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System Models

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An EMS system is a comprehensive, coordinated arrangement of resources and functions organized to respond to medical emergencies in a timely manner. An EMS system therefore is the arrangement of services provided to the consumer requiring a physician-patient contract using prehospital personnel. An EMS system in the practical world is provided because of public desire for medical care in the prehospital environment.

Police protection, fire protection, and civil defense emerged long ago in response to public demand. The various needs of an EMS system require a different structure for the provision of services than do other public services. Furthermore, a range of motivations exist behind the provision of the service, not the least of which is profit.

Under the stimulus of these variables, many methods of providing EMS operations have evolved. Almost every locale offering services has developed an EMS operation, whether public, private, volunteer, or a mixture.

Hospital-Based Systems

Hospitals commonly operate EMS systems. They purchase equipment, hire administrative personnel, train and hire EMS personnel, and contract for medical oversight. Although hospital-based systems may be privately owned, they may also be an extension of public hospital authorities, entities that direct public monies and act on the behalf of specific geographic locations. Hospital EMS systems are usually managed in a fashion typical to hospital environments, with administrators assigned to report through the hospital administration. Generally, these systems are financially tied to the hospital.

Medical oversight in a hospital model is usually an extension of emergency medical practice within the hospital. For example, medical staff guidelines for the hospital must be followed in hospital-based EMS systems as well. Because the physician-patient contract established in an EMS system does not differ from the physician-patient contract established in the hospital, peer review of all medical care must be conducted. Malpractice underwriting guidelines of the hospital should be maintained.

Medical oversight of hospital-based systems can be excellent because it encourages familiarity and close contact between medical oversight physicians and prehospital staff. Commonly, EMS personnel provide care in the emergency department when not in the field, thus further enhancing the team relationship.

Jurisdiction-Provided Systems

Another common method of EMS provision is through a jurisdiction-based system, usually at the municipality or county level; a few state and provincial models exist. The specifics of these systems vary, with economic issues playing a major role.

EMS providers housed in fire departments are one of the most common types of jurisdictional models. Approximately one half of the EMS systems in the United States are fire-based. Fire department vehicles and personnel are usually geographically well located, available 24-hours per day, and already oriented toward protecting life.

Fire departments maintain highly structured methods of training and advancement, including regular continuing education and benefits such as retirement. EMS activities are often added without such benefits, encouraging many EMS personnel to work in fire suppression to improve their benefits. Fire suppression personnel who chose EMS often return to fire suppression because of the increased opportunity for advancement and benefits.

Changing perceptions of EMS within fire services may gradually minimize such differences.

Medical oversight is usually contracted from private physicians. An important consideration for the medical director of an EMS system based in a fire department is the dominant role of the fire chief within the local public milieu. Any EMS physician who has come to loggerheads with an established fire chief quickly discovers where the power exists. Winning battles and losing wars holds very true when dealing with the hierarchy of a county or municipal fire department.

Jurisdiction-sponsored systems are typically supported by taxes. EMS may be a line item within the fire, police, or health department budget. Further sources of revenue may include billing patients. Proper management must provide for realistic billing and pricing based on the efficient provision of service. In this era of cost control and shrinking public resources, it may be difficult to shift expenses to the users. Jurisdictions providing EMS may be of any size, from small rural towns to entire territories bound into a single system such as Puerto Rico, British Columbia, or New South Wales. The matrix of management and medical oversight varies with the geographic complexities of the system.

Privately-Run Systems

One of the oldest forms of EMS is that of the private profitmaking provider. Originating in the funeral home days, these providers have evolved into highly efficient operations. Many private EMS systems become power brokers within the local legislative arenas because of their size and political influence. Private providers learned quickly to maximize efficiency, aggressively seeking service zones within the regional emergency systems that provided a steady flow of clients.

Medical oversight of private or proprietary providers must be of the same quality as that of other types of systems. High productivity is integral to the survival of private provider systems, especially in the absence of government subsidy. Excellence in patient care, consistent with the standard of care in the community, must always be the determinant of what care the patient receives, not economic motivation.

Volunteer Systems

In some rural areas the entire system of prehospital care is provided by volunteers. In fact, a few urban and many suburban jurisdictions are predominantly volunteer-based, usually with a government subsidy and a small cadre of paid personnel. Volunteer prehospital providers have existed in some parts of the world for centuries and in the United States since the 1920s.

The political power of volunteer ambulance providers is often only slightly less than that of the volunteer fire lobby, especially in the state legislatures. As a result of that political strength, volunteer organizations in some states have not been required to meet the same standards of EMS provision and medical oversight as other providers.

Complex Systems

Many complex EMS systems have evolved, some by prospective creative effort and some by the haphazard action of providers to fills gaps in care. It is not uncommon for private and public providers to coexist in the same geographic areas with various levels of providers occupying separate yet overlapping niches in any system. Often the First Responder element will be supplied by one part of the system, such as a fire department, and the paramedics will be provided by another. Land and air transport can be delivered by yet another agent.

An interesting picture of the financial and political history of a geopolitical area can be gained by examining structural elements of the EMS system. In the city of Atlanta, for example, the northern half of the city is served by a private provider and the southern half is served predominantly by a public provider. This is due, in part, to the payor mix of the populations; over the years, economic improvements in the southern area of the city have encouraged private providers to establish themselves there as well.

Public dispatch systems often evolve to take the initial call from the patient and then, as indicated by zone or other factors, dispatch private providers by secondary contact. Such call shunting may cause potentially significant delays.

Medical oversight of complex EMS systems may be exceedingly complicated, with both indirect and direct medical control being poorly coordinated. For example, providers receiving excellent direct medical control may not receive adequate or meaningful indirect medical control from their individual service medical director. Feedback among the physicians providing indirect medical control and direct medical control may not occur. One of the most important challenges for the EMS physician in a complex system is to provide ample coordination among all aspects of medical oversight.

Summary

The basic purpose of an EMS system is the provision of prehospital medical care. Therefore, excellent medical oversight remains the essential element of a well-run EMS system. In the vast technical and political milieu of providers and patients, the duty to provide accurate and compassionate medical care must always be foremost in the minds of all members of the EMS team. There is no one optimal EMS system model; most designs can provide excellent care. Regions and jurisdictions must intelligently identify the specific EMS needs of the area and organize the system responses pursuant to those particular needs building on existing resources and history.