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Standard Guide for Providing System Evaluation for Emergency Medical Services[1]

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ϵ^1 NOTE—Paragraph 10.1 was editorially revised in June 2004.

1. Scope

1.1 This guide covers providing system evaluation for emergency medical services (**1**),[2] including authority, responsibility, objectives, approaches, data, applications, and implementation.

NOTE 1—This guide does not address evaluation for individual prehospital, hospital, or posthospital providers. (Related guides will be developed.)

2. Referenced Documents

2.1 *ASTM Standards:* [3]

F 1149 Practice for the Qualifications, Responsibilities, and Authority of Individuals and Institutions Providing Medical Direction of Emergency Medical Services

F 1177 Terminology Relating to Emergency Medical Services

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *system evaluation*—a review of the performance of emergency medical services systems by qualified, experienced individuals.

3.1.2 *minimum data set*—the minimum number of data elements required for system evaluation.

3.2 *Definitions*—See Terminology F 1177.

4. Significance of Use

4.1 This guide establishes system evaluation as an essential component of emergency medical services systems.

4.2 This guide covers the methods and materials that are necessary to evaluate quality for emergency medical services systems at both the system operations and patient care levels.

5. Authority

5.1 The authority for providing system evaluation for emergency medical services rests with the entity that is utlimately legally responsible for system operation and evaluation.

6. Responsibility

6.1 The responsibility for providing system evaluation for emergency medical services systems rests with the directors of the entities specified in 5.1.

6.2 The responsibility for providing adequate financial resources and appropriate medical confidentiality for system evaluation for emergency medical services rests with the entities specified in 5.1.

6.3 Independent evaluation of individual parts of the emergency medical services system by prehospital, hospital, or posthospital providers must be integrated with and must not be substituted for system evaluation.

7. Objectives

7.1 System evaluation of quality for emergency medical services entails five objectives (**2**) including:

7.1.1 Setting priorities,

7.1.2 Assessing outcome,

7.1.3 Identifying problems,

7.1.4 Effecting changes, and

7.1.5 Reassessing outcome.

8. Approaches

8.1 System evaluation of quality entails approaches of structure, process, and outcome, singly or combined (**3**).

8.2 The approaches specified in 8.1 should be applied at both the system operations and patient care levels.

8.2.1 Applied at the system operations level (Table 1) these approaches provide a means of identifying issues that require further attention, including:

8.2.1.1 System operation, and

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[2] The boldface numbers in parentheses refer to the references at the end of this guide.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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TABLE 1 Approaches and Methods for System Evaluation for Emergency Medical Services

Evaluation Approaches	Evaluation Methods
Structure (standards)	ASTM guides (to be developed)
Process (care)	Medical direction (Guide F 1149) **(1)**
Outcome (results)	Intermediate: preventable morbidity **(4)**
	Final: preventable morbidity
	preventable mortality**(5)**
Combined	Preventable morbidity
	Preventable mortality
	Tracers **(6)**
	Registries **(7)**
	Generic Screens **(8)**

8.2.1.2 Individual patients.

8.2.2 Applied at the patient care level these approaches provide a means of evaluating care for patients that are specified in 8.2.1.2.

8.3 Audits performed using the approaches specified in 8.1 should examine two aspects of care, including:

8.3.1 Compliance with system standards, and

8.3.2 Appropriateness of system standards.

9. Data

9.1 Systemwide uniform recordkeeping constitutes an essential element of medical evaluation of emergency medical services systems.

9.2 Emergency medical services system data sources subject to uniform recordkeeping include:

9.2.1 Prehospital care: dispatches, first responders, prehospital providers, base stations;

9.2.2 Facility care: nonhospital-based emergency facilities, hospitals;

9.2.3 Posthospital care: rehabilitation facilities, home care programs; and

9.2.4 Government agencies: medical examiners.

9.3 Each source specified in 9.2 must collect and report the data contained in the minimum data set as determined by the entity specified in 5.1.

9.3.1 Data comprise three types, including:

9.3.1.1 Patient demographic data such as patient origin, etiologic factors, condition severity, and resource utilization;

9.3.1.2 System operation data such as elapsed times, patient volumes, and protocol compliance; and

9.3.1.3 Patient care data such as procedures, diagnoses, and outcomes.

10. Applications

10.1 Patients should be considered for evaluation by emergency medical services systems when classified into the categories identified in Table 2.

10.2 Emergency medical services systems incorporating subsystems, such as those for burn, behavioral, cardiac, pediatric, perinatal, toxicologic, or traumatic emergencies, may require categories in addition to those specified in Table 2. When required, such categories should be identified in their respective subsystem standards.

11. Implementation

11.1 Implementation of system evaluation for emergency medical services entails eight steps, including:

11.1.1 Defining existing authority, responsibility, standards, and resources,

11.1.2 Establishing goals and objectives,

11.1.3 Selecting an approach and method,

11.1.4 Assembling data,

11.1.5 Analyzing results,

11.1.6 Modifying standards,

11.1.7 Periodically disseminating findings, and

11.1.8 Continually reevaluating the system.

12. Keywords

12.1 emergency medical service; emergency medical services system; system evaluation

TABLE 2 Evaluation Criteria

High-Yield **(8)**	
Deaths	
High-Risk	
Critical care admissions	
Morbidity	
Instability—Symptoms:	severe pain, dyspnea, etc.
Signs:	severe injury, tachypnea, etc.
Procedures:	thoracostomy, air transport, etc.
Diagnoses:	shock, respiratory failure, etc.
Regionalized Care	
Prospective—prehospital or emergency department triage	
Transfers—interfacility	
Retrospective—discharges, deaths	
Administrative Review	
Complaint—patient, provider or third-party	
Prehospital Protocol Deviation—exceeding standard of care	
Patient Refusing Prehospital Care—against medical advice	
Outliers	
Medical—mortality, morbidity, timeliness, etc.	
Administrative—diagnostic related groups, cost, etc.	
Randomized	

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(**1**) Cayten, C. G., Evans, W. J.,“ EMS Systems Evaluation,” Boyd, D. R., Edlich, R. F., Micik, S., eds, *Systems Approach to Emergency Medical Care*, Norwalk, CT, Appleton-Century-Crofts, 1983, Chapter 8.

(**2**) Williamson, J. W., Aronovitch, S., Simonson, L., et al, “Health Accounting: An Outcome-Based System of Quality Assurance: Illustrative Application to Hypertension,” *Bulletin of the New York Academy of Medicine*, 1975, pp. 727–738.

(**3**) Donabedian, A., “Evaluating the Quality of Medical Care,” *Milbank Memorial Fund Quarterly*, 1966, Vol 44, pp. 166–206.

(**4**) Pozen, M., et al, “Confirmation Parameters for Assessing Prehospital Care,” final report for the National Center for Health Services Research, Hyattsville, MD, 1980.

(**5**) Rutstein, D. D., Berenberg, W., Chalmers, T. L., et al, “Measuring the Quality of Medical Care: A Clinical Method,” *New England Journal of Medicine*, 1976, Vol 294, pp. 582–584.

(**6**) Kessner, D. M., Kalk, C. E., Singer, J., “Assessing Health Quality—The Case for Tracers,” *New England Journal of Medicine*, 1973, Vol 288, pp. 189–194.

(**7**) Brooke, E. M., *The Current and Future Use of Registers in Health Information Systems*, Geneva, Switzerland, World Health Organization, 1974.

(**8**) Shortell, S. M., Richardson, W. C., *Health Program Evaluation*, St. Louis, MO, 1978.

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