot Wound	6.9%	6.4%	5.2%
Stab Wound	7.1%	6.9%	6.4%
Other	16.2%	16.7%	16.8%
TOTAL	100.0%	100.0%	100.0%

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

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

(June 2011 to May 2012)

Source: Maryland State Trauma Registry

Blood Alcohol Concentration	Motor Vehicle				Total
	Crash	Assault	Fall	Other	
Negative	59.1%	47.2%	57.3%	59.6%	56.3%
Positive	22.9%	32.8%	17.8%	13.6%	22.5%
Undetermined	18.0%	20.0%	24.9%	26.8%	21.2%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

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

Etiology of Injuries by Age: Primary Admissions Only

(June 2011 to May 2012)

Source: Maryland State Trauma Registry

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound	Other	Total
Under 1 year	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%	0.1%
1 to 4 years	0.3%	0.0%	0.3%	0.4%	0.3%	0.0%	0.6%	0.3%
5 to 14 years	0.9%	0.7%	2.0%	0.9%	0.3%	0.1%	1.7%	0.9%
15 to 24 years	26.6%	18.4%	23.4%	6.4%	40.9%	32.1%	24.5%	20.5%
25 to 44 years	32.9%	40.6%	30.8%	17.0%	44.0%	47.7%	37.9%	31.0%
45 to 64 years	25.9%	35.7%	31.7%	32.7%	12.3%	18.4%	29.1%	28.3%
65+ years	13.3%	4.6%	11.7%	42.4%	2.2%	1.7%	5.8%	18.8%
Unknown	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.2%	0.1%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

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

Etiology Distribution for Patients with Blunt Injuries: Primary Admissions Only

(June 2011 to May 2012)

Source: Maryland State Trauma Registry

Etiology	Percentage
Motor Vehicle Crash	34.4%
Motorcycle Crash	7.8%
Pedestrian Incident	6.1%
Fall	34.4%
Other	17.1%
Unknown	0.2%
TOTAL	100.0%

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

Etiology Distribution for Patients with Penetrating Injuries: Primary Admissions Only

(June 2011 to May 2012)

Source: Maryland State Trauma Registry

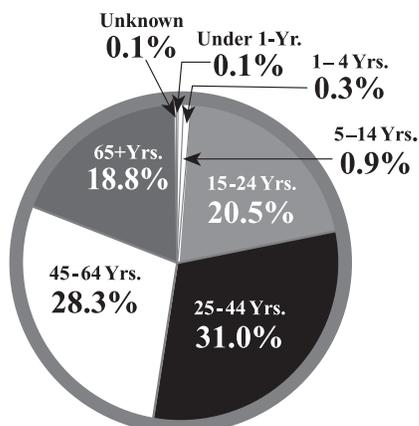
Etiology	Percentage
Motor Vehicle Crash	0.1%
Motorcycle Crash	0.1%
Gunshot Wound	41.7%
Stabbing	51.2%
Fall	1.6%
Other	4.6%
Unknown	0.7%
TOTAL	100.0%

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

Age Distribution of Patients: Primary Admissions Only

(June 2011 to May 2012)

Source: Maryland State Trauma Registry

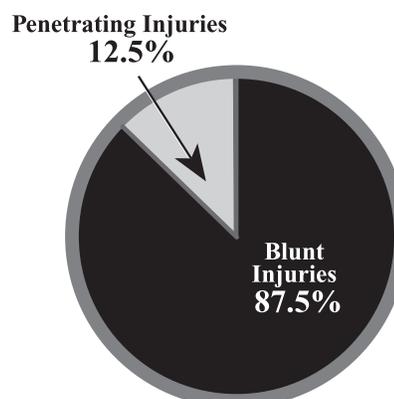


Note: "Primary Admissions" refers to all patients except those treated and released from the emergency department within 6 hours of emergency department arrival. Only pediatric patients that were treated at adult trauma centers are included in this chart. For patients treated at pediatric trauma centers,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

Injury Type Distribution of Patients: Primary Admissions Only

(June 2011 to May 2012)

Source: Maryland State Trauma Registry



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

Final Disposition of Patients: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

Final Disposition	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Inpatient Rehab Facility	12.3%	12.7%	13.4%
Skilled Nursing Facility	2.5%	2.2%	2.3%
Residential Facility	1.2%	1.0%	0.5%
Specialty Referral Center	3.5%	3.8%	3.4%
Home with Services	2.6%	2.8%	2.5%
Home	68.2%	67.0%	66.2%
Acute Care Hospital	1.8%	2.4%	2.8%
Against Medical Advice	1.8%	1.7%	2.0%
Morgue/Died	5.0%	4.9%	5.1%
Left Without Treatment	0.4%	0.4%	0.3%
Hospice Care*	0.0%	0.1%	0.2%
Jail*	0.2%	0.8%	1.1%
Other	0.5%	0.2%	0.2%
TOTAL	100.0%	100.0%	100.0%

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

* "Jail" and "hospice care" are new categories that were added in the previous annual report year. Prior to that time, "jail" was included in "residential facility" and "hospice care" was included in "skilled nursing facility."

Injury Severity Score (ISS) by Injury Type: Primary Admissions Only

(June 2011 to May 2012)

Source: Maryland State Trauma Registry

ISS	Blunt	Penetrating	Total
1 to 12	70.5%	71.9%	70.6%
13 to 19	15.8%	12.3%	15.4%
20 to 35	11.4%	10.7%	11.3%
36 to 75	2.3%	5.1%	2.7%
TOTAL	100.0%	100.0%	100.0%

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

Injury Severity Scores of Patients with Penetrating Injuries: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

ISS	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
1 to 12	72.9%	67.5%	71.9%
13 to 19	11.3%	13.9%	12.3%
20 to 35	10.5%	13.3%	10.7%
36 to 75	5.3%	5.3%	5.1%
TOTAL	100.0%	100.0%	100.0%

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

Injury Severity Scores of Patients with Blunt Injuries: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

ISS	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
1 to 12	69.2%	69.4%	70.5%
13 to 19	16.5%	16.8%	15.8%
20 to 35	11.7%	11.1%	11.4%
36 to 75	2.6%	2.7%	2.3%
TOTAL	100.0%	100.0%	100.0%

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

Injury Severity Scores of Patients with Either Blunt or Penetrating Injuries: Primary Admissions Only

(3-Year Comparison)

Source: Maryland State Trauma Registry

ISS	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
1 to 12	69.8%	69.1%	70.6%
13 to 19	15.7%	16.4%	15.4%
20 to 35	11.5%	11.4%	11.3%
36 to 75	3.0%	3.1%	2.7%
TOTAL	100.0%	100.0%	100.0%

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

MARYLAND ADULT BURN STATISTICS

Total Number of Adult Burn Cases

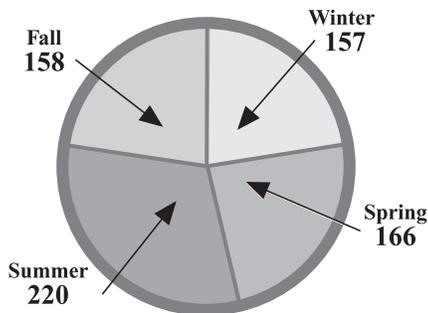
*Patients Age 15 and Older Treated at
John Hopkins Burn Center at Bayview
Source: Maryland State Trauma Registry*

Institution	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Johns Hopkins Burn Center (at Bayview)	660	612	701

Season of the Year Distribution

*Patients Age 15 and Older Treated at
Johns Hopkins Burn Center at Bayview
(June 2011 to May 2012)*

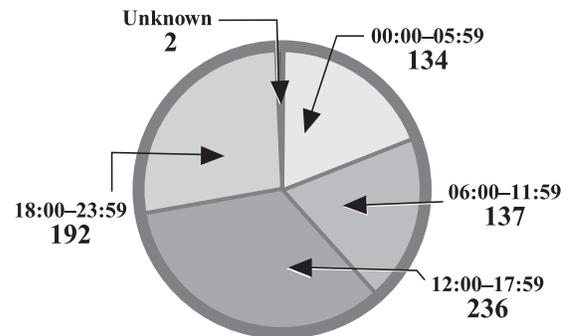
Source: Maryland State Trauma Registry



Time of Arrival Distribution

*Patients Age 15 and Older Treated at
Johns Hopkins Burn Center at Bayview
(June 2011 to May 2012)*

Source: Maryland State Trauma Registry



Place of Injury

*Patients Age 15 and Older Treated at
John Hopkins Burn Center at Bayview
(June 2011 to May 2012)*

Source: Maryland State Trauma Registry

Place of Injury	Number
Home	363
Industrial Place	109
Place for Recreation or Sport	59
Street/Highway	26
Public Building	14
Residential Institution	4
Other Specified Place	17
Unspecified Place	109
TOTAL	701

Occurrence of Injury by County

*Patients Age 15 and Older Treated at
John Hopkins Burn Center at Bayview
(June 2011 to May 2012)*

Source: Maryland State Trauma Registry

County of Injury	Number
Allegany County	3
Anne Arundel County	55
Baltimore County	124
Caroline County	2
Carroll County	21
Cecil County	8
Charles County	1
Dorchester County	7
Frederick County	11
Harford County	28
Howard County	23
Montgomery County	1
Prince George's County	11
Queen Anne's County	1
Somerset County	3
Talbot County	5
Washington County	18
Wicomico County	8
Worcester County	5
Baltimore City	162
Virginia	3
West Virginia	16
Pennsylvania	33
Delaware	2
Other	12
Not Valued	138
TOTAL	701

Residence of Patients by County

*Patients Age 15 and Older Treated at
John Hopkins Burn Center at Bayview
(June 2011 to May 2012)*

Source: Maryland State Trauma Registry

County of Residence	Number
Allegany County	3
Anne Arundel County	69
Baltimore County	164
Calvert County	2
Caroline County	5
Carroll County	29
Cecil County	17
Charles County	1
Dorchester County	8
Frederick County	13
Harford County	40
Howard County	35
Montgomery County	3
Prince George's County	15
Somerset County	3
Talbot County	5
Washington County	21
Wicomico County	9
Worcester County	6
Baltimore City	173
Virginia	4
West Virginia	16
Pennsylvania	39
Delaware	4
Other	11
Not Valued	6
TOTAL	701

Mode of Patient Transport

*Patients Age 15 and Older Treated at
John Hopkins Burn Center at Bayview
(June 2011 to May 2012)*

Source: Maryland State Trauma Registry

Modality Type	Number
Ground Ambulance	313
Helicopter	51
Other*	318
Not Valued	19
TOTAL	701

**Note: The category "Other" includes patients that were walk-ins or were brought in by private or public vehicles.*

Etiology of Injury by Age

*Patients Age 15 and Older Treated at John Hopkins Burn Center at Bayview
(June 2011 to May 2012)*

Source: Maryland State Trauma Registry

Age Range	Electrical	Chemical	Thermal			Inhalation	Other Burn	Other Non-Burn	Unknown	Total
			Flame	Contact	Scald					
15 to 24 years	3	9	44	8	41	0	1	1	3	110
25 to 44 years	13	22	83	25	109	1	0	2	8	263
45 to 64 years	7	23	105	13	80	4	5	7	3	247
65 years and over	1	2	39	2	21	7	0	8	1	81
Total	24	56	271	48	251	12	6	18	15	701

Final Disposition of Patients

*Patients Age 15 and Older Treated at
John Hopkins Burn Center at Bayview
(3-Year Comparison)*

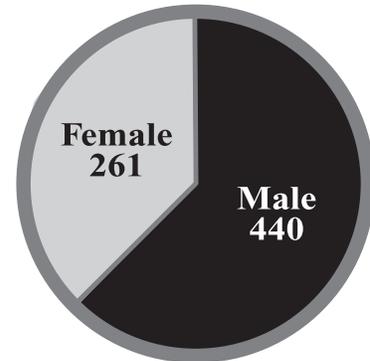
Source: Maryland State Trauma Registry

Final Disposition	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Home	531	504	559
Home with Services	57	48	51
Transfer to Another Acute Care Facility	1	4	6
Rehabilitation Facility	17	11	29
Skilled Nursing Facility	16	11	15
Psychiatric Hospital	5	2	6
Morgue/Died	13	16	12
Unable to Complete Treatment/ Against Medical Advice	9	7	8
Jail	0	0	1
Other	2	0	0
Not Valued	9	9	14
TOTAL	660	612	701

Gender Profile

*Patients Age 15 and Older Treated at
John Hopkins Burn Center at Bayview
(June 2011 to May 2012)*

Source: Maryland State Trauma Registry



Number of Injuries by Age

*Patients Age 15 and Older Treated at
John Hopkins Burn Center at Bayview
(3-Year Comparison)*

Source: Maryland State Trauma Registry

Age Range	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
15 to 24 years	138	119	110
25 to 44 years	238	229	263
45 to 64 years	217	202	247
65 years and over	67	62	81
TOTAL	660	612	701

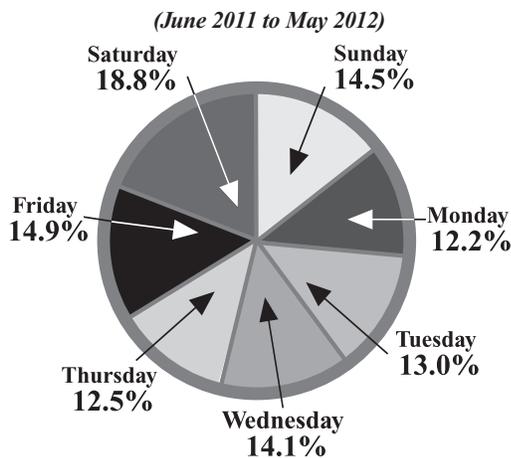
MARYLAND PEDIATRIC TRAUMA STATISTICS

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

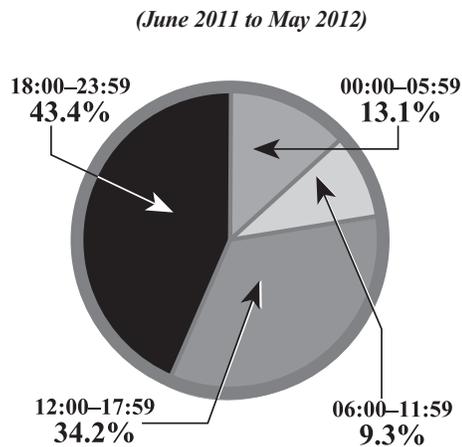
Total Cases Treated at Pediatric Trauma Centers (3-Year Comparison)			
Trauma Center	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
CNMC	855	765	856
JHP	827	673	694
TOTAL	1,682	1,438	1,550

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

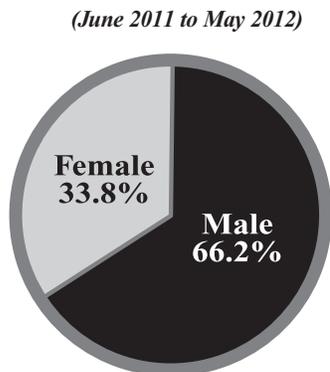
Emergency Department Arrivals by Day of Week: Children Treated at Pediatric Trauma Centers



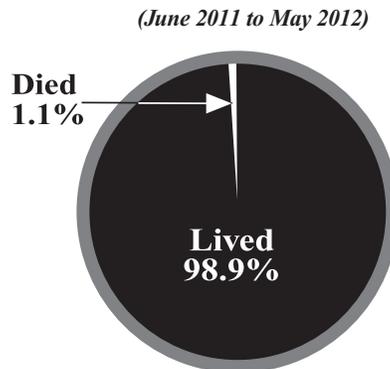
Emergency Department Arrivals by Time of Day: Children Treated at Pediatric Trauma Centers



Gender Profile: Children Treated at Pediatric Trauma Centers



Outcome Profile: Children Treated at Pediatric Trauma Centers



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

Mode of Patient Transport by Center: Scene Origin Cases Only

*Children Treated at Pediatric Trauma Centers
(June 2011 to May 2012)*

Modality Type	CNMC	JHP	Total
Ground Ambulance	70.2%	75.9%	73.6%
Helicopter	15.9%	19.9%	18.2%
Other	13.9%	4.2%	8.2%
TOTAL	100.0%	100.0%	100.0%

Note: Only patients brought directly from the scene to a trauma center are included in this table. For children who were treated at adult trauma centers, see Maryland Adult Trauma Report. Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Origin of Patient Transport by Center

*Children Treated at Pediatric Trauma Centers
(June 2011 to May 2012)*

Origin	CNMC	JHP	Total
Scene of Injury	43.0%	74.9%	57.4%
Hospital Transfer	44.7%	24.8%	35.7%
Other	12.3%	0.3%	6.9%
TOTAL	100.0%	100.0%	100.0%

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

Injury Type

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

Injury Type	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Blunt	94.8%	95.5%	94.4%
Penetrating	4.0%	2.9%	3.0%
Near Drowning	0.4%	0.4%	1.0%
Hanging	0.1%	0.3%	0.2%
Ingestion	0.1%	0.2%	0.0%
Crush	0.3%	0.1%	0.3%
Animal Bite/Human Bite	0.3%	0.6%	1.0%
Other	0.0%	0.0%	0.1%
TOTAL	100.0%	100.0%	100.0%

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

Etiology of Injury

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

Etiology	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Motor Vehicle Crash	16.8%	16.4%	17.0%
Motorcycle Crash	0.7%	1.1%	0.9%
Pedestrian Incident	9.4%	9.4%	9.4%
Gunshot Wound	0.7%	1.2%	0.8%
Stabbing*	2.0%	1.4%	2.0%
Fall	45.8%	43.0%	41.8%
Other	24.6%	27.5%	28.1%
TOTAL	100.0%	100.0%	100.0%

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

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

Etiology of Injuries by Age

Children Treated at Pediatric Trauma Centers (June 2011 to May 2012)

Age	Motor Vehicle Crash	Motorcycle	Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
Under 1 year	3.4%	0.0%	0.7%	13.7%	0.0%	3.2%	9.3%	9.0%
1 to 4 years	23.8%	7.1%	20.8%	37.7%	30.8%	32.2%	18.3%	27.9%
5 to 9 years	37.5%	28.6%	41.7%	29.1%	7.7%	19.4%	20.0%	28.8%
10 to 14 years	33.0%	57.2%	34.7%	17.6%	53.8%	45.2%	43.6%	30.3%
15+ years	2.3%	7.1%	2.1%	1.9%	7.7%	0.0%	8.8%	4.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

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

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

Number of Injuries and Deaths by Age

Children Treated at Pediatric Trauma Centers
(June 2011 to May 2012)

Age	Number of Injured Patients		Number of Deaths	
	Total	Maryland Residents	Total	Maryland Residents
Under 1 year	140	136	3	3
1 to 4 years	431	416	7	7
5 to 9 years	446	424	5	5
10 to 14 years	470	438	2	2
15+ years	63	56	0	0
TOTAL	1,550	1,470	17	17

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

Number of Injuries by Age

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

Age	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Under 1 year	211	142	140
1 to 4 years	468	393	431
5 to 9 years	410	373	446
10 to 14 years	553	476	470
15+ years	40	54	63
TOTAL	1,682	1,438	1,550

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

Number of Deaths by Age

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

Age	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Under 1 year	4	2	3
1 to 4 years	7	3	7
5 to 9 years	2	5	5
10 to 14 years	3	7	2
15+ years	0	1	0
TOTAL	16	18	17

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

Final Disposition of Patients

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

Final Disposition	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Inpatient Rehab Facility	2.8%	2.8%	2.5%
Residential Facility	0.0%	0.2%	0.5%
Specialty Referral Center	0.1%	0.0%	0.1%
Home with Services	1.2%	1.0%	1.5%
Home	93.6%	94.1%	92.9%
Acute Care Hospital	0.1%	0.0%	0.3%
Against Medical Advice	0.1%	0.0%	0.0%
Morgue/Died	1.0%	1.2%	1.1%
Foster Care	0.8%	0.7%	1.1%
Other	0.3%	0.0%	0.0%
TOTAL	100.0%	100.0%	100.0%

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

Etiology of Injuries by Age

Children Treated at Pediatric Trauma Centers or Adult Trauma Centers (June 2011 to May 2012)

Age	Motor Vehicle		Pedestrian	Fall	Gunshot Wound	Stab Wound*	Other	Total
	Crash	Motorcycle						
Under 1 year	4.4%	0.0%	1.7%	14.5%	0.0%	3.0%	9.3%	9.3%
1 to 4 years	24.4%	8.3%	19.7%	38.4%	33.3%	30.3%	20.2%	28.4%
5 to 9 years	35.5%	25.0%	40.4%	28.2%	5.6%	18.2%	21.8%	28.8%
10 to 14 years	35.7%	66.7%	38.2%	18.9%	61.1%	48.5%	48.7%	33.5%
TOTAL	100.0%							

Notes: Children's National Medical Center data include patients residing in Maryland and/or injured in Maryland. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

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

**Occurrence of Injury by County:
Scene Origin Cases Only**

*Children Treated at Pediatric Trauma Centers
(June 2011 to May 2012)*

County of Injury	Number
Anne Arundel County	65
Baltimore County	123
Calvert County	18
Caroline County	12
Carroll County	23
Cecil County	8
Charles County	18
Dorchester County	5
Frederick County	19
Harford County	44
Howard County	26
Kent County	5
Montgomery County	101
Prince George's County	193
Queen Anne's County	6
St. Mary's County	10
Talbot County	6
Washington County	4
Worcester County	2
Baltimore City	171
Virginia	2
Pennsylvania	3
Washington, DC	16
Not Indicated	6
TOTAL	886

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 57.2% of the total cases treated at pediatric trauma centers. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

**Residence of Patients by County:
Scene Origin Cases Only**

*Children Treated at Pediatric Trauma Centers
(June 2011 to May 2012)*

County of Residence	Number
Anne Arundel County	73
Baltimore County	105
Calvert County	21
Caroline County	16
Carroll County	26
Cecil County	8
Charles County	14
Dorchester County	4
Frederick County	20
Harford County	38
Howard County	29
Kent County	5
Montgomery County	96
Prince George's County	183
Queen Anne's County	6
St. Mary's County	10
Talbot County	2
Washington County	3
Wicomico County	1
Worcester County	2
Baltimore City	173
Virginia	9
West Virginia	2
Pennsylvania	8
Washington, DC	21
Delaware	2
Other	9
TOTAL	886

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 57.2% of the total cases treated at pediatric trauma centers. For children that were burn patients at each hospital, see Maryland Pediatric Burn Center Statistics.

Children with Protective Devices at Time of Trauma Incident

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

Protective Device	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
None	37.5%	35.8%	34.2%
Seatbelt	22.4%	19.2%	26.8%
Airbag & Seatbelt	2.5%	3.3%	0.8%
Infant/Child Seat	17.3%	17.1%	15.7%
Protective Helmet	7.7%	10.5%	13.3%
Other Protective Device	0.0%	0.0%	0.5%
Padding/Protective Clothing	0.5%	0.0%	0.3%
Unknown	12.1%	14.1%	8.4%
TOTAL	100.0%	100.0%	100.0%

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

MARYLAND PEDIATRIC BURN STATISTICS

Legend Code

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

Total Number of Pediatric Burn Cases

Patients Treated at Pediatric Burn Centers and Patients Less Than Age 15 Treated at John Hopkins Burn Center at Bayview

(3-Year Comparison)

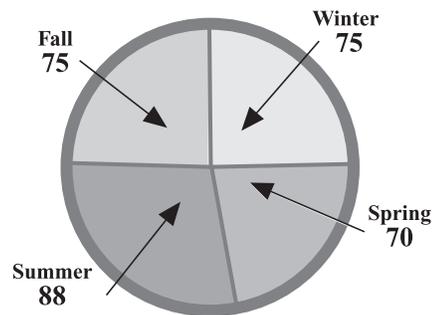
Source: Maryland State Trauma Registry

Institution	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Children's National Medical Center Pediatric Burn Center	102	88	61
Johns Hopkins Pediatric Burn Center	230	265	236
Johns Hopkins Burn Center (at Bayview)	19	15	11
TOTAL	351	368	308

Season of Year Distribution

Patients Treated at Pediatric Burn Centers and Patients Less Than Age 15 Treated at Johns Hopkins Burn Center at Bayview
(June 2011 to May 2012)

Source: Maryland State Trauma Registry



Place of Injury

Patients Treated at Pediatric Burn Centers and Patients Less Than Age 15 Treated at John Hopkins Burn Center at Bayview

(June 2011 to May 2012)

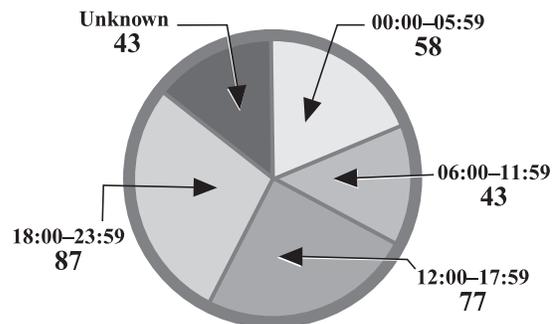
Source: Maryland State Trauma Registry

Place of Injury	Number
Home	264
Place for Recreation or Sport	2
Street/Highway	1
Public Building	16
Residential Institution	1
Other Specified Place	5
Unspecified Place	19
TOTAL	308

Time of Arrival Distribution

Patients Treated at Pediatric Burn Centers and Patients Less Than Age 15 Treated at Johns Hopkins Burn Center at Bayview
(June 2011 to May 2012)

Source: Maryland State Trauma Registry



Occurrence of Injury by County

Patients Treated at Pediatric Burn Centers and Patients Less Than Age 15 Treated at John Hopkins Burn Center at Bayview (June 2011 to May 2012)

Source: Maryland State Trauma Registry

County of Injury	Number
Anne Arundel County	17
Baltimore County	47
Caroline County	4
Carroll County	2
Charles County	5
Dorchester County	4
Frederick County	4
Garrett County	1
Harford County	10
Howard County	7
Montgomery County	19
Prince George's County	31
Queen Anne's County	1
St. Mary's County	1
Somerset County	2
Talbot County	1
Washington County	2
Wicomico County	5
Worcester County	1
Baltimore City	94
Virginia	2
West Virginia	2
Pennsylvania	6
Not Valued	40
TOTAL	308

Residence of Patients by County

Patients Treated at Pediatric Burn Centers and Patients Less Than Age 15 Treated at John Hopkins Burn Center at Bayview (June 2011 to May 2012)

Source: Maryland State Trauma Registry

County of Residence	Number
Anne Arundel County	19
Baltimore County	50
Caroline County	4
Carroll County	2
Cecil County	1
Charles County	5
Dorchester County	4
Frederick County	4
Garrett County	1
Harford County	17
Howard County	8
Montgomery County	19
Prince George's County	30
Queen Anne's County	1
St. Mary's County	1
Somerset County	3
Talbot County	1
Washington County	3
Wicomico County	5
Baltimore City	107
Virginia	1
West Virginia	2
Pennsylvania	12
Washington, DC	3
Delaware	2
Other	1
Not Valued	2
TOTAL	308

Mode of Patient Transport by Burn Center

Patients Treated at Pediatric Burn Centers and Patients Less Than Age 15 Treated at John Hopkins Burn Center at Bayview (June 2011 to May 2012)

Source: Maryland State Trauma Registry

Modality Type	CNMCBC	JHPBC	JHBC	Total
Ground Ambulance	38	134	0	172
Helicopter	5	16	0	21
Other	18	67	11	96
Not Valued	0	19	0	19
TOTAL	61	236	11	308

Note: The category "Other" includes patients that were walk-ins or were brought in by private or public vehicles.

Origin of Patient Transport by Burn Center

Patients Treated at Pediatric Burn Centers and Patients Less Than Age 15 Treated at John Hopkins Burn Center at Bayview (June 2011 to May 2012)

Source: Maryland State Trauma Registry

Origin Type	CNMCBC	JHPBC	JHBC	Total
Scene of Injury	32	148	11	191
Hospital Transfer	29	88	0	117
TOTAL	61	236	11	308

Etiology of Injuries by Age

*Patients Treated at Pediatric Burn Centers and Patients Less Than Age 15
Treated at John Hopkins Burn Center at Bayview
(June 2011 to May 2012)*

Source: Maryland State Trauma Registry

Age Range	Electrical	Chemical	Thermal			Inhalation	Other Burn	Unknown	Total
			Flame	Contact	Scald				
Under 1 year	0	0	0	19	28	0	2	0	49
1 to 4 years	3	4	5	34	118	1	0	1	166
5 to 9 years	0	0	8	7	21	1	0	0	37
10 to 14 years	0	0	21	4	25	0	0	0	50
15 years and over	0	0	2	0	3	0	0	1	6
Total	3	4	36	64	195	2	2	2	308

Final Disposition of Patients

*Patients Treated at Pediatric Burn Centers and
Patients Less Than Age 15 Treated at
John Hopkins Burn Center at Bayview
(3-Year Comparison)*

Source: Maryland State Trauma Registry

Final Disposition	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Home	298	306	268
Home with Services	22	29	16
Transfer to an Acute Burn Facility	9	10	2
Transfer to an Acute Care Facility	0	0	3
Rehabilitation Facility	17	16	4
Jail or Prison	0	1	0
Morgue/Died	3	1	1
Alternative Caregiver	0	3	5
Foster Care	2	2	0
Extended Care Facility	0	0	1
Not Valued	0	0	8
TOTAL	351	368	308

Total Body Surface Area (TBSA) Burned by Length of Stay in Days

*Patients Treated at Pediatric Burn Centers and
Patients Less Than Age 15 Treated at
John Hopkins Burn Center at Bayview
(June 2011 to May 2012)*

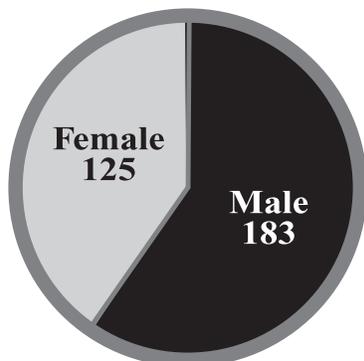
Source: Maryland State Trauma Registry

Length of Stay	Less Than 10% TBSA	10 - 19% TBSA	20% or Greater TBSA	Not Valued	Total
1 Day	160	7	3	53	223
2 - 3 Days	23	7	2	7	39
4 - 7 Days	12	4	0	9	25
8 - 14 Days	3	4	1	2	10
15 - 21 Days	0	2	2	0	4
22 - 28 Days	0	0	1	0	1
Over 28 Days	0	0	4	0	4
Not Valued	1	0	0	1	2
TOTAL	199	24	13	72	308

Gender Profile

*Patients Treated at Pediatric Burn Centers and
Patients Less Than Age 15 Treated at
Johns Hopkins Burn Center at Bayview
(June 2011 to May 2012)*

Source: Maryland State Trauma Registry



Number of Injuries by Age

*Patients Treated at Pediatric Burn Centers and
Patients Less Than Age 15 Treated at
John Hopkins Burn Center at Bayview
(3-Year Comparison)*

Source: Maryland State Trauma Registry

Age Range	June 2009 to May 2010	June 2010 to May 2011	June 2011 to May 2012
Under 1 year	51	36	49
1 to 4 years	182	199	166
5 to 9 years	70	71	37
10 to 14 years	40	53	50
15 years and over	8	9	6
TOTAL	351	368	308

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

In 2007, in an effort to further basic, translational, and clinical studies in injury research, the University of Maryland School of Medicine (UMSOM) designated its Charles McC. Mathias National Study Center for Trauma and EMS as an Organized Research Center (ORC). With this designation, the Shock, Trauma, and Anesthesiology Research—Organized Research Center (STAR-ORC) is on its way to becoming a world-class, multidisciplinary research and educational center focusing on brain injuries, critical care and organ support, resuscitation, surgical outcomes, patient safety, and injury prevention. The STAR-ORC encompasses the research activities of the UMSOM's Program in Trauma and its Department of Anesthesiology, along with the existing National Study Center (NSC), which was established in 1986 by Congress. The STAR-ORC is led by Alan I. Faden, MD, David S. Brown Professor of Trauma and Professor of Anesthesiology, University of Maryland School of Medicine. The Executive Committee of the STAR-ORC is comprised of Thomas M. Scalea, MD, FACS, FCCM, Physician-in-Chief, R Adams Cowley Shock Trauma Center, System Chief for Critical Care Services, University of Maryland Medical System, and Francis X. Kelly Professor of Trauma Surgery, Director, Program in Trauma; and Peter Rock, MD, MBA, Martin Helrich Professor and Chair, Department of Anesthesiology.

25th Anniversary Celebration

In celebration of 25 years of injury research, the NSC hosted a seminar series throughout the year. The first of which, entitled *25 Years of Research: Innovations in Injury Prevention*, was held in November 2011 with presentations from the Honorable Francis X. Kelly, STAR-ORC senior staff, and a keynote address by Thomas M. Scalea, MD. Additional seminars included:

- January – *Drunkards and Trauma Patients with Alcohol Use Problems: Past, Present and Future Issues*, presented by Carl Soderstrom, MD
- March – *Developing Emergency and Trauma Care Globally: Injury Research Training in Egypt and the Middle East*, presented by Jon Mark Hirshon, MD, MPH, PhD
- April – *Building Trauma Surgical Capacity in the Developing World: A Proposal*, presented by Andrew N. Pollak, MD

Research Activities

Motor Vehicle-Related Injuries: The NSC is a leading participant in two multi-center studies of injuries sustained in vehicular crashes: the Crash Injury Research and Engineering Network (CIREN) and the Crash Outcomes Data Evaluation System (CODES) Data Network funded by the National Highway Traffic Safety Administration (NHTSA). The NSC is one of six centers awarded the CIREN project on an annually renewable basis, currently funded through 2015. A total of 65 cases were enrolled into CIREN during the 2011-2012 contract year. Case reviews were held each month with an average attendance of 15 to 20 people;

they have also been attended by representatives from the automotive industry and from other CIREN centers. The NSC's CIREN center continued partnerships with the following agencies/organizations: Johns Hopkins University Applied Physics Lab, Maryland State Police, Baltimore County Police Department, Office of the Chief Medical Examiner, Maryland Motor Vehicle Administration, and the Maryland Highway Safety Office (MHSO). CIREN cases are frequently used as part of biomechanics presentations at the Trauma Center and other local injury prevention programs across the state. CIREN team members presented "Beyond aging: the role of frailty in crash-related injuries" at the CIREN Annual Meeting at NHTSA Headquarters in September 2011.

As part of CODES, the NSC has compiled information from a variety of statewide databases to allow for the in-depth analysis of highway safety programs. During the past year, the Maryland CODES team has continued as the Program Resource Center (PRC) for the national CODES data network. The PRC, in conjunction with the Technical Resource Center at the University of Utah, provides coordination and support for the 17 states currently participating in the program. On state and local levels, data provided by the Maryland CODES program are used for portions of the Highway Safety Plan and Annual Report compiled by the MHSO and to support a variety of problem identification and program evaluation activities across the state. NSC staff members serve on the Traffic Records Coordinating Committee, the Strategic Highway Safety Plan Implementation and Emphasis Area Teams, the national Traffic Records Advisory Committee, the Association of Traffic Safety Information Professionals, and Maryland's Partnership for a Safer Maryland. The PRC coordinates the NHTSA CODES Grand Rounds Electronic Seminars.

Under a contract with the MHSO, the NSC serves as a key data analysis partner for the MHSO and the Maryland Motor Vehicle Administration. During the past year, NSC staff has conducted analysis related to night-time seatbelt use, motorcycle safety, older drivers, and distracted driving. The NSC also used new NHTSA guidelines to revise the Maryland Seatbelt Survey for 2012 and presented Maryland crash data to the Maryland General Assembly at the beginning of their legislative session in January 2012. In addition to the core data available to the NSC through their CODES initiative, the NSC also realizes that understanding behaviors of drivers is critical information that can help to explain changes (or lack thereof) in crashes and injuries. Staff developed what has come to be known as the Action Measure Tools and the Maryland Annual Driving Survey. These surveys were designed to learn more about what motivates survey respondents, what is important to them, and if they understand some of Maryland's traffic safety laws. Outputs are shared consistently throughout the year with MHSO staff. NSC staff also attended and presented at the Traffic Records Forum, the American Association for

the Surgery of Trauma, and Lifesavers Conferences. Topics for presentation included an analysis of data collected through the DriveCam® project, younger drivers, and an evaluation of crash and citation risk among newly licensed drivers.

The NSC is continuing its collaborative efforts with other State agencies to make highway safety data available to the public, via the internet, in the form of “canned” reports and queries. Many of these products, including a CODES data request form, were made available through the Safety and Transportation Knowledge Online website at www.stko.maryland.gov.

The NSC is also creating data collection tools, a database, and an evaluation plan for the state’s Strategic Highway Safety Plan (SHSP) with funds from the MHSO. The NSC is collecting data from partners around the state and analyzing and evaluating grantees of the MHSO as well as other partners involved in the SHSP (which is mandated and managed by the US Department of Transportation).

Alcohol Related Injuries: Gordon Smith, MB, ChB, MPH, has two grants funded by the National Institutes of Health (NIH) to study the role that alcohol use and alcohol hangovers play in trauma and subsequent mortality. The first project, entitled “Alcohol involvement in a cohort of trauma patients: Trends and future mortality,” is innovative because it will link unique longitudinal data on alcohol consumption by R Adams Cowley Shock Trauma Center patients with the National Death Index data to identify patients who die after discharge. The objective of this proposal is to develop a comprehensive toxicology database on alcohol involvement in non-fatal injuries, spanning 1983 to the present, use this data to evaluate trends in alcohol involvement in non-fatal injuries over time, and determine how an elevated blood alcohol concentration (BAC) on admission relates to subsequent mortality risk.

The second project, entitled “Hangovers and Traffic Injuries: Is Alcohol’s Influence Greater Than Expected?,” will identify and quantify the role of residual effects of alcohol in traffic injuries by assessing biomarkers of recent alcohol consumption in motor vehicle crash drivers admitted to the Shock Trauma Center. The study includes collecting urine samples from participants to evaluate biomarkers of recent alcohol consumption. The two grants are awarded for five years each, and represent over \$4.7 million in funding.

Prehospital and In-Hospital Care: A study sponsored by the US Department of Defense is underway to collect vital signs data in trauma patients transported from the scene of their injury through resuscitation at the Shock Trauma Center. The objectives are to develop predictive algorithms based on collected vital signs data, patient outcomes, and therapeutic interventions between field encounter and completion of resuscitation. This work may result in decision aids for military and civilian prehospital providers to improve the quality of prehospital care, identify emergency surgery needs before hospital arrival, and increase survivability of the seriously injured.

Training Activities

Domestically, in FY 2007 the NSC was awarded a prestigious Institutional National Research Service Award (T32) training grant, entitled “Injury Control and Trauma Response,” from the National Institute of General Medical Sciences of the NIH. This grant provides the means to train postdoctoral fellows in the necessary critical skills to conduct high-quality, injury-related research. The first NIH-supported R Adams Cowley Research Fellow started in July 2007 and a total of eight fellows have been appointed since the inception of the program. In addition, an increasing number of epidemiology doctoral students are working with NSC faculty to develop research projects as part of their training.

Internationally, continued funding by the Fogarty International Center of the NIH through their International Collaborative Trauma and Injury Research Training Program has provided training in the United States and the Middle East for health professionals in a number of injury prevention and response-related courses. The material covered in these various courses includes injury epidemiology, emergency preparedness and disaster response, and the clinical care of trauma patients. As a key component of this grant, five Egyptian physician trainees came to the United States during June and July of 2007 to increase their knowledge and understanding of injury-related research. Four additional Egyptian physicians were hosted during June and July of 2008, and another four were hosted in 2009. These students returned to Egypt and are now applying their new knowledge through research projects to decrease significant injury-related morbidity and mortality in Egypt. A group of eight students are expected during the summer of 2012. Through this grant, more than 300 Egyptian, Iraqi, and Afghan physicians have been trained in the past three years. Overall, these courses are designed to strengthen injury prevention and control research and practice within Egypt and the Eastern Mediterranean region.

MIEMSS-NSC Memorandum of Understanding

Through a cooperative Memorandum of Understanding (MOU) agreement, the NSC continues to support data management and data analysis needs as requested by MIEMSS. Focus of the past year has been on the development of standardized procedures and documents for analysis of data trends from previous years. Ongoing activities include targeted data analysis efforts and assisting with the development of a standardized data dictionary and report templates for the new electronic Maryland EMS Data System (eMEDS). Additionally, an Emergency Medical Services Research Interest Group (EMS RIG) was developed with members from MIEMSS, University of Maryland, and Johns Hopkins University. The purpose of this group, which currently meets monthly, is to help further EMS research within Maryland and nationally. The NSC continues to serve on various MIEMSS committees and provides assistance to meet the mission and the vision of MIEMSS.

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Maryland Institute for Emergency Medical Services Systems (MIEMSS)

Robert R. Bass, MD, FACEP, Executive Director
653 W. Pratt Street, Baltimore, MD 21201-1536

In Memoriam

Richard C. Meighen, MIEMSS Region II Administrator

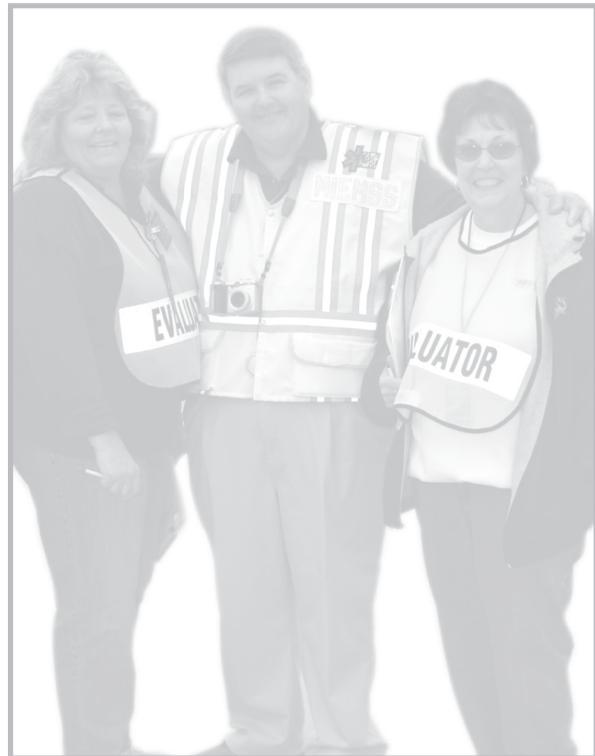


In February 2012, MIEMSS lost a valued member of its staff, Richard “Rick” C. Meighen, following an illness. Rick started his Emergency Medical Services career in 1977 as a Nationally Registered Emergency Medical Technician and Paramedic in Moundsville, West Virginia. In 1983, he moved to Washington, DC, and was employed as a Paramedic by the District of Columbia Fire Department until 1993. Following his graduation from University of Maryland Baltimore County, with a degree in Emergency Health Services Administration, Rick joined the Maryland Institute for Emergency Medical Services Systems in 1994, working as an Assistant Administrator in Region V.

In 2004, Rick became the Region II Administrator. In addition to running the MIEMSS Regional Office, he assumed additional duties, including coordinating MIEMSS emergency drills. From assigning designated vests to identify individuals on the scene to organizing the MIEMSS moulage team that “made-up” victims with authentic-looking injuries, Rick was involved in all the details. He even made sure that the participants were fed, including a supply of his favorite donuts that he referred to as “fattycakes.” These drills were held across the state and Rick was always there in his MIEMSS vest with a clipboard and radio in his hands, eager to help out.

Another important project that Rick spearheaded was the Maryland Virtual Emergency Response System (MVERS) project, a system that documents a building or facility from the ground up with both blueprints and a virtual photographic tour. Rick expanded the program to include many other entities, including the Maryland State House in Annapolis.

Rick gave his all during his time in EMS, whether as a Paramedic providing care in the field or as an Administrator assisting in the delivery of EMS care to the entire Region. Rick was a true asset to Maryland’s EMS community and will be sorely missed.





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