MARYLAND EMERGENCY MEDICAL SERVICES

AGENDA 2030

INTRODUCTION

The legal framework for Maryland’s emergency medical services (EMS) system is within the Annotated Code of Maryland, Education Article, Subtitle 5, enacted in 1993. Among other things, the law established the Emergency Medical Services Board and the responsibilities and authorities of the Maryland Institute for Emergency Medical Services Systems (MIEMSS). §13-509 stipulates that the EMS Board shall develop and adopt an Emergency Medical System plan to ensure effective coordination and evaluation of emergency medical services delivered in the state. Subsequently, the Board shall adopt regulations to implement the plan.

The first plan, in 1995, laid out objectives in 15 strategic areas. They provided direction to creating structure for an evolving system. Plans, by their nature, are meant to be re-visited periodically. The EMS system planning cycle has been five years or so. The most recent plan, completed in 2014, was MIEMSS-centric, providing an extensive worklist but less long-range direction.

The development of this plan, Maryland EMS Agenda 2030, presented a meaningful opportunity to chart a visionary path forward for Maryland’s statewide EMS system. Foremost, it was intended to capture the passion thousands of people have for their roles in EMS. It was also meant to harness the insights and expertise of diverse stakeholders who volunteered their input to the process.

Maryland EMS Agenda 2030 incorporates concepts from previous plans and nationally led efforts. They include the EMS Agenda for the Future, National Highway Traffic Safety Administration State EMS Technical Assessment standard criteria, and EMS Agenda 2050. It provides strategic direction in 16 important areas.

What’s not in the plan? It’s not a prescription. It’s not a worklist. It doesn’t include boxes to be checked off as quickly as possible.

Maryland EMS Agenda 2030 lays out the paths we want to follow through this decade to get us where we want to be at the dawn of the next one. Intentionally, it doesn’t define all the steps.
Those are for each of us to determine as we consider our roles, the parts we play, and our potential to contribute to the established direction. The job of every person and entity that exists within the EMS system, or interfaces with it, is to breathe life into the plan. *Maryland EMS Agenda 2030* is a discussion starter, it is a focal point, and it is a guide to help us stay on track and assess our progress. Although it is not a worklist, it is meant to generate attention that leads to them. When a quantum of work is complete, the plan is not obsolete. As progress is made, new work can be contemplated and begin, building on accomplishments guided by the *Agenda*. In some cases, success may be best evaluated by the nature of the journey more than the finality of the destination.

For the EMS Board and MIEMSS, *Maryland EMS Agenda 2030* will be the focal point for developing initiatives, and the standard by which progress is measured. It will provide the most important guidance for the next decade.

### Where We Want To Be

Maryland EMS is a well-coordinated system of volunteer and career professionals who are optimally qualified to provide out-of-hospital acute medical care with state-of-the-art technologies and techniques to reduce the effects of injuries and illnesses within our communities.

Maryland EMS strives to be adaptive and innovative, inherently safe and effective, integrated and seamless, reliable and prepared, socially equitable, and sustainable and efficient.

### EMS CLINICIANS

*The underpinnings of Maryland’s EMS system are its dedicated volunteer and career clinicians who strive to deliver state-of-the-art out-of-hospital emergency care. They include 15,485 emergency medical technicians (EMT), 587 cardiac rescue technicians (CRT), and 3,728 paramedics. Maryland requires them to be certified by the National Registry of EMTs prior to initial licensure. As requirements for certification and licensure have increased over time, recruitment and retention of a qualified workforce has demanded additional attention. Awareness of occupational stressors requires enhanced focus toward clinician wellness.*

- Attract and retain a diverse, inclusive, and population-representative EMS workforce.
  - Monitor workforce trends.
  - Evaluate needs and develop solutions.
- Ensure EMS clinicians are optimally prepared and qualified for the care they are called to provide.
- Evaluate options and appropriateness for levels of licensure/certification and added qualifications.
- Promote cultures of safety.
  - Promote occupational safety including prevention of injury, communicable disease, and unhealthy stress.
  - Maintain patient-centric safety awareness.
- Develop and disseminate resources to continuously improve wellness.
  - Develop and maintain a statewide wellness-focused workgroup.
  - Raise awareness of prevention strategies.
  - Ensure that every EMS clinician has the necessary information and resources to pursue his or her own overall wellness.
- Maintain reliable and efficient systems to facilitate licensure/certification.
  - Update processes as appropriate.
  - Provide licensed/certified clinicians with appropriate recognition of their achievements.
  - Include processes for monitoring clinician levels of qualification, including added qualifications.
- Maintain a culture of accountability.

**Medical Direction**

Medical direction in Maryland is led by the state EMS medical director and the aeromedical medical director. Five regional EMS medical directors report to the state medical director. There is a jurisdictional EMS medical director for each of the 26 EMS operational programs and each of Maryland’s 40 commercial services. Fourteen of Maryland’s EMS medical directors are board-certified in EMS medicine.

Online medical direction is provided through a network of 47 EMS base stations located in emergency departments throughout Maryland. All physicians providing medical consultation must complete an initial EMS Base Station Course and annual protocol updates. Statewide EMS protocols are updated annually with the advice of a protocol review committee and the approval of the Maryland EMS Board.

- Ensure all aspects of the EMS system benefit from optimally qualified EMS medical direction.
  - Develop new EMS physicians.
    - Create opportunities for EMS physician fellows.
Incorporate multi-disciplined physician input to clinical decision-making.
  
  • Enhance EMS physician involvement in quality improvement and evaluation processes.
  • Create additional continuing medical education opportunities for EMS physicians.
  • Support legislative and regulatory initiatives to optimize the practice environment for EMS medical directors.

• Ensure availability of appropriate “on-line” medical direction as necessary.
  
  • Evaluate orientation and update processes.
  • Incorporate technological solutions, as appropriate.

• Ensure that EMS medical protocols reflect best practices, emerging evidence, and national standards.
• Designate “Maryland EMS Physicians.”
  
  • Develop potential criteria.

**EDUCATION & TRAINING**

*Initial education for EMS clinicians takes place at 45 programs in Maryland. Each program is authorized by the state EMS Board, and include the University of Maryland Baltimore County (UMBC), 13 community colleges, seven public safety training academies, and the Maryland Fire Rescue Institute (MFRI). EMS clinicians are initially certified as an Emergency Medical Responder, Emergency Medical Technician, or Paramedic. Continuing education required for maintenance of certification and licensure is offered throughout the state over the course of each year at various conferences and seminars.*

• Ensure Maryland EMS educational programs meet the needs of EMS clinicians.
  
  • Emphasize safety.
  • Monitor and report certifying examination success.
  • Deliver state-of-the-art content.
    • Promote critical thinking.
  • Continue to oversee and monitor approved educational programs.
  • Develop “just-in-time” educational content.
    • Utilize quality improvement and evaluation data.
    • Transform needs assessments to education.

• Ensure Maryland EMS educational programs meet the needs of communities and patients.
  
  • Emphasize safety.
  • Provide content relevant to patient and community needs.
Emphasize therapeutic communication, affective domain, and professionalism.
  o Incorporate knowledge of special populations and cultural diversity.
• Ensure there is a process to recruit, retain, and validate the qualifications of EMS educators.

**CLINICAL CARE**

Maryland’s EMS clinicians respond to approximately 1.2 million calls for help each year, and transport more than 530,000 patients to emergency departments for their continuing care. Statewide EMS protocols guide the preponderance of care provided. The protocols are continually evaluated to identify opportunities to improve care and resulting outcomes. Protocol development and revisions are informed by data from the statewide eMEDS® patient care report system and problem-specific registries. The Protocol Review Committee is active in the process, and provides advice regarding introduction of clinical innovations and the pilot and research protocols.

• Ensure EMS clinical care reflects best practices, statewide.
  o Continually evaluate evolving science.
  o Provide EMS clinicians with protocols and medical direction that reflect the state of the art.
    ▪ Ensure EMS protocols are developed with appropriate multi-disciplined input.
    ▪ Develop protocols that are clear and concise.
    ▪ Limit perfunctory needs for on-line medical direction.
    ▪ Ensure the protocol development and revision processes are efficient and responsive.
  o Enable time-limited local and regional pilots to evaluate evolving science and technique.
    ▪ Evaluate meaningful patient outcomes.
• Promote “top-of-license” care delivery.
  o Encourage quality care versus rapid transport.
• Facilitate local adaptation depending on available resources.
• Ensure EMS clinicians are appropriately knowledgeable and skilled to meet clinical demands and expectations.
  o Provide adequate resources.
  o Match clinical expectations and patient needs to qualifications and competencies.
**SYSTEMS OF CARE**

Specific systems of care refine the strategies to optimally treat certain EMS patients, including those with trauma, stroke, cardiac, and perinatal conditions. Each system defines appropriate EMS evaluation and treatment, and indicates preferred patient receiving centers. Among them are trauma centers (one primary adult resource center, one level I center, four level II centers, three level III centers, and two pediatric centers), stroke centers (32 primary, three comprehensive), 27 cardiac interventional centers, an adult and a pediatric burn center, and perinatal centers. The Code of Maryland (COMAR) Title 30 describes center designation processes, which are overseen by the Maryland Institute for Emergency Medical Services Systems (MIEMSS). Representatives from each designated specialty center actively participate in statewide quality improvement initiatives and regulatory revisions.

- Develop and maintain systems of care appropriate for emergency conditions encountered by the State’s population.
  - Enhance existing systems of care for trauma, cardiac, stroke, and perinatal patients.
  - Ensure the concept of “system” is patient-centric for Maryland’s entire population.
    - Consider cultural diversity.
    - Consider geography and demography.
    - Consider special needs populations, specific illnesses, and injury patterns.
  - Plan for and evaluate sufficiency of intrinsic transportation needs and availability.
  - Establish guidance for specific injury and illness types and severities.
- Solidify and update the framework for statewide EMS systems of care.
  - Ensure state-of-the-art technique and technology in the field.
  - Ensure state-of-the-art assessment and care by EMS personnel.
  - Ensure systems incorporate the centers located outside the state that care for Maryland EMS patients.
    - Monitor their participation.
    - Incorporate evaluations.
  - Continually update guidance based on evolution of clinical science.
    - Consider severity of clinical findings and availability of diagnostic and therapeutic resources.
    - Evaluate the potential appropriateness of post-cardiac arrest resuscitation centers.
    - Evaluate the potential appropriateness of regionalized critical care.
- Continue Maryland Institute for Emergency Medical Services Systems (MIEMSS) designation of trauma, stroke, cardiac intervention, and perinatal centers.
  - Update expectations and standards for center designation, as appropriate.
  - Ensure standards and designation processes meet or exceed nationally based criteria.
  - Support ongoing development of existing trauma, stroke, cardiac, and perinatal centers.
- Support continual evaluation of system of care centers.
  - Work to determine and monitor system effectiveness.
  - Use available quality improvement tools, as appropriate.
- Facilitate trauma, cardiac, stroke, and perinatal/neonatal-related EMS research.
  - Evaluate appropriateness of developing additional systems of care.
  - Monitor evolving clinical science.
  - Consider distribution of specific resources and expertise.
  - Evaluate potential impacts, including costs and effects.
  - Incorporate multidisciplined perspectives.
- Develop an Emergency Department collaborative.
  - Enhance abilities to monitor and respond to statewide emergency department conditions.
  - Improve procedural consistencies between field EMS agencies and emergency departments.
  - Develop and maintain system-of-care mindedness for general EMS patients.
  - Improve ED-to-ED and ED-to-EMS collaborations, including MIEMSS and EMS Operational Programs (EMSOPs).

**INTEGRATION OF HEALTH SERVICES**

Maryland EMS is recognized as an important component of care for clinical problems that may be of immediate high consequence, such as trauma. More recently, the value of EMS-derived information has been recognized and incorporated into the fabric of health system information and patient care records. Data-sharing agreements facilitate information conduits to the Chesapeake Regional Information System for our Patients (CRISP), for example. Additionally, several EMS programs have pursued community or population health initiatives characterized as mobile integrated health. In doing so, they have collaborated or integrated with other aspects of the healthcare system, including hospitals, public health, and other allied health services.

- Work to ensure that EMS is considered part of the continuum of health care.
• Share appropriate information to be parts of patients’ complete medical records.
• Participate with other principals in the healthcare system to monitor community health, improve the delivery of care, or develop novel solutions.
• Participate within community-based systems of care to address focused clinical or community problems.
  o Contribute to delivery of state-of-the-art care in every community.
• Engage and participate with multidisciplined healthcare resources to develop innovative approaches to improve community health.
  o Work toward optimal utilization of appropriate resources.

**COMMUNICATIONS**

*The Emergency Medical Resource Center (EMRC) is the hub for EMS communications. It is supported by two satellite centers in Allegany and Talbot Counties. Extensive microwave links throughout the state enable EMS clinicians to consult with and receive direction from base stations and clinical experts anywhere in Maryland. The system is currently in the midst of an extensive upgrade to modern digital technology. Interoperability among Maryland’s emergency responders is facilitated by Maryland FiRST, a statewide 700 MHz network designed to support connected responder needs. Each jurisdiction is responsible for the communications systems within themselves.***

• Develop and implement EMS communications systems that are integrated and interoperable.
  o Ensure system accessibility.
  o Ensure EMS operational program competency with available systems.
  o Ensure adequate training for field personnel.
  o Minimize end-user complexity.
• Maintain EMS communications systems to ensure reliability and effectiveness.
  o Refresh equipment appropriately.
  o Maintain up-to-date technology.
• Evaluate clinical and operations needs.
  o Incorporate research and evaluation results in planning and execution of communications systems updates.
  o Consult operational programs and end-users.
  o Incorporate updated modalities and formats, as appropriate.
  o Support data sharing.
• Leverage existing and evolving frameworks.
  o Collaborate within local, state, and national partnerships.
  o Employ existing tower sites and technologies, as appropriate.
Employ FirstNet®, as appropriate.

**PUBLIC ACCESS**

Public access to emergency medical services in every jurisdiction in Maryland is enabled through calls to 9-1-1 centers. Several have undergone recent technology updates as the patterns of callers have evolved, meaning calls from wireless devices exceed those from landline telephones in many areas. Resources are being made available to begin implementation of Next Generation 9-1-1, which is intended to facilitate access and information transfer by means other than voice communications.

- Ensure universal access to EMS.
  - Implement “Next Generation 9-1-1.”
    - Secure funding.
    - Develop and implement communications center operational standards.
    - Improve access among people with disabilities, language barriers, or who are incapacitated.
  - Develop and implement training standards among public safety answering point personnel.
- Enhance interoperability among public safety answering points.
  - Improve communications format standardization.

**PUBLIC EDUCATION & PREVENTION**

Public education is a core mission of the EMS system. Healthcare personnel, including EMS clinicians, are often a trusted source of valuable educational information. Further, as visible members of the community, EMS clinicians often have access to people and awareness of circumstances that other elements of the healthcare system routinely do not. They are often in positions to identify prevention needs, understand potentially effective strategies, and instill prevention mindedness. Each of the specialty centers that serve as pinnacles of systems of care is obliged to engage in public educational initiatives.

- Use available datasets and demographic and epidemiologic information to identify community educational needs and appropriate prevention topics.
- Empower and prepare EMS clinicians to provide appropriate, current, and relevant education to community members.
  - Provide necessary training and materials.
Incorporate current technologies within existing educational programs.
• Acknowledge efforts and successes.
• Collaborate with other relevant public educational initiatives, as appropriate.
• Evaluate public educational initiatives.
  • Use results to improve processes and activities.

SYSTEM FINANCE

Funding for Maryland’s EMS system is provided from a variety of sources.

The Maryland Emergency Medical Services Operation Fund (MEMSOF) provides support for EMS partners in the state’s budget annually. The MEMSOF derives its revenue primarily from a $29 biennial motor vehicle registration surcharge and $7.50 moving violation surcharge. This fund supports the operations of Maryland Institute for Emergency Medical Services Systems (MIEMSS), the medically oriented missions of Maryland State Police Aviation Command (MSPAC), Maryland Fire and Rescue Institute (MFRI), an operating subsidy to the R Adams Cowley Shock Trauma Center, and grants (Amoss Fund) to local jurisdictions for the purchase of fire and rescue equipment and building rehabilitation. The MEMSOF’s revenue sources are not inflation sensitive, which has resulted in fee increases approximately every ten (10) years in the past. The Fund is projected to face insolvency again after fiscal year 2024.

Costs for delivering EMS within individual jurisdictions are offset by myriad sources, including tax revenue, various grants, and, in some cases, volunteer fundraising. Additionally, most providers of EMS bill for services when patients are transported to a hospital. Work is ongoing to develop reimbursement models for a broader scope of EMS care, including transportation to facilities other than hospital emergency departments, treat-and-release, and “mobile integrated health.”

• Recognize EMS care as part of the continuum of health care that is appropriate for commensurate remuneration.
  • Work to develop all-payer participation for EMS-provided care regardless of transportation to an emergency department.
    ▪ Develop performance metrics, as appropriate.
  • Seek maximum appropriate remuneration for care delivered.
  • Share best practices among EMS operational programs.
• Maintain the Maryland EMS Operational Fund as a solvent and secure source of funding to support the statewide EMS system.
**RESOURCE MANAGEMENT**

Maryland’s EMS resources include more than 1,300 public safety ambulances and more than 400 commercial ambulances that provide most interfacility patient transports. Additionally, the Maryland State Police provides air medical support for scene response. Private air medical services provide critical care interfacility transport. Through mutual aid agreements and the Maryland Emergency Management Assistance Compact, EMS resources are available to their local jurisdictions as well the entire state.

- Ensure the availability of appropriately staffed and equipped public safety and commercial resources to meet the anticipated needs throughout the state.
  - Maintain standards of safety, including vehicle characteristics and patient safety-related equipment and supplies.
  - Develop tools to monitor deployment and availability of EMS assets.
  - Collaborate with healthcare system stakeholders to address challenges that affect EMS resource availability.
  - Consider patient transportation needs in the contexts of systems of care and medical care facility evolution.
- Ensure the availability and optimal distribution of air medical services.
  - Facilitate timely care within therapeutic windows.
  - Monitor appropriate utilization.
- Pursue innovative strategies to reduce unnecessary resource utilization.
- Enhance interoperability within the state.
  - Increase abilities to share resources efficiently.
  - Develop processes to rapidly identify and deploy available resources.
  - Improve the readiness of deployable EMS assets and personnel.
  - Expand public and private collaborations.

**PREPAREDNESS AND RESPONSE TO EXTRAORDINARY EVENTS**

Preparation for extraordinary events is a continuous process involving many collaborators, including the Maryland Institute for Emergency Medical Services (MIEMSS), EMS operational programs, commercial ambulance services, healthcare partners and other federal, state, and local agencies. Recent efforts include ensuring readiness of the CHEMPACK program to enable deployment of time-critical chemical nerve agent antidotes, development of ambulance strike teams, and an active assailant workgroup. MIEMSS and local agencies periodically participate in disaster exercises.
• Pursue an all-hazards approach to system-wide preparedness
  o Ensure local, regional, and statewide participation in vulnerability assessments.
  o Ensure all-hazards planning among local, regional, state, national, private sector, and other non-governmental partners.
• Maintain situational awareness of the status of the EMS and healthcare system.
  o Collaborate with federal, state and local partners.
  o Remain aware of both current and emerging threats.
• Enhance knowledge and awareness among EMS clinicians regarding extraordinary events.
  o Develop and deliver appropriate educational content.
  o Ensure awareness of pre-, during, and post-response resources.
• Equip EMS personnel to respond to extraordinary events.
  o Pre-position resources based on risk assessments.
  o Distribute equipment and supplies as far “forward” as practical.
  o Distribute immediately life-sustaining resources widely.
• Develop sustainable working relationships with all stakeholders critical to emergency preparedness and response.
  o Collaborate with local, state, federal, private sector, and non-governmental agencies.
  o Collaborate with commercial ambulance companies, hospitals, and other entities of the healthcare system.
  o Facilitate multidisciplined interactions and cooperation.
• Develop capacity to meet the emergency medical needs of the population for up to 72 hours after a catastrophic event.
  o Conduct and incorporate needs assessments.
  o Ensure availability and mobility of resources within the State.
  o Consider cultural diversity and corresponding needs.

INFORMATION SYSTEMS

eMeds® is the statewide EMS patient reporting system and is the focus of the information system. However, the information system is a complex matrix of inter-connected applications and data sources. In turn, it enables the conversion of data to useable information upon which decisions can be made. There is an ongoing need to enhance user experiences, ensure reliability, and maintain appropriate security.

• Develop and/or maintain information systems that support a state-of-the-art, statewide EMS system.
- Provide reliable and efficient access for end-users.
- Support all aspects of the EMS system and initiatives.
- Meet needs of system users at all levels.

- Ensure system security.
  - Deploy appropriate safeguards and security measures.
  - Develop contingency plans for continuity of operations.
  - Improve infrastructure resiliency.
  - Refresh equipment appropriately and maintain up-to-date technology.

- Integrate relevant data.
  - Facilitate data sharing for individual and community health intervention and surveillance.
    - Enable meaningful systems evaluation at all levels.
    - Support bona fide research initiatives.

- Improve end-user experiences.
  - Limit data input to that which is relevant and meaningful.
  - Provide feedback to users with the data they supplied.
  - Facilitate standardized data elements and definitions.
  - Develop standard queries for specific quality metrics and intra-state comparisons.

**EVALUATION**

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Most evaluation of the EMS system occurs at local levels with varying degrees of sophistication and intensity. Statewide evaluations tend to focus on processes, with limited attention to relevant outcomes. Cardiac arrest outcomes are a notable exception. eMeds® can be queried, but is often complex and cumbersome.
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- Develop standard measures to evaluate the statewide EMS system.
  - Evaluate structures.
  - Evaluate processes.
  - Evaluate outcomes.

- Ensure evaluation is part of the EMS culture at all levels.
  - Facilitate evaluation at local levels.
  - Develop report cards that enable intra-state comparisons, where appropriate.

- Benchmark EMS system outcomes to national performance measures, where available and appropriate.

- Exploit the availability of data and information to its maximum potential.
RESEARCH

Several intrinsic characteristics of Maryland’s EMS system make it well-suited for conducting meaningful research. Among them are inclusive patient care records, linkages with hospital records associated with systems of care, collaborative potential with prominent academic institutions, engaged EMS physician scholars, sophisticated EMS leaders, and innovative spirit. However, much of the opportunity for generating new knowledge about EMS systems and care remains under-developed.

- Promote a framework to support multidisciplined EMS research.
  - Consider the statewide EMS system to be a research laboratory.
    - Capitalize on the availability of data.
    - Attempt to answer meaningful questions.
  - Foster collaborations that acknowledge the various contributors.
  - Facilitate institutional review board obligations.
    - Evaluate institutional review board affiliation options.
    - Facilitate access to necessary training.
- Engage EMS researchers.
  - Maintain an active collaborative or interest group.
    - Provide support.
    - Share information.
    - Develop common agendas.
  - Develop system-wide approaches to addressing common logistical challenges.
  - Promote ongoing and completed Maryland-based EMS research.
    - Use educational conferences and publications.
    - Highlight at administrative meetings, including regional councils.
  - Support initiatives to identify and secure research funding.

LEGISLATION AND REGULATION

Maryland Education Article, §13-501 through §13-517 provide the statutory basis for the statewide EMS system and the Maryland Institute for Emergency Medical Services Systems (MIEMSS). Any MIEMSS initiative for statute revision requires pre-approval of the governor. The Code of Maryland Regulations (COMAR) Title 30 provides the regulatory framework for MIEMSS to fulfill its responsibilities for the EMS system. Regulations may be promulgated and revised in accordance with the Administrative Procedure Act, State Government Article § 10-101 through §10-117. State agency regulations undergo structured review every eight years. With regard to EMS-related regulations, stakeholder input is routinely sought as revisions are contemplated.
• Engage a broad constituency in development and modification of rules, regulations, and policies.
  o Invite stakeholder participation.
  o Establish a process whereby concerns or requests for regulatory change can be addressed.
• Ensure statutes, rules, regulations, and policies support a state-of-the-art, statewide EMS system.
  o Review periodically to update as necessary.
  o Strive for a balance of facilitation and appropriate boundaries.
  o Ensure they do not prohibit emerging best practices.
  o Provide a clear path to compliant operations and conduct in an equitable fashion.
• Support statutory and regulatory updates that support EMS clinicians as bona fide health care providers.
• Establish a vision for various stakeholder groups, including regional councils.

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Appendices to be added:
EMS Agenda for the Future 14 Attributes
NHTSA State EMS Technical Assessment standards
EMS Agenda 2050 goals
Steering Committee Members
EMS Board Members
Section workgroup members
EMS Agenda 2030 Summit Attendees