

Emergency Medical Dispatching

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The development and rapid growth of EMS has produced a redefinition of the various roles of the EMT, paramedic, mobile intensive care nurse, and emergency physician, both on-line and off-line. Even the citizen has come to be identified as a "key player" in the evolving roster of the prehospital care team.

The last in a long line of individuals to be identified as vital to the functioning of an EMS system is the emergency medical dispatcher (EMD). The dispatcher's key role has been accurately defined only since 1979, when the Salt Lake City Fire Department identified the medical dispatcher as the "weak link" in the chain of EMS response.¹ Until that time, the individual functioning as the medical dispatcher had, on the average, less than one hour of medical training.

Common Misconceptions

There are several commonly held misconceptions about dispatching that are nearly universal throughout EMS communities and that have delayed development of sound EMD programs. Seven have been identified:

- The caller is too upset to respond accurately
- The caller does not know the required information
- The medical expertise of the dispatcher is not important
- The dispatcher is too busy to waste time asking questions, giving instructions, or flipping through card files
- Phone information from dispatchers cannot help victims and may even be dangerous
- More personnel and more units at the scene are always better

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- It is dangerous not to provide maximum responses or not to respond to every call with "red-lights-and-siren"

In response to the first misconception, Eisenberg *et al* studied 640 cases to determine the difference among the emotional levels of callers who report cardiac arrest versus other complaints.³ The study used an emotional scale of one to five, with one

representing "normal conversational speech" and five representing "so emotionally distraught that information (eg, the address) could be obtained only with great difficulty." Of the 146 callers in non-cardiac arrest cases, they found the mean emotional score was 1.4. However, contrary to popular expected result, the mean emotional quotient for the 494 callers reporting cardiac arrest was only 2.1.

The second misconception, that the caller "doesn't know the required information," appears to be more a result of the dispatcher's not asking the right questions than it is a true lack of knowledge on the part of the caller.

The misconception regarding the medical training of the dispatcher and his or her use of protocols has fallen by the wayside, as a number of states, as well as the Department of Transportation, have established programs for training and either formally or informally require that the dispatcher use medically approved protocols.

Another false notion is that telephone information from dispatchers is not safe. Currently, hundreds of dispatch systems provide dispatch prearrival instructions with almost universally positive results. The National Association of EMS Physicians has stated in its consensus document on EMD that "standard telephone instructions by *trained* EMDs are safe to give and, in many instances, a moral necessity."⁴

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The last two misconceptions are the result of unscientific use of "red-lights-and-siren" responses as used by other public safety providers, particularly fire departments. More attention than ever is being focused on the use of red lights and siren for every EMS response.^{5,6} Currently, there is no identifiable data or published study in the medical or EMS literature supporting the use of red lights and siren or maximal response on every call.

The Role of the Dispatcher

The emergence of dispatcher training as vital to the appropriate functioning of EMS systems has been a phenomenon of the 1980s. In the past, the dispatch function was "out-of-sight" of medical control. For most EDs, a prehospital case begins

on-line—that is, when the biotelemetry radio goes off announcing a call, so the dispatcher's function before arrival at the scene was mostly unknown to the emergency medical community as far as the mechanics of EMS dispatch and the decision-making process of EMS response. Whether the closest unit was sent, whether a paramedic unit was unavailable because of a previous assignment, or whether the first assigned vehicle did not arrive because it was involved in a "red-lights-and-siren" accident literally was a secret to most medical control physicians.

Today, the role of the typical EMD is multifaceted. At least six "subroles," or functions, have been identified: interrogator, radio dispatcher (output), triage, logistics coordinator, resource person, and prearrival aid instructor. Specific training in each of these aspects of dispatching is essential. Also, a sound basis in generic telecommunication techniques is a requisite framework for sound emergency medical dispatching.

The EMD needs specific training so that he or she can recognize specific presentations of medical problems.¹ This body of knowledge commonly is referred to as the "dispatch priorities" and is an oblique cross-section of emergency medicine unique to dispatch. The basic components of emergency medical dispatching (key question interrogation, prearrival instructions, and dispatch prioritization) are essential to the proper and appropriate initiation of prehospital medical care.

Medical Control

Inclusion of medical control in the dispatch process has lagged significantly behind physician direction of other EMS components. In the past, medical control was unaware of the prearrival state of affairs in EMS. The "out-of-sight, out-of-mind" physical existence of the medical dispatcher has been identified as a contributing factor to this evolutionary lag.⁷ Another factor affecting the delay in medical involvement has been the question of control over dispatch policy and practice. The fire service became a common stepparent for EMS in the 1970s, and a reluctance to medical involvement in agency activity, such as dispatch, often was encountered. However, the medical community and the EMS agency are responsible for working together to establish appropriate and medically sound practices and procedures for EMDs in medical dispatch centers.

Quality Assurance

The concept of emergency medical dispatching encompasses more than just training. In essence, a practice standard is evolving that defines not only the role of the EMD but also the supervision, quality assurance, and risk management practices that must accompany it.⁷ The tragic effects of poor dispatching have been documented.⁸ The time to organize the quality assurance portion of an EMD program is not after a "major malfunction"—medical control of dispatch is just as essential as it is for paramedics and EMTs, and, without it, the dispatch process is shaky indeed.

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Training, Certification, and Continuing Medical Education

The process begins with training and certification. State-approved courses currently range from 25 to 40 hours. This training is critical in providing the groundwork for the precise, "rapid-fire" decision making that often is required of the EMD.

No one would prefer the care of a noncertified EMT or paramedic over that of a certified one, and this concept applies directly to the medical dispatcher as well. Defining a standard training package and practice sets the stage for the development of government certification of these EMS professionals. There is a clear trend toward the institution of certification in many states and EMS regions. The state-level process for establishing regulations, standards, or official guidelines often has been difficult: when possible, the emergency physician should be involved.^{9, 10}

Continuing medical education is essential to reinforce initial concepts and to build on the many aspects of dispatch priorities.⁷ The fact that dispatching is an emerging and changing field mandates an active continuing medical education program to keep dispatchers current with medical standards and ideas specific to their daily routines. As the on-line experience of new EMDs expands, continuing medical education becomes their link

with the positive and changing aspects of medicine. Physicians must take an active role in the quality assurance process and in providing sound continuing medical education for dispatchers. Regular exposure to appropriate medical concepts as they relate to dispatch increases understanding and fosters application of medical principles at the point where EMS "leaves the chute"—the dispatch center. Currently, EMD recertification may require a minimal investment of as little as one hour per month.¹¹ As more experience is gained with the education of EMDs, the necessary amount and type of such training will continue to be redefined.

Risk Management and Dispatch Case Review

Adequate on-line supervision must be provided for dispatchers who function as the "air traffic controllers of the ground." EMDs must be supervised directly, and supervisors functioning in this role must have sound training in emergency medical dispatching. Professional on-line supervision to identify problems as they occur will pay dividends in problem reduction in the future. Supervisors must have both EMS and EMD knowledge and be responsible for quality assurance and risk management as a major part of their job activities.

Because history repeats itself, an after-the-fact review of EMD activities and decisions also is important. A review can reveal a wealth of information about the current state of a dispatch center, in reference to both protocol adherence and the individual abilities of the EMDs. For this purpose, a medical dispatch review committee, consisting of all dispatch-related parties, including line EMDs, should review, on a regular basis, tape-recorded playbacks of calls received and processed by dispatchers.¹² The use of a medical dispatch feedback report to record, in writing, apparent problems at dispatch is another helpful tool for medical control review.

Role of the Medical Director

The responsibility of the EMS medical director now must include medical dispatcher functions.⁴ This responsibility includes initial training, CME, medical dispatch case review, protocol review and approval, including response assignment and "red-lights-and-siren" need. For most EMS medical directors, the responsibility for medical dispatch does not appear to be as important as their interactions with paramedics and EMTs. However, the dispatch center, in essence, controls the system in its make-up and deployment, and the establishment of

dispatch priorities often requires an unprecedented review of how the system functions. These priorities include EMS decision-making activities that must involve physicians. Once involved, the physician often becomes fascinated by the philosophy of medical dispatch.

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One aspect of routine medical direction that is not really possible in dispatch is on-line control. The dispatch equivalent to medical control is dispatch case review, and this can be performed by committee with the medical director's involvement, as described earlier.

To be able to manage the activities of the EMD from a medical-administrative standpoint, the physician medical director should attend an established, highly regarded EMD training course—one that is taught by an instructor with EMD experience. Once the physician understands the training required of EMDs, he or she will be better prepared to provide adequate medical control.

The National Association of EMS Physicians summarized the issue of medical control in dispatch with their consensus document on emergency medical dispatching (Appendix). The document's general statement proposes that

"The trained Emergency Medical Dispatcher (EMD) is an essential part of today's EMS system. Medical control for the EMD and the dispatch center is also part of the EMS physician's responsibilities. The basic functions of emergency medical dispatching should include predetermined interrogation questions, pre-arrival telephone instruction, and preassigned response levels and modes. The EMD must understand the philosophy and psychology of interrogation and telephone intervention, basic emergency medical priorities, and be versed in basic life support. Training should be standardized and EMDs certified by governmental authority."⁴

Medical Dispatch Systems Standards

Medical dispatch system standards should include, at a minimum:

- A requirement to use a medical dispatch protocol system generically defined as an approved reference system used by a local dispatch agency to dispatch aid to medical emergencies. The system should include systemized caller interrogation questions; systemized prearrival instructions; and protocols matching the dispatcher's evaluation of injury or illness severity with vehicle response mode and configuration. (Vehicle response mode is the use of emergency driving techniques, such as "red-lights-and-siren" versus routine driving response, vehicle response configuration is the specific vehicle of varied types, capabilities, and numbers responding to render assistance.)
- That dispatch agencies provide for quality assurance by initiating an on-going medical call review procedure.
- A state or regionally required training and certification program that includes an initial certification process; a recertification process and period; provisions for certification and recertification of the handicapped; lapsed certification reentry; reciprocity approval procedures; instructor definitions and standards; and prohibitions and revocation processes.
- A definition of medical control and the process of approval of written medical dispatch protocols for individual agencies.
- Appropriate wording to tie into any EMS immunity clause existing in the current EMS law.

These standards for medical dispatch providers are designed to promote the health and safety of the patient as well as the efficiency and responsibility of the EMS system.

Prearrival Instructions

Trained EMDs have become the system's "first" first responders because they may provide initial professional intervention within the EMS system and because they can reduce response time to near zero for the specific problems on which they can have an impact. There is no better justification for the provision of prearrival instructions than the landmark legal opinion to the Aurora (Colorado)

Fire Department written by EMS legal authority James Page, JD, which says that:

"After years of arriving 'too late' at the scenes of hundreds of life-threatening emergencies, it is difficult for me to offer a detached and unemotional opinion. Throughout the US we have spent billions of dollars constructing systems to respond to medical emergencies, and we have done little to cure the deadly four-minute gap at the front of the system. While we race through city traffic to get to the scene, a brain dies from lack of CPR (oxygen). Frankly, I don't understand how any public safety or health care worker can accept these recurring tragedies without actively seeking a solution to the 'response time' problem which proves fatal in so many cases."¹³

Common Dispatcher-Caller Situations

There are certain predictable situations facing medical dispatchers that should be resolved, or at least addressed, without significant delay. For example, to an EMT trained in automatic defibrillation, a cardiac arrest victim is defined as a pulseless, motionless, nonbreathing patient. The same patient may have been described to the dispatcher by a second-party caller in this way: "Is he conscious?" . . . "No!" "Is he breathing?" . . . "Uh, I'm not sure. He's making funny noises." In this case, "funny noises"—a common telephone description of agonal respirations—must be interpreted correctly by the dispatcher based on dispatch-specific medical training. A trained EMD would realize that this description represents an unconscious victim with an uncontrolled airway until proven otherwise. A professional would immediately establish control of this airway, not defer it to someone else. The basics apply equally to dispatchers also.

EMDs should be trained to give various types of prearrival instructions.¹⁴ Many are nonmedical, such as "don't move the victim," "observe the victim closely until the paramedics get there and report any changes to me immediately," or "turn on your porch lights and flash them on and off when you hear the siren." Other medical instructions that can be given range from head-tilt airway control, mouth-to-mouth breathing, the Heimlich maneuver, and direct pressure hemorrhage control to telephone-instructed CPR. The more invasive or significantly intricate procedures are given through the use of "treatment sequence protocols" (Figure 1).

These cards are algorithmic scripts that the EMD, through a "yes or no" logic branch, literally reads to the caller. This system prevents dispatcher variation in treatment and ensures consistency from one case to the next. Such scripts help the EMD develop learned phrasing after continued study and multiple use, which may reduce fear and anxiety and encourage intervention.

On the surface, the behavior of the emotional or sometimes hysterical caller may seem to be random and unpredictable. But, after nearly a decade of study, researchers have determined that there are some very predictable, generic components present in most prearrival instruction cases.

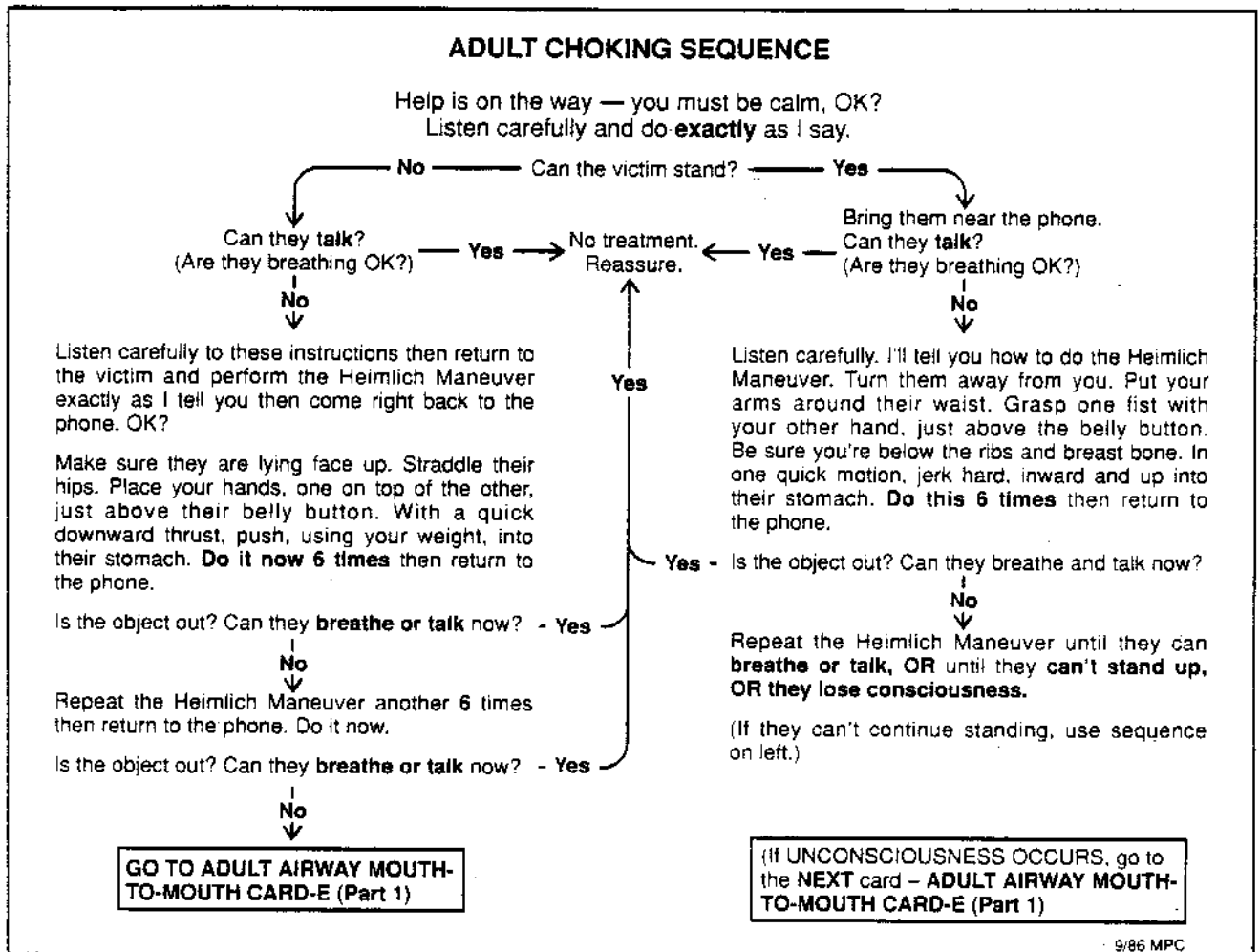
The hysteria threshold. All distraught callers appear to have a threshold of hysteria that can be overcome by "repetitive persistence." This threshold usually is easy to reach through the use of this technique. Once the caller has been "reached" and is "in control," he or she usually is able to repeat the dispatcher's instructions "word perfect."¹⁵

Repetitive persistence is the most successful method of reaching the hysteria threshold. In this technique, the EMD repeats over and over again, in the same exact wording, a request to calm down or perform any other act desired. For example, in the case of a distraught mother whose child is choking, "You're going to have to calm down, ma'am, if we're going to help your baby" should be repeated firmly to achieve initial control. This approach works almost universally after only two or three repetitions. Altering the wording is less effective, and it is believed this appears to the caller's subconscious as indecision or lack of control on the part of the EMD.

The "bring the patient to the phone" problem. It is amazing how many times prearrival instructions are begun only to have the caller interrupt the process by yelling, "Bring him in here to the phone!"¹⁶ Obviously, this wastes time and interrupts the instructions. The EMD should always ask "Where is the patient?" at the beginning of the telephone treatment sequence.

The "re-freak" event. The exception to the complete control obtained once the threshold is reached occurs when the caller is reminded of the distressing state of the victim at any of three different stages: First, when the victim is brought to the phone, and back into the sight of the caller; second, when the EMD asks for verification of absent vital signs; and third, when the caller finally is performing, for example, CPR or the Heimlich maneuver, and the victim is not "revived." When this happens,

Figure 1. Sample telephone treatment sequence protocol.



callers say "Nothing's working!" in frustration and despair and sometimes stop trying.^{15, 16}

The "nothing's working" phenomenon. Most callers have a misconception that if they are performing the EMD's instructions, then the victim will respond or be immediately revived. When the patient doesn't respond, a specific type of frustration—"refreak"—can occur and interrupt the treatment sequence.¹⁶ The EMD can overcome this with appropriate encouragement, repetitive persistence, and by stating that the caller should "keep the victim going until the paramedics get there."

Dispatch Treatment Sequence Protocols

EMS physicians and other personnel involved in developing "standards" should have a perspective of how dispatch treatment standards will be applied and why. A common problem presented to medical

control physicians during adoption of dispatch treatment sequence protocols is what appears to be deviation from current standards, such as those of the American Heart Association (AHA). The problem usually is in understanding the special limitations of the dispatch situation, not in the dispatch protocol itself.

For example, the most common method of opening the airway is the head-tilt as used by dispatchers: "Put one hand on the forehead, the other under the neck. Lift up on the hand under the neck and push down on the hand on the forehead. This will open the airway." However, in 1987, AHA changed the recommended airway control maneuver to the chin-lift and jaw-thrust.⁷ The continued use of the head-tilt technique in many dispatch protocols, however, is not an oversight. The dispatcher is in the position of trying to teach a difficult physical procedure to an unwilling student in seconds,

without verification of correct application. As such, the most reproducible and simple to convey method to achieve a life-sustaining result must be used, that is, the head-tilt.

Concerns Regarding Prearrival Instructions

The provision of prearrival instructions raises the concerns of many, and the common issue is "Doctors don't even give advice over the phone—why should dispatchers?" It has been amply shown in hundreds of cases that EMDs give excellent instructions via the telephone.⁷

More intelligent concerns should revolve around the following questions: 1) Is there adequate identification of the problems requiring dispatcher treatment intervention? 2) Are dispatchers uniformly trained? 3) Do dispatchers use sound, medically approved algorithms to determine when to give more detailed instructions such as CPR? 4) Is there adequate quality control including call review? The answers to each of these questions is important in the risk management of EMD programs, and dispatchers should not be any less accountable than other EMS practitioners.

Medical Dispatch Priorities and Components

Priorities are not new to the emergency physician, so dispatch priorities simply are an extraction of his or her knowledge regarding the urgency of medical problems on which ED triage decisions commonly are based. These priorities lie at the heart of medical dispatch because they form the basis of the dispatcher's knowledge, decision making, and treatment. The development of "dispatch priorities" was a key event in the evolution of emergency medical dispatching.^{1, 17}

The dispatcher currently is the least trained professional in the EMS chain of care; therefore, he or she must fully understand and completely adhere to a sound protocol for dispatch priorities. Each protocol consists of four components: key questions, prearrival instructions, dispatch priorities (including determinants), and response mode, and these are explained in detail on "medical dispatch priority cards," which the EMD uses to respond to callers (Figure 2). An "additional information" section of the dispatch cards exists to remind the EMD of important medical information and axioms that will be routinely "in sight" and, therefore, eventually "in mind." (Figure 3).

Each key question asked on a dispatch priority card is included for one or more of the following reasons:

- To "glean" information that is necessary in determining the appropriate response assignment
- To identify and verify conditions that require prearrival instructions
- To obtain information required by response personnel to preplan and address the call
- To identify hazards at the scene and risks to patients, laypersons, and professional responders

Any question set that does not address all of these considerations will contribute to an unsound interrogation. The answers to these questions provide information needed for appropriate prearrival instructions—the second component of dispatch protocol.

The major reason for the structure of the key questions is to identify the most appropriate mobile response—the dispatch priorities. These priorities reflect the level of urgency needed during response. The "response" section of the dispatch protocol matches the levels of urgency with the most appropriate mobile response available within that system.

In the past, many medical dispatchers were given lists of problems, and these lists were considered to be the "dispatch priorities." Such a list might have included appendicitis, anaphylactic shock, heart attack, heat stroke, pneumothorax, and pulmonary embolus. The effectiveness of this type of system was severely limited because the problem has to be "diagnosed" before the dispatcher can select the right response.¹ To require the least-trained medical person in the EMS system to diagnose the problem is shaky at best. Effective dispatch must use symptom-based or incident-type (mechanism of injury) entry problem indices instead of diagnostically based ones. The entry problem index was adopted by the Department of Transportation in its 1983 Medical Dispatch Priority Reference System example.¹⁸

Maximal Response

Resources in EMS are limited. Literally millions of "emergency" responses occur every year in this country alone. Most of them receive "maximal response,"⁶ which is always "red lights and siren" or multiple vehicles or both. In the years before priority response, "red lights and siren" were run—not only to the scene, but often to the hospital. Ninety

Figure 2. Medical dispatch priority card.

KEY QUESTIONS		PRE-ARRIVAL INSTRUCTIONS		
1. History of seizures? 2. Did injury precede seizure? 3. History of: - Drugs? - Diabetes? 4. Fever (if age ≤ 5) 5. Pregnant? (if female age ≥ 12) 6. Has seizure stopped?		NOTE TO DISPATCHER: Stay on line with caller until seizure stops . . . then verify breathing. a. No CPR while victim is jerking. b. Don't restraint victim, force objects in victim's mouth, or force victim's jaw open. d. Move dangerous objects. e. Turn gently on side when seizure stops. f. Don't let victim wander around. g. Look for medical ID tags/cards.		
Determinant	DISPATCH PRIORITIES		Response	
A. Victims UNDER AGE 35 with Unknown history, or previous history of seizures. Febrile Seizures (age ≤ 5).	A	Closest BLS Ambulance	COLD	COLD
B.	B	Closest BLS Ambulance	HOT	COLD
C. Victims UNDER AGE 35 with NO previous history. Pregnant or Trauma or Diabetic. Continuous or multiple seizures.	C	Paramedics Ambulance	HOT	COLD or HOT
D. ANY victim age 35 or OVER	D	Closest BLS Paramedics Ambulance	HOT	HOT COLD or HOT
12 CONVULSIONS/SEIZURES				MPC © 8/86

Figure 3. Additional information card.

ADDITIONAL INFORMATION	
<p>Also known as seizures, fits, epilepsy . . . they are an abnormal firing of brain cells usually resulting in jerking movements.</p> <p>TYPES: Grand mal, Petit mal, Psychomotor, Jacksonian, focal . . .</p> <p>CAUSES: Epilepsy (unknown cause), trauma, tumor, meningitis, cardiac arrest (anoxia - lack of oxygen), Diabetes mellitus (hypoglycemia, hyperglycemia), drugs (cocaine, amphetamines), fever, many other less common causes.</p> <p>PROBLEMS: Associated with airway, cyanosis, tongue biting, fractures, secretions. INAPPROPRIATE CPR and Mouth-to-Mouth, post-ictal state, recurrent or continuous (status epilepticus).</p> <p>NOTE: SEIZURE-LIKE ACTIVITY CAN BE AN INITIAL SYMPTOM OF CARDIAC ARREST. ABC's must be checked VERY carefully before initiating CPR after a seizure has stopped. INITIALLY all seizure victims appear to have abnormal or absent breathing.</p> <p>NOTE: A seizure in a person age 35 plus is considered a CARDIAC ARREST until breathing is verified. Stay on the line until status is known.</p>	
12 CONVULSIONS/SEIZURES	
MPC © 8/86	

percent of the time, however, there is no medical justification for this practice.

Maximal response developed from three traditional notions. First, "It's an emergency, we've got to hurry!" Years ago, when hurrying was just about all that was done for the victim, it had some value—it got the victim to the treatment. Second, many systems have coupled EMS response logic to that of fire response: A fire gets worse by seconds and minutes, so why wouldn't a prehospital medical problem? But a single broken leg in a football stadium does not spread in the manner of a fire. Medical problems do change, but the vast majority involve a single patient in a less-than-life-threatening crisis. The last and least palatable notion of all—running "red lights and siren"—is fun and seems important. Fortunately, the maximal response disease is the dinosaur of today's progressive EMS systems, and medical priority dispatching is the method of its extinction.

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Tiered Response

Tiered response is a term used to describe one of the most common methods of EMS response deployment. It requires the availability of more than one type of EMS response vehicle and is more often found in large municipal systems, particularly those that are fire service based. Response components usually include first response non-transporting units (often these are fire engines staffed with EMT/firefighters), paramedic-staffed vehicles (nontransport), and EMT- or paramedic-staffed transporting ambulances.

A common alternative to tiered response is the all-ALS system, in which all responding vehicles are paramedic-staffed ambulances. However, few all-ALS systems can provide initial response time of under five minutes without integration of BLS first response, fire or police service units. The availability of this often overlooked resource in EMS systems can be applied through proper application of dispatch priorities and tiered response.

Tiered response systems take maximum advantage of dispatch priority use where the goal is to

send "the right thing in the right way to the right patient at the right time."

Assigning Dispatch Priorities

Response mode, the fourth component of the dispatch protocol, establishes the appropriate response assignments and is dependent on the specific type of system and types of trained personnel and units available. The development of local dispatch priorities often requires an unprecedented review of why the system does things the way it does.

The degree of urgency is assigned a priority level of A through D and is linked to the response vehicles dispatched and whether they use "red lights and siren."

There are a few basic questions to answer when formulating priorities: Will the time saved make a difference in the final outcome (ie, whether the problem is a true time-priority case requiring a response of less than five minutes, such as cardiac or respiratory arrest, airway problem, unconsciousness, or severe trauma or hypovolemic shock)?

- How much time leeway do you have?
- How much time can you save using "red lights and siren?"
- How much time can be saved sending a closer but less definitive unit?

Dispatch call prioritization has its roots in two main areas—the evolution of various levels of response vehicles and the emergence of EMS system abuse originally identified in larger municipalities.¹⁹

Having large numbers of response vehicles arrive at single patient scenes may not be medically or fiscally sound. Medically approved dispatch response prioritization puts accurate information into the hands of the responding EMTs. It also allows for pre-planned responses, safer responses (fewer units responding in the "red lights and sirens" mode), and fuel and energy savings (fewer units and crews used when possible) and saves paramedic teams for "true" ALS emergencies.

Emergency Medical Vehicle Accidents

According to Page, "By far the greatest legal hazards facing EMTs arise from ambulance vehicle accidents."²⁰

Thousands of emergency medical vehicle accidents (EMVAs) occur every year in North America as a result of "red lights and siren" and multiple unit responses. By national statistics, 50 percent of these

Figure 4. Dispatch priority levels.

Priority Level	Unit Responding	Response Type
A	Closest BLS Unit Ambulance	COLD COLD
B	Closest BLS Unit Ambulance	HOT COLD
C	Paramedics Ambulance	HOT COLD OR HOT
D	Closest BLS Unit Paramedics Ambulance	HOT HOT COLD or HOT

involve a reportable injury, and one percent involve a fatality. Many accidents are caused by "hot" responses that involve citizens' vehicles in which the EMS unit slips safely by as the culprit. Any successful effort made to reduce hot responses and excessive responding vehicles appropriately would, in turn, reduce the number of EMVAs. In the long run, this problem will be reduced significantly by the new appropriateness of response levels. In regard to EMS as a branch of medicine, the original premise still applies—"First, do no harm."

Call Prioritization Versus Call Screening

Call prioritization and call screening are not the same. With call screening, some calls are "screened out," which means that no response is sent. Dispatch or call prioritization allows only for the decision of what response to send, not whether to send a response. The legal risks of call screening outweigh the cost savings of not sending any EMS response.

Horizontal Versus Vertical Dispatch Configurations

In centers where more than one dispatcher is on duty, medical dispatching is performed best when there is a division of individual responsibilities between call interrogation and radio dispatch functions. This team approach is referred to as "horizontal" dispatching. The interrogator follows the entry and key question protocols while the radio dispatcher listens and, at predetermined points during the questioning, dispatches the appropriate response as indicated by the information. This frees the interrogator to go into prearrival instructions without having to decide which function is more important at a critical point (ie. unit dispatch or life-saving telephone treatment). When this team

approach is used, the radio dispatcher can give the responders accurate information regarding the situation.

"Vertical" dispatching makes each dispatcher responsible for a geographical area and requires that individual to handle all calls from start to finish. This dispatch configuration is less effective for EMDs using priority dispatch protocols. Centers using a single dispatcher must dispatch vertically.

Medical and Legal Aspects

The potential liability dispatchers could incur by giving telephone instructions or prioritizing calls has been the subject of recent controversy—and fear. Currently, with the exception of an incident in Dallas in 1984, no successful suits have been identified in either area, even though hundreds of communities now have dispatchers performing these functions. The medical-legal climate continues to get warmer in all areas of medicine, and EMS has been no exception. As the legal community learns more about the workings of the prehospital care system, it is likely to discover the dispatch office as well.

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The medical-legal-conscious emergency physician understands well the four essential components of proving negligence in a court of law. These components are duty, breach of duty, damages, and

causation. Most malpractice cases are won or lost in the area of causation (ie. they demonstrate that the acts of the defendant were the "proximate cause" of the damage). However, duty appears to play a more basic role in the evolution of medical dispatching legal risk exposure. William Prosser stated regarding duty, "Changing social conditions lead constantly to the recognition of new duties. No better general statement can be made than that the courts will find a duty where, in general, reasonable men would recognize it and agree that it exists."²¹

In 1981, EMS legal expert James O Page stated, "I can foresee a day when a citizen might allege that the municipality (which maintains a full-time public safety dispatching service) was negligent for failing to implement and operate such a service (prearrival instructions). In view of the fact that implementation of this new level of service does not constitute a major expenditure to the municipality—and thus is basically an organizational/management/training issue, rather than a funding/taxation issue—I feel the case for a legal obligation (duty) to provide it becomes stronger."¹³

In some ways that prediction has come true. The *Journal of Emergency Medical Services* reported from their 1986 reader survey that 56 percent of those polled indicated that they were offering prearrival instructions to callers.²² It's anyone's guess as to whether or when such a duty is actually created. But in the opinion of a number of EMS physicians, that day already has come.

Preventing Legal Problems

Dispatch quality assurance has four facets: before-the-fact planning and training, during-the-fact event supervision, on-going retraining, and after-the-fact review.

The EMD concept is pliable, and it adapts easily to a broad range of local circumstances and system designs. However, like any new innovation, lack of preplanning can doom EMD to quick local failure. Better to invest time indoctrinating the people who will be using the system as to its purpose and value.

An EMS system may have to defend itself against cases resulting from significant delays in arriving at a critical emergency because an ALS team was tied to an emergency of lesser severity. Maximal response does not eliminate dispatch errors—it just replaces them with errors that are less apparent (ie. ALS units tied up on BLS calls, first response where not needed, emergency vehicle accidents).⁶ The practice of maximal response

should be reserved for the highest level of actual or potential crisis. Systems with the capability of tiered or layered response that do not use their first response personnel appropriately and still send a maximum response may not be functioning at the highest level of medical responsibility. This is increasingly evident as social pressures to contain the costs of medical care rise. Thus, the use of the EMS system must be judicious and balanced. Prioritizing calls for help is one way to accomplish this safely. ALS units are sent to the most appropriate calls instead of those that happen to come in first.

Quality assurance means excellence, and it is the job of EMS physicians, administrators, employers, and medical field personnel to pay careful attention to the professional expertise of today's EMD.

Pre-planning and operating procedures that require adherence to dispatch protocols establish the framework of the system. Quality assurance and risk management are essential as EMD evolves into a new level of sophistication. Standards are changing, and so will the world's view of the dispatch process. EMDs who fail to adapt as need for change occurs must be identified. This is done through risk management, by direct supervision, by after-the-fact random sampling by the dispatch run review committee, or through data collection results that indicate poor performance. The EMS system's planning should include mechanisms to handle recalcitrant dispatchers and to screen out job applicants who are unsuited. Quality assurance means excellence, and it is the job of EMS physicians, administrators, employers, and medical field personnel to pay careful attention to the professional expertise of today's EMD.

Predetermined Medically Approved Dispatch Protocols

EMS physicians must understand that acceptable dispatch interrogation procedures must follow predetermined protocols to reproduce the same sequence of questions in relation to a given chief complaint. According to James E. George, MD, JD, in a 1981 issue of the *EMT Legal Bulletin*,

"EMS dispatchers must always avoid the appearance of responding to or categorizing emergency calls in a haphazard or arbitrary manner. A unified procedure will provide an excellent method of safeguarding against arbitrary decision making. Without a unified system, one dispatcher may decide that a crucial situation exists primarily on the level of emotion he detects in the caller's voice, while another may depend on his own gut reaction, without being able to articulate a clear reason for his decision."²³

Fire Versus EMS Dispatching

Because the combination of fire and medical dispatching is very common, a clear understanding of their differences is essential knowledge to students of dispatching in general and medical control physicians in particular. The dispatch role changes during the unfolding of an incident and can be thought of graphically as the variable width of a wedge (Figure 5).

The beginning of fire dispatch is the small point of the wedge and is predicated on the absolute necessity to get suppression units on the road quickly. A fire is assumed to be spreading, and the extent of it can rarely be seen initially. It gets worse each second, and, here, seconds do count. The fire dispatcher's job gets progressively more difficult as the fire spreads and more units are needed, but these facts cannot be extrapolated directly to medical dispatching.

By far, the greatest responsibility of the EMD is upfront, at the beginning of each call. The wedge is,

therefore, reversed in EMS calls. The interrogation process usually is the fulcrum upon which the correct nature of the response rests. Medical priority dispatching has proved to be an effective, safe way to determine the nature of the emergency at the time the call is received, thus eliminating the need for maximal response in many cases.

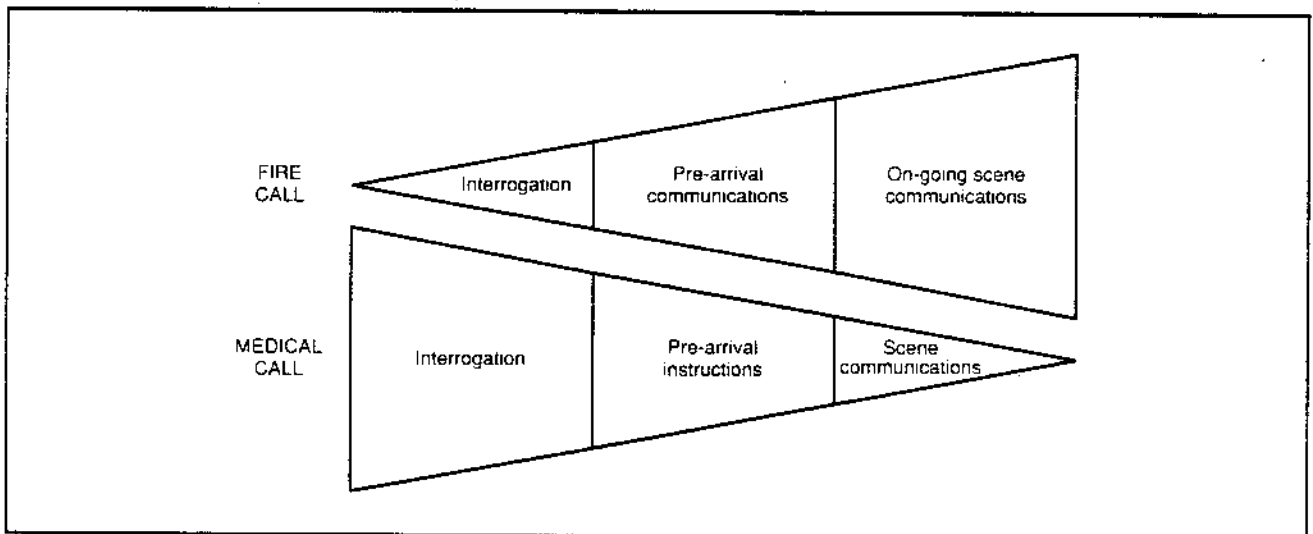
Legal Immunity for the EMD

Approved training and state certification of medical dispatch personnel provide a standard of professional conduct and potential governmental immunity to those who are certified and perform their trained functions "in good faith."

Government immunity in and of itself will not always protect an individual or his or her employer from liability damage recovery. However, in recent EMS court cases, immunity coverage has been applied "at the beginning" to define for jurors what measure of immunity (gross negligence as opposed to routine negligence) should be applied.²⁴ Most legal experts agree that it is much better to have an immunity shield to take to battle rather than enter the fight without any immunity whatsoever.

Some EMDs already have some protection from legal liability. For example, the Utah State EMS Systems Act of 1983 states that certified EMDs are "basic life support personnel who, during training or after certification, . . . who in good faith, provide emergency medical instructions or render emergency care authorized by this chapter shall not be liable for civil damages as a result of any acts or omissions, unless found guilty of gross negligence or willful misconduct." The application of immunity

Figure 5. Fire versus medical call comparison.



to certified EMDs has resulted in widespread training leading to certification throughout Utah, especially in law enforcement controlled centers.

The "Spock Principle"

At times, application of common sense seems impossible in a world of self-protectionism and "what if?" mentality. This fear of one's shadow makes it easier for dispatchers to always maximally respond as an easy answer to the more difficult, but correct, practice of prioritizing calls and sending the appropriate response teams.

The street practitioners act as the advocate for individual patients who are assumed to be "dying until proven otherwise," while the EMD's primary role is the advocate for the well-being of the entire system.

There is confusion over what type of training creates the best EMD "animal." The EMD's role differs in some major ways from that of the EMT or paramedic. The street practitioners act as the advocate for individual patients who are assumed to be "dying until proven otherwise," while the EMD's primary role is the advocate for the well-being of the entire system. As a result, the EMD must constantly balance the resources—"allocate" and "conserve," "hurry" and "wait." This requires a philosophy of training and protocols that is quite different from that of field personnel. The role of the emergency physician in a busy ED is quite similar to that of the EMD because triage of patients and establishing priorities is an everyday activity of both. The EMD's responsibility as interrogator, prioritizer, and prearrival intervenor correlates well with the application of the emergency physician's skills in history and evaluation, categorization of urgency, and ultimate treatment of the patient. It is no wonder that the professional emergency physician usually feels quite at home with the philosophy of emergency medical dispatching and in providing medical control for medical dispatch programs.

The advocacy of system versus patient is the true dilemma continually faced in creating safe but sound dispatch priorities. EMS physicians responsible for medical dispatch programs repeatedly will be

forced to deal with the "Spock Principle." At the end of the movie "Star Trek II," the Starship Enterprise faced destruction from a runaway fusion reactor. Without delay, the logical Mr Spock entered the main reactor room and, while exposing himself to lethal radiation, saved the Enterprise and her crew. When asked by Captain Kirk why he did it, Spock gave the classic reply: "The good of the many outweighs the needs of the few or even the one." Today, many EMS systems lack the money and manpower to respond immediately and with numbers to every medically generated call to "911." The tiering of response via structured prioritization provides that same type of logical answer to the specter of a similar self-destruction in EMS.

Summary

The emergency physician must help design dispatch systems that balance the many factors affecting appropriate medical dispatch of our valuable prehospital resources. The core of emergency medical dispatching is the same as any aspect of medical practice, that is, the provision of appropriate medical interactions at the right time, with the proper attention given by the appropriate types of trained practitioners. For the emergency physician, the responsibility for medical control at dispatch is an important and necessary responsibility.

References

1. Clawson JJ: Dispatch priority training—Strengthening the weak link. *J Emerg Med Serv* 1981;6.
2. Clawson JJ: Priority dispatching after Dallas: Another viewpoint. *J Emerg Med Serv* 1984;9.
3. Eisenburg MS, Carter W, Hallstrom A, et al: Identification of cardiac arrest by emergency dispatchers. *Am J Emerg Med* 1986;4.
4. National Association of EMS Physicians: *Consensus Document on Emergency Medical Dispatching*.
5. Clawson JJ: The red-light-and-siren response. *J Emerg Med Serv* 1981;6.
6. Clawson JJ: The maximal response disease—red lights and siren syndrome. *J Emerg Med Serv* 1987;12.
7. Clawson JJ, Dernoceur KB: *Principles of Emergency Medical Dispatch*. Englewood Cliffs, NJ: Brady/Prentice Hall, 1988.

8. Adams R: Lessons learned from Dallas, *Firehouse* 1984.
9. Clawson JJ: Regulations and standards for emergency medical dispatchers: A model for state or region, *Emerg Med Serv* 1984;13.
10. Dearmin D: California develops guidelines for emergency medical dispatching, *APCO Bull* 1986.
11. Emergency Medical Dispatcher Rules of the Utah Emergency Medical Services System and Standards Act, Title 26, Chapter 8.
12. Clawson JJ: Medical dispatch review: 'Run' review for the EMD, *J Emerg Med Serv* 1986;11.
13. Clawson JJ, Dernocoeur KB: *Principles of Emergency Medical Dispatch*, appendix C, Englewood Cliffs, NJ, Brady/Prentice Hall, 1988, pp 274-279.
14. Clawson JJ: Telephone treatment protocols: Reach out and help someone, *J Emerg Med Serv* 1986;11.
15. Clawson JJ: The hysteria threshold: Gaining control of the emergency caller, *J Emerg Med Serv* 1986;11.
16. Clawson JJ: The psychological components of pre-arrival instructing, in *Emergency Medical Dispatcher Training Program Manual*, Salt Lake City; Medical Priority Consultants, Inc, 1986.
17. Slovis C: A priority dispatch system for emergency medical services, *Ann Emerg Med* 1985;14.
18. *National Standard Curriculum for EMS Dispatchers*, ed 2, US Department of Transportation, 1983.
19. Robinson V: Call-screening targets false emergencies, *Internat Fire Chief* 1980;47.
20. Page J: *EMT's Legal Checklist*, Solana Beach, Calif, *jems* Publishing Co, 1986.
21. Keeton P (ed): *Prosser and Keeton on the Law of Torts*, ed 5, St. Paul, Minn. West Publishing Co, 1984; p 196.
22. Fitch JJ: in *Beyond the Street: A Handbook for EMS Leadership and Management*, Appendix G, 1987; Solana Beach, Calif, *jems* Publishing Co, p 288.
23. George J: EMS triage, *Emerg Med Tech Legal Bull* 1981;5.
24. George J: CPR on Trial, *Emerg Med Tech Legal Bull* 1984;3, p 2-7.

Appendix

National Association of EMS Physicians Consensus Document on Emergency Medical Dispatching (Working Version)

General Statement: The trained Emergency Medical Dispatcher (EMD) is an essential part of today's EMS system. Medical control for the EMD and the dispatch center is also part of the EMS physician's responsibilities. The basic functions of emergency medical dispatching should include pre-determined interrogation questions, pre-arrival telephone instructions, and pre-assigned response levels and modes. The EMD must understand the philosophy and psychology of interrogation and telephone intervention, basic emergency medical priorities and be versed in basic life support. Training should be standardized and EMDs certified by governmental authority.

Rationale for Document: Medical Dispatching has been the last major area in the EMS system to be identified and developed. The "health" of many EMS systems can be gauged by the appropriateness of training, protocol, and medical control of dispatchers. The involvement of EMS physicians in the world of dispatch is relatively new but unquestionably essential. For this purpose our involvement is outlined and the position of NAEMSP stated regarding the significant issues of EMD.

1) **Basic Telecommunication Skills** are a requisite to becoming an EMD. The training and certification of the EMD is then built upon this baseline of knowledge. NAEMSP encourages this training for all public safety dispatchers.

2) Understanding the **Philosophy of Medical Interrogation** and the **Psychology of Providing Pre-Arrival Instructions** are integral parts in the training of EMDs. The ability to interact with anxious, uncooperative, and at times, hysterical callers rests upon the ability of the EMD to anticipate the actions of the caller, control them, and convert the caller into a calmer first responder. This requires training that is not part of EMT or paramedic curricula but is specific to medical dispatch training.

3) **Pre-Arrival Instructions** are a mandatory function of the EMD. In essence the EMD is the "first" first responder and through immediate action can effectively eliminate the deadly "four-minute" plus gap at the beginning of the response. Standard telephone instructions by *trained* EMDs

are safe to give and in many instances a moral necessity. Training and recertification in BLS, as is appropriate to application by medical dispatchers, is necessary to maintain and improve this unique, and at times, life-saving, non-visual skill.

4) Dispatch Prioritization requires careful attention by both the EMD, his/her supervisor, and the physician responsible for medical control. The necessity to prioritize response is evident in the majority of EMS systems today. In order to prioritize calls properly the EMD must be well versed in understanding the medical conditions and incident types that constitute their daily routine. The training in these priorities must be dispatch-specific (not EMT or paramedic training per se) and provided in a straightforward way to the EMD, who in most situations has had little more training than the average layperson. The development of dispatch priorities for an agency or locality must be carefully thought out and ultimately be approved by those responsible for medical control. These priorities must reflect the level of appropriate response including types of personnel (ALS vs. BLS vs. first responder), numbers of vehicles responding, and mode of response (red-lights-and-siren vs. routine). EMDs must always avoid the appearance of responding to or categorizing calls in a haphazard or arbitrary manner. A unified procedure will provide an excellent method of safeguarding against arbitrary decision making. Without a unified system, one dispatcher may decide that a crucial situation exists primarily on the level of emotion he detects in the caller's voice, while another may depend on his own "gut" reaction, without being able to articulate a clear reason for his decision. Where reasonable guidelines are in effect, the emergency medical dispatcher's conduct will be less vulnerable to charges of careless or reckless judgment. Similarly, EMS employers can point to such guidelines as a system of risk management in an area where human error and its dire consequences are clearly foreseeable. The appropriate prioritization of responses and therefore appropriate reduction of responding vehicles and vehicles traveling red-lights-and-siren, will assure that unnecessary emergency medical vehicle accidents do not occur, that emergency crews will

not be inappropriately committed to non-emergent cases, and that the "right care will be sent in the right way to the right patient at the right time."

5) Training of EMDs requires unprecedented cooperation between the diverse disciplines of telecommunications and emergency medicine necessary to provide this unique teaching forum. Instructor requirements should include line dispatch experience as an EMD for the Primary Dispatch Instructor and a minimum of advanced life support training and experience for the Medical Dispatch Instructor who is responsible for teaching the core course material, especially the medical dispatch priorities. All instructors should have attended and passed an EMD course prior to assuming a teaching role.

6) Quality Assurance, Risk Management, and Medical Control are an absolute necessity for the ongoing well-being of any EMS system. Emergency medical dispatching requires such attention and guidance. NAEMSP believes that routine medical review of the activities of EMDs and medical dispatch centers is vital to the health of the EMS system in general. Dispatch review committees are a significant step toward providing this assurance. The EMS physician must be intimately familiar with the medical dispatch process and involved in an ongoing way with its function.

7) Certification and Authorization by Government Entities are the next logical steps to assuring that the EMD is a well-trained EMS professional. An ever increasing number of states, regions, counties, and municipalities certify or require standard training of EMDs. NAEMSP stands behind this effort as not only laudable but a future prerequisite to practice by medical dispatchers. The ASTM process is currently defining a national standard for medical dispatch practice that will be translated into a national standard training curriculum. EMS physicians should actively participate in its development as well as others that insure the professionalism of pre-hospital care in the streets. The emergency medical dispatcher is no exception to this process.

Approved by Membership and the Executive Committee: June 12, 1988.