Testimony

Maryland Institute for Emergency Medical Services Systems
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Senate Public Safety, Transportation, and Environment Subcommittee
February 9, 2012

House Health & Human Resources Subcommittee
February 13, 2012

Good afternoon. We appreciate the opportunity to present MIEMSS' FY 2013 budget request and to brief the committee on several programmatic aspects of interest. MIEMSS and the Emergency Medical Services Board are very mindful and appreciative of the General Assembly's interest and support of MIEMSS and the EMS system. The write-up by Michael Vorgetts is comprehensive and focuses on several important matters. We acknowledge his hard work, as well as that of the Department of Budget and Management and Jeff Wulbrecht, MIEMSS' budget analyst.

MIEMSS 2013 budget does not include funding for new initiatives. Like other state agencies, MIEMSS is carefully budgeting and focusing its state resources to meet the broad mandates of the EMS law and improve the EMS system.

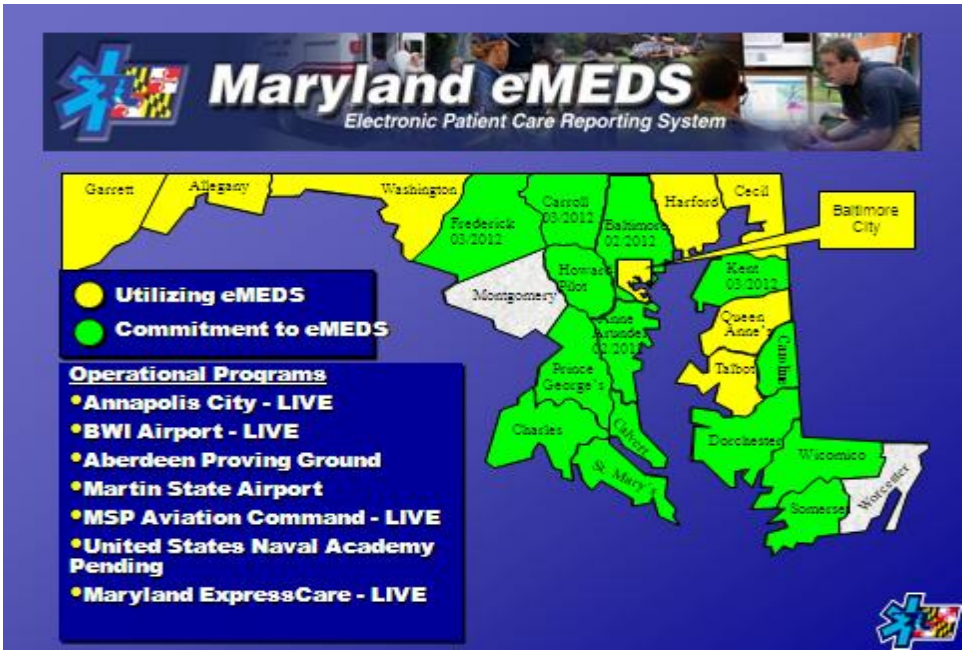
I would like to highlight just a few of our accomplishments over the past year.

- MIEMSS implemented the statewide STEMI System to treat patients with acute ST segment evaluation myocardial infarction (STEMI), the most common type of heart attack. MIEMSS has designated 23 Maryland Hospitals as Cardiac Intervention Centers. These hospitals have complied with State standards to receive and rapidly treat EMS-transported STEMI patients who require primary Percutaneous Coronary Intervention (pPCI). Rapid treatment for STEMI patients is key since the sooner the heart blockage is relieved, the better the heart muscle will recover. A high degree of coordination and integration between field EMS providers and the receiving Cardiac Interventional Center is required to expedite this life-saving care. Our STEMI system was launched on April 1, 2011, throughout the State. As a result, EMS providers who have identified a STEMI patient are now able to transport those patients to the closest designated Cardiac Intervention Center, bypassing non-designated hospitals in accordance with *Maryland Medical Protocols for EMS Providers*. Regional STEMI Committees have been developed in all five regions and have been meeting regularly to address the treatment of STEMI patients in Maryland.

- In Spring 2011, MIEMSS began the statewide deployment of our statewide electronic patient care record system, "eMEDS," after successfully pilot-testing eMEDS in Harford, Queen Anne's, and Cecil counties. "eMEDS," short for electronic Maryland EMS Data System, is an off-the-shelf software package for pre-hospital electronic medical record systems that is used in 26 states and hundreds of local counties and fire departments. The acquisition of eMEDS was made possible a combination of agency funding and a grant from the Maryland Highway Safety Office. As a result, MIEMSS is able to make eMEDS available for use by Maryland's public safety EMS jurisdictions at no cost; additional modules, e.g., CAD interface, may be purchased at a modest cost to the jurisdiction.

eMEDS creates an electronic patient care record (medical record) as each patient is treated at the site of the incident. eMEDS simplifies and brings uniformity to collection and tracking of patient care information in the pre-hospital phase of care for patients treated by Maryland's EMS providers. Treatment information is available electronically to treating emergency physicians and hospitals. eMEDS helps EMS services track and trend the types of emergencies seen, as well as information on treatments rendered by EMS providers, ambulance usage, response times and other factors. In addition, eMEDS ensures compliance with national EMS data collection requirements and helps ensure reliable, accurate data for use in research, analysis, quality improvement initiatives and efforts to improve care. eMEDS will also facilitate the inclusion of pre-hospital care information in the Health Information Exchange that is being implemented in Maryland to enable the healthcare community to securely share data, facilitate and integrate care, increase efficiencies and improve outcomes.

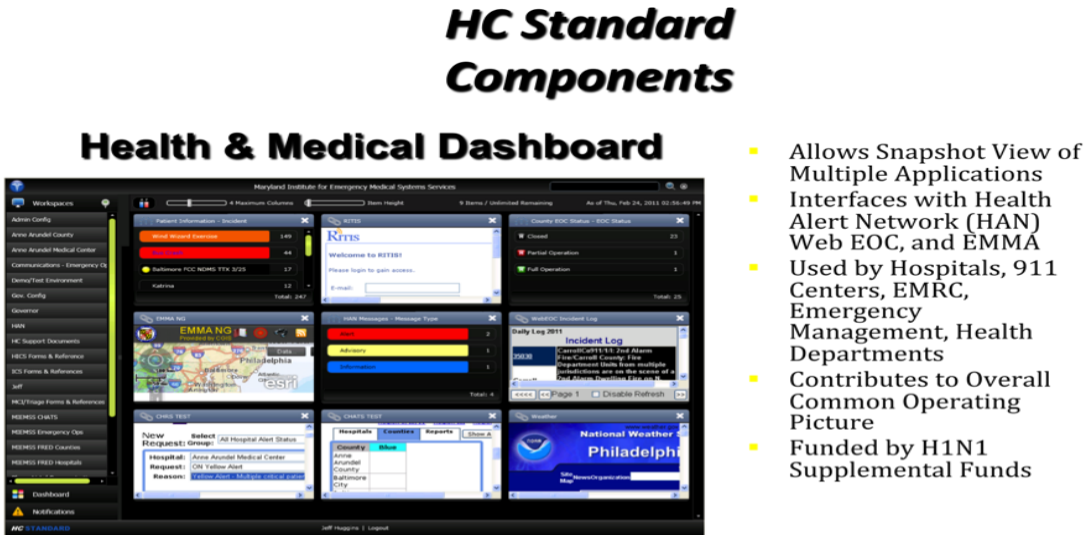
Most Maryland counties have expressed interest in using eMEDS. EMS Region I has successfully moved to eMEDS, all of Region III will be migrating to eMEDS. Several Commercial Services have also begun the implementation process. It is expected that Anne Arundel, Kent and Baltimore Counties will begin using eMEDS in the first quarter of 2012. Howard County is in the testing phase right now, and Prince George's County plans to migrate over in mid-2012.



- MIEMSS was a key participant in the State's responses to Hurricanes Irene and Lee in August / September and helped implement and coordinate the evacuation of patients from two nursing homes and one hospital. During those events, MIEMSS was able to a track the movement of evacuated patients through its Electronic Patient Tracking System. The tracking system provides map showing real-time patient location, as well as what medical treatment was provided to the patient. The tracking system was also used during the Baltimore Grand Prix to track the triage, treatment and transport of spectators who fell ill during the event. This tracking feature is part of MIEMSS' HC Standard application that

is used to integrate information from our many partners involved in providing emergency care.

A key feature of this application is a Health and Medical Dashboard that provides a central portal to view, monitor, and access emergency health applications, including Health Alert Network and WebEOC.



- The MIEMSS Ambulance Safety Task Force released its report and recommendations in November. The Task Force was formed to consider ways to increase ambulance safety. Throughout the country, ambulance crashes are a significant risk for EMS personnel and the patients they transport. Key factors that lead to such crashes include insufficient driving training, driver error, failure to use restraints, and excessive use of "lights and sirens." The Task Force membership included the Maryland Fire & Rescue Institute (MFRI), Maryland State Fireman's Association (MSFA), and jurisdictional and commercial ambulance companies.

  Recommendations by the Ambulance Safety Task Force Report include screening ambulance drivers; uniform ambulance driver training and refresher training throughout the State; increased use of seat-belt restraints and safety improvements; tailoring ambulance transport practices to reduce routine use of "lights and sirens;" and improved monitoring of ambulance safety issues. Through ongoing work, the goal of the Task Force is to create a culture of safety through best practices in screening, training, policies, and procedures.

These are just several highlights of the efforts of MIEMSS and the EMS Board during the past year.

I would like to offer a few comments on the issues that were discussed in the analysis.

MIEMSS should comment on the increase in yellow alerts in calendar 2011.

MIEMSS monitors Yellow Alert trends and works with hospitals to provide assistance in addressing issues associated with Yellow Alert hours. As noted in the analysis, Yellow Alert hours increased in 2011, although the level of Yellow Alerts remains below the level experienced in 2008 and 2009. The increased hours occurred primarily among hospitals in Regions III (+2856 hours) and Region V (+1338 hours).

In 2010, MIEMSS began incorporating detailed reviews of Yellow Alerts into its hospital base station designation process. During hospital base station site surveys, MIEMSS staff evaluates alert utilization and at hospitals where significant utilization or increases are noted, requires the hospitals to identify reasons for the increases, and develop and submit action plans to decrease Yellow Alerts usage. The most common reasons identified during the 2011 base station surveys included: 1) Delays in documentation related to the implementation of new electronic documentation systems thus delaying patient throughput; 2) Increase in ED patient volumes; 3) Implementation of new throughput processes in the ED; 4) Hospital not monitoring or unaware of increase in alert utilization; and 5) Staffing issues. Based on year-end alert data analysis, MIEMSS follows up with hospitals that have 6-month action plans in place and where necessary, with hospitals that have alert utilization increases not previously identified. MIEMSS will continue to work with hospitals to decrease Yellow Alerts utilization.

<u>Communications System Upgrades:</u>

MIEMSS should comment on the likelihood of a large-scale failure of the communications system and the impact of system failures that have occurred in recent years.

The equipment currently in use has a very impressive reliability history. However, a large-scale system failure is inevitable at some point for several reasons. The biggest concern is that there is no way to tell if this catastrophic breakdown will occur next week, or in five years. This inevitability is due to several compounding factors:

- At approximately 25 years old, all three major systems are well beyond their expected lifetime. These three systems are:
    - RedCom cross-patching system
    - Seimens analog telephone system
    - Motorola analog Centracom radio console system
- Due to this age, many critical spare parts are available only through second-hand sources, such as other agencies that have retired similar equipment. Over the next few years, sources of spare parts will become critically problematic.
- The architecture of most major components is such that there is little or no redundancy in any portion of the system. This creates a situation in which there are multiple single-points-of-failure that would disable a major area of functionality.
- The existing "backup center" serves only as another location to operate the same electronics; it does not in fact back up any of the major systems. There is no viable system backup.

The severity of the impact of failures that have occurred is dependent on the extent and duration of the failure. The most notable impacts have been:

- Delays in processing emergency requests including dispatching Medevac helicopters and providing hospital status notifications. Delays result from personnel reverting back to the older push button phone system (agency phone system). The older push button phone system does not have access to all the phones lines available on the Siemens System nor does it have the automated features such as speed dials. Operators in the center also lose the ability to monitor/participate in incoming calls which is an integral part of normal operations.
- There is risk associated with operating on this older push button phone system (agency phone system) because it is itself an old system which has also experienced problems/outages. Note: MIEMSS has moved general agency phones over to a VoIP Phone System, however there are technological barriers preventing MIEMSS from moving Communication Center over to the VoIP System.
- Increases in overtime expenses. The agency must pay overtime to cover after-hours responses to outages provided by MIEMSS technical support personnel.

The agency should also detail the advantages and disadvantages of upgrading to an IP-based system.

Advantages of an upgrade to IP include the following:

- The ability to keep and adapt the existing major investment represented by the transmitter stations currently in place Statewide through Radio Over IP (ROIP) adaptors.
- The ability to implement a network with multiple layers of redundancy in all aspects of the system architecture, including:
    - Route redundancy between remote facilities and dispatch centers.
    - Geographic redundancy is provided, allowing the ability to dispatch any operation from any regional dispatch center.
    - Network redundancy in the system routers, switches, servers, etc.
    - Protection is provided against loss of data and loss of active emergency calls, due to the redundant design.

- The ability to implement this system in a way that most new hardware will be Commercial Off-the-Shelf (COTS), thus reducing the cost as compared to proprietary approaches.
- Many of the network and infrastructure improvements proposed will compliment other activities in the State, including the Maryland First radio system, and the Central Maryland Area Radio Committee (CMARC) efforts currently underway.
- IP-based technology ensures that long term growth and enhancements may be gracefully implemented without requiring a "forklift" upgrade. Instead, many future upgrades will be supported through software upgrades and periodic refreshment of COTS equipment.

The major disadvantage of this upgrade is the investment required, as the cost is not insignificant. From a technical perspective, however, there are no apparent disadvantages.

The agency should detail how it would maintain its current operations if the communications system were to be upgraded at the Baltimore headquarters.

This concern has been carefully considered in development of the proposed implementation approach. The existing facility simply does not have enough space to simultaneously hold the old system and the new system. The recommended approach solves this problem while also leaving MIEMSS with a true backup facility. The lack of an adequate facility is considered one of the major deficits in the current paradigm. The following steps are suggested as a way to provide the migration to the new system with minimum risk of service interruption:

- Upgrade EMRC operations to allow IP radio communications from the Talbot and Allegany County 911 centers; they can then backup each other in an IP configuration.
- Develop a transition facility outside of downtown Baltimore that will be capable of handling EMRC for central Maryland and SYSCOM operations statewide. After these operations are fully tested and MIEMSS is confident of stable operation, relocate from MIEMSS HQ to the transition facility.
- Renovate the MIEMSS HQ to support all MIEMSS communications responsibilities in an IP environment.
- Move operations back to MIEMSS HQ from the transition facility.
- Keep the transition facility in place as a fully capable backup center.

Within this plan, the transition/backup facility offers an opportunity for shared infrastructure with other communications activities. Examples for possible shared locations include the Maryland First program Network Operations Center (NOC), or existing SHA facilities, or an existing County backup 911 center.

MIEMSS should provide further explanation on the short- and long-term budgetary impacts, including additional personnel costs, associated with upgrading the agency's communications system. Specifically, the agency should address (1) how the project may be funded (i.e., how much funding may be obtained through the capital budget and how much cannot be bonded); (2) whether the ongoing maintenance costs cited in the evaluation reflect decreases in costs due to phasing out the existing system; and (3) potential plans and cost estimates to renovate the MIEMSS facility.

MIEMSS is currently in discussions with both the Department of Budget and Management and the Department of Legislative Services to ascertain the most appropriate funding mechanism for this project.

Most of the existing maintenance cost is absorbed within current MIEMSS staff efforts since vendor support is no longer available. This reduction in effort is reflected in the fact that a relatively low increase in new staff will be needed to support the new system. It is anticipated that three new positions will be required to support the new communications system.

Costs for renovation of the existing facility are included in the budgetary estimate except where covered by other programs. For example, while a wholesale upgrade of the HVAC system is needed, this is not shown in the Communications upgrade budget.

Costs for the Transition/Backup facility are included in broad terms. Significant assumptions were necessary since no specific facility or location has been selected. For example, the cost to design and construct a new building would be significantly higher than the cost to renovate an existing space in a facility shared by another agency. Estimates presented are based on the assumption that a shared facility will be identified in order to effectively manage costs.

Finally, MIEMSS should further explain the SONET ring project and comment on the project's status.

The EMS communications system between Bressler and the MIEMSS Communication Center (EMRC/SysCom) is presently carried over an 1800 pair copper cable which runs along Penn Street. The improvements currently underway allow permit MIEMSS to eliminate the vulnerabilities associated with the cable and route the radio communications traffic over multi-mode fiber and microwave. The microwave and fiber solution for replacing the copper cable will have minimum of OC3 (Optical Carrier 3, 155 Mbps) capability. The fiber cable is capable of carrying up to 1 gigabit of traffic. Once this fiber and microwave project is complete it will permit MIEMSS to move forward with plans to implement IP-based technologies.

Status

- 80% of the Microwave Networks ordered equipment has been received by MIEMSS.
- The SOW for the installation of the microwave has been released under DoIT's Master Contract for Microwave Installation (FAIII) to the two approved vendors.
- The bids are due on February for the installation of microwave equipment as well as necessary cabling and fiber installation.
- MIEMSS have received 100% of the Harris Intraplex order.
- The installation of the cable ladder in the new Server/Radio Room has been completed by the vendor.
- Work has begun on the upgrades to the electrical system in the Server/Radio Room.
- Funding continues to appear sufficient to cover the completion of the project but the financial status will be more solidified once we receive the bids from the Master Contract Vendors.

Recent Legislative Audit:

MIEMSS should comment on exactly what measures it has put in place to better account for ambulance licensing fee revenue and the final disposition of licenses. The agency should also provide further explanation regarding the mistakes that allowed for the reporting of the erroneous year-end fund balances. In addition, MIEMSS should comment on the claim that MIEMSS could not provide any detail on the composition of funds transferred to MEMSOF. Finally, MIEMSS should outline any measures taken to avoid similar accounting errors.

MIEMSS has put the following three procedures in place to address the legislative auditor's concerns regarding the accountability over commercial ambulance licensing fees:

1) MIEMSS has created a form that must be signed by the receiver when blocks of license decals are issued. This form is also used to witness the destruction of unused decals.
2) A log is maintained of all license decals issued, on hand and destroyed for each license year, and the total is reconciled to total license decals purchased for that period.
3) A log is maintained by a person independent of the fee collection and deposit function. This person ensures that the appropriate license fee is traced to deposit and to subsequent recordation in the state's accounting records for each decal issued.

The agency should also provide further explanation regarding the mistakes that allowed for the reporting of the erroneous year-end fund balances. In addition, MIEMSS should comment on the claim that MIEMSS could not provide any detail on the composition of funds transferred to MEMSOF. Finally, MIEMSS should outline any measures taken to avoid similar accounting errors.

MIEMSS has looked into the causes of the erroneous year-end fund balances. There are two separate issues here:

1) The auditors noted that "MIEMSS reported fiscal 2010 and 2009 year-end balances of $208,008 and $228,668, respectively. However, according to the State's records, the 2010 and 2009 balances totaled only $5,098 and $17,798, respectively". The balances reported by MIEMSS are the correct balances. MIEMSS Finance staff erroneously believed a journal entry to defer the revenue into the subsequent fiscal year was required to properly retain the funds. The balances of $5,098 and $17,798 were maintained at fiscal year-end to provide for unliquidated encumbrances. MIEMSS Finance staff has since learned the proper method for retaining fund balances allowed by statute and will ensure that that year-end balances are properly reported in the future.

2) The auditors also noted that "…unspent funds totaling approximately $27,000 were retained at the end of fiscal year 2009 and were not transferred to the Maryland Emergency Medical System Operations Fund (MEMSOF), as required". Upon further investigation, it was discovered that MIEMSS Finance staff provided the auditors with a report of encumbrances at year-end which was not the final report. Had the correct final encumbrance report been provided to the auditors, it would have disclosed that all unspent funds were properly transferred to the MEMSOF as required. MIEMSS regrets this oversight and will ensure that the auditors are provided with the appropriate documentation to support the fiscal year closing process in the future.

I would be happy to answer any questions.