

An Industry Update: Trends in the Emergency Medical Services Market



The EMS industry is driving significant advancements in technology, design, and functionality by embracing innovative design and the latest technology.



According to Data Bridge Market Research, the global emergency ambulance vehicle market was valued at \$19.31 billion in 2023 and is projected to grow to \$22.62 billion by 2031, with a CAGR of 2.00% between 2024 and 2031.¹

In 2024, the EMS vehicle industry has seen significant technological, design, and functionality advancements. These updates aim to improve emergency medical response efficiency, safety, and effectiveness. They reflect a broader trend toward leveraging technology and innovative design to improve emergency medical response, enhance patient care, and ensure the safety of both patients and medical personnel.

TRENDS UPDATE



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Advanced Technology and Connectivity

Modern EMS vehicles are equipped with advanced telemedicine systems that allow paramedics to communicate with emergency room doctors and specialists in real time. This helps them make informed decisions and prepare for patient arrival. Integrated electronic health record (EHR) systems allow for real-time data entry and transmission, improving patient care continuity and record accuracy.

Advanced portable diagnostic equipment, such as handheld ultrasound devices and mobile ECG monitors, allow for more comprehensive assessment and treatment of patients in transit. Modern AEDs with improved algorithms and user interfaces are standard, enhancing the effectiveness of cardiac arrest interventions.

Advanced GPS and navigation systems that show current traffic conditions help to optimize response times by ensuring that EMS vehicles can find the fastest routes to emergency scenes and hospitals. Additionally, V2X, or “Vehicle-to-Everything” technology, enables EMS vehicles to communicate with traffic lights, other vehicles, and infrastructure to improve traffic management and prioritize emergency response.

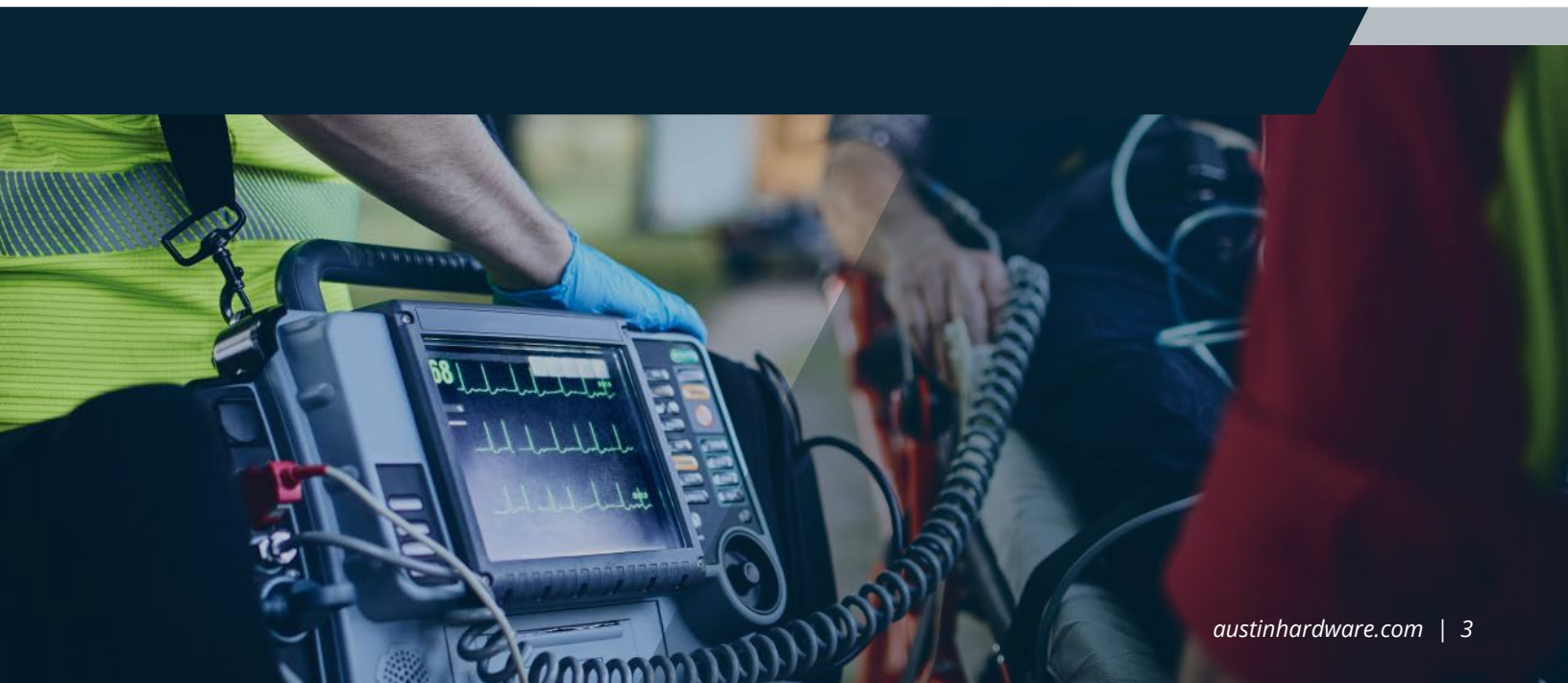
Many state and local agencies are switching to 5G connectivity to help address the obstacles that interfere with signal coverage and inhibit the successful use of the new technologies.

Sustainability and Efficiency

There is a growing trend towards electric and hybrid EMS vehicles to reduce emissions and operating costs. These vehicles are designed to maintain high performance while being environmentally friendly. Battery technology's continuous improvement is critical to the push toward electric ambulances. High-capacity batteries not only have an extended range but also charge faster.

Many EMS vehicles also now feature energy-efficient systems for lighting, climate control, and equipment operation, reducing their overall energy consumption.

Along with emergency service agencies' commitments to more sustainable practices and new government regulations, many are focused on reducing carbon emissions and improving air quality, making electric ambulances the preferred choice for new ambulances.





The industry shows a continued committed to enhancing emergency medical response, improving patient care, and prioritizing the safety of both patients and medical personnel.

Vehicle Design and Safety

An increased focus on ergonomics has been placed on EMS vehicle interiors, with layouts that allow for efficient movement and quick access to medical equipment, reducing response times and improving patient care. Addressing EMTs' mental and physical health is also a high priority for EMS leaders, which we touched on in a previous post.

High-intensity LED lighting systems, inside and outside the vehicle, enhance visibility and safety during emergency operations. Some systems offer programmable lighting patterns to signal specific needs or hazards. Fire trucks are also being painted in brighter colors like lime-green, lime-yellow, and yellow to improve their visibility.

Modern emergency vehicle design also prioritizes the comfort and safety of patients and EMS personnel. Patient compartments now include better climate control, more comfortable seating, and advanced stretcher systems that make it easier to secure and transport patients safely. Automatic bariatric and oxygen bottle lifts, along with IV hangers that can be actuated with one hand, are being installed to help enhance the safety of EMS personnel.

Additional features such as automatic collision avoidance systems, lane-keeping assist, and adaptive cruise control are being integrated to protect paramedics during high-stress situations. State-of-the-art cabinet frames, such as Austin Hardware's LifeDefender series, designed to keep medical equipment in place in the event of an accident, have become the new widely-accepted standard due to superior safety features.



Training and Simulation

Advanced simulation systems train paramedics in realistic scenarios, improving their skills and preparedness for a wide range of emergencies. Some EMS vehicles are equipped with systems allowing real-time equipment and vehicle status monitoring, ensuring that issues are promptly addressed. Simulations include virtual reality (VR) and augmented reality (AR) simulations, which offer cost-effective, immersive training and allow remote collaboration. Artificial intelligence (AI) driven scenarios are also used to generate unpredictable scenarios, creating a more challenging environment for trainees.

Wearable technology that enables biometric monitoring of a trainee's heart rate and stress levels is also being incorporated. This live feedback helps instructors monitor trainees' performance in real time and provides insights into how they handle the stress and strain of the training scenarios.

As mentioned earlier, a key focus on the mental well-being of EMTs is a top priority. One way this is being addressed is the addition of psychological and mental health training scenarios and post-incident psychological debriefing to help responders deal with the emotional consequences inherent to the job.

Technological advancements, including virtual and augmented reality, have enhanced the quality of training, helping to improve outcomes.

Telemedicine and Other Potential Disruptors

The ambulance market is witnessing several major trends and dealing with other disruptors in 2024. They include the increasing adoption of telemedicine technologies, as mentioned previously, the dominance of KKK-A-1822 standards, and the emergence of private companies offering new competition.

As discussed, integrating telemedicine in ambulances allows EMTs to communicate in real time with physicians, specialists, and healthcare facilities, facilitating quicker medical decisions and care coordination. It also enables remote triage and diagnostic data sharing (e.g., vital signs and video feeds) before hospital arrival, improving patient outcomes and reducing treatment time.

Telemedicine offers access to specialized care, such as trauma and stroke management, in under-served areas. Telemedicine-equipped ambulances also support preventive care and remote monitoring, enhancing patient engagement and reducing hospitalizations.

The KKK-A-1822 standard is the most widely adopted in the U.S. and outlines specifications for ambulance construction, equipment, and performance, ensuring compliance with federal regulations. Ambulances under the KKK-A-1822 standard prioritize safety, featuring reinforced structures and ergonomic designs to enhance patient and crew protection during emergencies. They support reliable, high-quality emergency medical care and are critical to U.S. EMS infrastructure.²

Additionally, rising consumer preferences for on-demand medical transportation services, including Uber Health and Lyft Healthcare, are reshaping the traditional ambulance market. Industry disruptions from private companies entering the ambulance sector and offering innovative solutions, such as drone ambulances, are creating new competition and driving market growth.





Cost & Regulatory Compliance

Extensive capital is used to develop and manufacture ambulances and emergency vehicles. These vehicles use the latest technologies to improve their applications, contributing to their high price tags. Complex regulatory approvals and trials add to the costs of these systems, which could hamper the market's growth.

Ambulances are also outfitted with high-end medicinal technologies, medical devices, and other expensive drugs. Monitoring, replenishing, repairing, and replacing medical devices, equipment, and medicines, along with high general maintenance costs, could challenge the market's growth and decrease the adoption rate in underdeveloped economies.

However, the good news is that government regulations aimed at improving healthcare infrastructure and mandating 24/7 patient care for everyone will provide lucrative opportunities for the market players. For example, with the increased demand for ambulances and emergency vehicles, major players have invested capital in researching and developing better systems such as integrated endotracheal tubes, cardiac monitors, and other advanced heart and airway equipment, all of which have contributed to the uptick in demand.

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¹ Data Bridge Market Research, "Global Emergency Ambulance Vehicle Market - Industry Trends and Forecast to 2031", April 2024.

² ETA, "The Importance of Federal Ambulance Specification KKK-A-1822F and why it is in place".

