# Opportunity

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*This could have happened but once,*
*And we missed it, lost it forever.*
Youth and Art, Robert Browning

During the 11th World Congress on Disaster and Emergency Medicine that was organized and conducted so marvelously by our Japanese colleagues, it again was apparent that prehospital emergency medical services are in various stages of development across the globe. Reports were provided from regions where the seeds for emergency medical services only recently have been planted and from some that are highly developed, but differ substantially in either structure, process, or both. Furthermore, it became evident that there is no universally "best" model for the delivery of such services. The types and mechanisms (structure and process) required for the provision of emergency medical services are dependent, to a large extent, upon the culture and resources of the society that they serve. What works well in the United States and the United Kingdom does not seem to have relevance in France or Germany. What is effective in Norway cannot be transferred directly to Japan or much of the African Continent. What works in Milwaukee may not be as effective in Madison. Rural EMS systems cannot serve citizens effectively in metropolitan areas and vice versa.

Moreover, we do not have the data necessary to support the notion that any one type of system is superior. We do not know how to judge the efficiency, effectiveness, efficacy, or benefit:cost relationships of our respective services and systems. We do not even know what to evaluate in order to define these factors.

As discussed in previous editorials,[1,2] and as outlined in the recent review of advanced life support by Bissell, Eslinger, and Zimmerman, most emergency medical care outcome studies have explored only the "success" of resuscitation of victims of cardiopulmonary arrest, as determined by "discharge alive" from the hospital.[3] But, the scope of practice for prehospital emergency medical services, no matter where provided, is much broader than are attempted resuscitations of victims of sudden death. And, despite numerous efforts to define outcome measures, we continue to concentrate on outcome from cardiopulmonary arrest as the primary determinant of the effectiveness of the provision of prehospital emergency medical care. But, knowledge regarding efficiency, effectiveness, efficacy, and benefit:cost relationships is essential not only for the development of new systems for the provision of such care, but also for improvements of current systems.

What is the optimal scope of practice in a given setting for these health care providers? Clearly, the scope of practice will vary by culture and available resources. How can we combine all of the variables involved to assess the impact of the care? And, what scale should we use for such assessments in these various settings?

Perhaps, this is an area for which we need the assistance of our public health and epidemiology colleagues. What *indicators* does the public health sector use to judge the cost-effectiveness, cost-efficiency, and cost-benefit of its effects? How are the priorities in the public health sector defined?

Indeed, as defined in the Executive Summary for the *Health Disaster Management: Guidelines for Evaluation and Research in the Utstein Style* in this issue of PDM,[4] it is essential that indicators for effectiveness, efficiency, efficacy, benefit, and cost be defined for given structures, process measures, outcome, adequacy of services provided, and costs be defined for specific problems. An indicator is a person or a thing that indicates, especially change or performance.[5] Indicators must be identified before measures that can be used to evaluate systems can be derived.

Unfortunately, the greatest concentration of the indicators and measures defined thus far, are highly dependent upon quantitative data collection and analyses using inferential statistics. Given our current state of knowledge, most of the indicators needed will be qualitative. And, we still are not well-prepared to use such data collection techniques. Hypotheses are derived from good qualitative research. Using the methods outlined in the *Guidelines*, careful analysis of the deliberations on Hurricane Georges and Mitch will allow identification of many of the indicators useful in Disaster Medicine. Similarly, careful analysis of what is known about emergency medical services can yield many indicators and measures of effectiveness for EMS. Perhaps, it is time for a consensus conference on this subject that involves participants from all levels of service from all over the globe, much as done by Bissell *et al* in Washington in 1989.[6]

If we adopt some of the methodologies used by our public health colleagues, we will need to concentrate on very few problems. Initial work should be confined to areas in which we believe prehospital emergency medical services make a difference. For example, we believe we make a difference in the treatment of patients with: 1) chest pain; 2) shortness of breath/difficulty breathing; 3) altered level of consciousness; and 4) life-threatening injuries. Can we analyze our effectiveness, efficiency, efficacy, and



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costs for the recognition, treatment, and possible transport of such patient populations?

During the May Congress of the International Association of Fire Fighters in San Francisco,[7] the need for acquisition of data to define what we do, how we do it, and the outcome and cost became even more apparent. While many suggestions were brought forward, the need for concentrating on a few areas in which we know we make a difference was not stressed. We cannot study everything at once. We need specific indicators for a few problems. It is inappropriate to search for universal indicators.

Identification of the needs of the population served is an essential element for the design of any EMS system. Appropriate indicators cannot be defined without needs assessment.

Currently, there are many models that either are operational or under development. This status presents a unique opportunity, as using specific indicators, it is possible to examine the different structures and processes in use or being conceived. By identifying and comparing the differences between these systems, important indicators should become apparent. When viewed in terms of the cultural differences and disparities between available resources and hence, expectations, important information should result, that when analyzed and applied in the context of the area and population served, could help to optimize the use of resources. We carefully must examine the information already available using the example set by Bissell[3] in the analysis of what is known about ALS.

This unique opportunity is here now. The opportunity may not persist for more than a few years. Developing countries are requesting assistance in the development of their respective emergency medical services. What can we advise them? Certainly, it would be fallacious to use any currently existing system as the model for their development. We must enlist the help of our colleagues and begin to examine and compare each currently operational model in terms of its effectiveness, efficiency, efficacy, and costs in order to optimize the structure, process, outcomes, adequacy of the services, and costs. We need a few good indicators and a few good researchers. We need to coordinate our systems with the needs of the population being served. The opportunities are staring us in our face. Grasp them!

*Quia qui non vult cum potest, non utique poterit cum volet.*
*(He who will not when he may, may not when he will.)*
*Policraticus,* John of Salisbury

## References


1. Birnbaum ML:Changing Times. *Prehospital and Disaster Medicine* 1992;7:11–12.
2. Birnbaum ML: Breaking the Paradigm. *Prehospital and Disaster Medicine* 1996;11:160–161.
3. Bissel RA, Eslinger DG, Zimmerman L: Advanced life support: A review of the literature. *Prehospital and Disaster Medicine* 1998;13:69–79.
4. Task Force for Quality Management of Medical Responses to Disasters, Sundness KO (Chair): Health disaster management: Guidelines for evaluation and research in the Utstein style, Executive Summary. *Prehospital and Disaster Medicine* 1999:14:xxx–yyy.
5. Fowler HW, Fowler FG: *The Concise Oxford Dictionary of Current English.* Thompson D (ed), Clarendon Press: Oxford 1995, p691.
6. Bissell RA, *et al*: Abstracts of the Contributed papers to the International Conference on Emergency Health Care Development. Prehospital and Disaster Medicine 1989;197–207.
7. Moore L, Pratt F: Fire-based EMS systems: The new guidebook. *Meeting the challenges of change.* International Association of Fire Fighters. San Francisco 1999 pg 71–75.