EMS Management Journal

A Journal of the National EMS Management Association, National Association of State EMS Directors and the National Association of EMS Educators

April-June, 2004 Volume 1, Number 2

A publication of HealthAnalytics LLC

EMS Management Journal

A HealthAnalytics LLC publication produced in collaboration with the
National EMS Management Association, the **National Association of State EMS Directors** and the
National Association of EMS Educators

The *EMS Management Journal* (ISSN 1547-8459) is published quarterly in electronic format by HealthAnalytics, LLC from its offices at PO Box 2128, Lakeland, FL 33806-2128. Direct all communications to the *EMSMJ* Editorial Office, PO Box 2128, Lakeland, FL, 33806; mic.gunderson@healthanalytics.net; 978-223-1443 x201.

The main *EMSMJ* website is located at www.emsmj.com.

EMS Management Journal

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External Accountability

Mic Gunderson
Editor

We, as EMS provider organizations and systems, are entrusted with an awesome responsibility to care for the ill and injured in our community. Through taxes, user fees, insurance payments, donations, grants or other means, we are provided with the financial resources to carry out our responsibilities. Unfortunately, the general public and their elected officials do not have a good way to appropriately assess our performance and thereby hold us accountable for using those resources wisely to provide care that is safe, timely, beneficial, patient-centered, equitable and efficient. When you get right down to it, neither do we as EMS administrators, medical directors, managers, or clinicians.

The hospital community has been struggling with these same kinds of issues. The Joint Commission on the Accreditation of Healthcare Organizations (JCAHO; www.jcaho.org), the Centers for Medicare & Medicaid Services (CMS; www.cms.hhs.gov) and the National Quality Forum (NQF; www.qualityforum.org) have been working on projects to provide the sort of external accountability that the general public, elected officials and other stakeholders need and deserve. These projects include the JCAHO Oryx Initiative (www.jcaho.org/pms/index.htm) and the CMS National Voluntary Hospital Reporting Initiative (NVHRI) (www.cms.hhs.gov/quality/hospital/default.asp).

The measures used by the NVHRI are a subset of common hospital performance measures developed and aligned by CMS and JCAHO and endorsed by the NQF. Their website states, "Scientific evidence indicates that they represent the standard of care for the treatment of some of the most common and costly conditions resulting in hospitalization. Hospitals strive continuously to give 100% of their patients the recommended care, against which their rates should be compared. To understand how the nation's hospitals are doing, the data displays the rates achieved by the top 10% and top 50% of hospitals who have volunteered to participate and have submitted data to the QIO Data Warehouse. CMS plans to create a more "user friendly" version of this website for consumers and release it on www.medicare.gov in early 2005."

The EMS community is in the early stages of some activities that could potentially lead to similar programs.

The EMS Performance Measures Project (www.measureems.org) "seeks to create a 'Guide to EMS Performance Measures' based on EMS community consensus. The Guide will contain performance measurement questions that the EMS community wants to be able to routinely answer on a local, state, and national level. These questions will be defined using data elements from the new "NHTSA Uniform Prehospital Dataset, Version 2.0 (www.nemsis.org)" so that these questions and their results may be compared with validity across EMS systems." The EMS Performance Measures Project is coordinated by the National Association of State EMS Directors (www.nasemsd.org) in partnership with the National Association of EMS Physicians (www.naemsp.org), and supported by the National Highway Traffic Safety Administration (www.nhtsa.dot.gov/people/injury/ems) and the Health Resources and Services Administration (www.hrsa.gov).

The International Association of Fire Fighters (www.iaff.org) and the International Association of Fire Chiefs (www.iafc.org) have developed a performance measures program for EMS systems in the United States and Canada (www.iaff.org/secure/content/ems/performance.htm). It

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Citation: Gunderson MR: External Accoutability for EMS Performance. 2004 Apr-Jun *EMS Mgmnt J 1(2):5-6.*

Online Access: http://www.emsmj.com/v1n2/editorial/default.htm

was created to provide local and regional governments with an "accurate and unbiased tool to assess the quality of the EMS systems in their communities." "The measures can also be a mechanism for local fire chiefs to report tangible information to municipal budget officials to justify what the fire department does with its budget dollars. Also, the measures will also allow chiefs to communicate knowledge about the system, not just numbers, in annual reports."

The Open Source EMS Initiative (www.mhf.net/opensource) has a performance indicator group. In their indicator development efforts, they are considering how performance indicators could be utilized at various levels of the EMS industry to monitor and improve performance. Senior EMS system managers may use the system-level indicators to monitor the overall status of their system and drill down to process-specific indicators to troubleshoot problems. Medical directors may use the indicators to monitor the quality of care. Regulatory agencies may use the performance indicators to define performance standards and monitor compliance to those standards. Software vendors may use the performance indicators to develop standardized report generators. Researchers may use the performance indicators as dependent variables which they try to improve through use of new treatments and techniques.

I would encourage the people involved in these efforts within the EMS community to carefully study the processes and examples of how JCAHO, CMS and NQF have developed their measures and made the results available to the general public and other stakeholders. If you are an EMS administrator, medical director, manager or clinician, I would urge you to get involved in these efforts within the EMS community. They could have a profound impact on how your work as an individual, provider organization and system are ultimately judged and held externally accountable. The people who put their lives in our hands and the people who fund our efforts deserve to know how well and efficiently we are meeting our responsibilities.

DESCRIPTIVE STUDY

Obstacles to Measuring Emergency Medical Services Performance

Bruce J. Moeller, Ph.D.

ABSTRACT

OBJECTIVES: Problems exist in the reporting of emergency medical services (EMS) performance. This is highlighted by differing results, found in numerous studies, examining survival from cardiac arrest. In response to some of these problems, the Utstein Template was endorsed by major medical groups in 1991 to permit apples-to-apples comparisons among EMS systems. Yet, a decade later EMS systems have failed to embrace a standardized reporting format, including the Utstein Template. This study sought to identify obstacles that inhibit the measuring of EMS performance.
METHODS: This study examined the self-reporting practices of 120 paramedic providers within the State of Florida. In this research, problems with definitional ambiguity and conscious errors are theorized to be obstacles in the measuring of EMS performance.
RESULTS: Using 'response time' as a key benchmark measure, the research found that paramedic agencies used nine (9) different definitions of response time. Further, the definitions used by agencies were significantly more favorable than those attributed to the general public and politicians - a finding suggestive of conscious errors.
CONCLUSIONS: Definitional ambiguity is a continuing obstacle in the ability to make inter-agency comparisons with performance data. The findings are also suggestive of conscious errors, an attempt to make agency performance look more favorable than may be deserved. Such organizational behavior may be a major obstacle to measuring EMS performance.
Keywords: performance, quality, measurement, assessment, emergency medical services
Citation: Moeller B: Obstacles to Measuring EMS Performance. 2004 *EMS Mgmnt J* 1(2):-8-15

INTRODUCTION

What are the obstacles to measuring performance in emergency medical services (EMS) systems? To explore that question, this research examined a widely used and simple performance measure - paramedic response time - that is considered highly valid and known to influence mortality and morbidity. However, studies on the reliability of response time as a performance measure are absent. Reliability can be affected by several factors. The first is definitional ambiguity, the use of varying definitions for important terms in performance measurement. The second factor in assessing reliability involves what has been described as conscious errors - problems in the collecting and reporting of data (Juran [1992]). Both of these challenges affect the ability to benchmark performance among organizations. Paramedic response time has been significantly researched and yet various studies provide divergent findings, in part because of problems with definitional ambiguity (Campbell [1997], Campbell [1991], Becker [1991], Braun [1993], Jurkovich [1987], Spaite [1993], Campbell [1993], Braun [1990], Hedges [1993], Gennis [1994], Campbell [1994], Killien [1996]). The ability to measure time to an accuracy of milliseconds often leads observers to believe that measurement of response time should be a simple exercise. This research identified some of the difficulties in conducting even relatively 'simple' performance measurement and the effects those difficulties have on making comparisons between organizations.

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Manuscript Received: 22 February 2004; *Revisions Received:* 7 April 2004; *Accepted*: 16 April 2004
Online Access: http://www.healthanalytics.net/emsmj/V1N2/Obstacles/default.htm

Definitional Ambiguity

In 1991, Cummins, et al. developed a template approach for reporting data from out-of-hospital cardiac arrest because of well-documented problems with standard data definitions (Cummins [1991a], Eisenberg [1980], Eisenberg [1990]). "The absence of uniform reporting has led to a tower of Babel in articles about cardiac arrest. Researchers have documented differences in survival rates in many different cities, differences that remain unexplained because of inconsistent and obscure terminology (Cummins [1991b])." To combat this data definition and data collection problem, researchers developed the Utstein template. The Utstein template is an effort designed to improve reliability in performance measurement with a standardized approach to data collection. As such, the template attempts to address the inconsistent use of various definitions, including response time, used in many of the earlier cardiac arrest studies. Cummins, et al. refer to response time as one of the most frequently, yet inconsistently, used terms in resuscitation. The call-response interval is the period from receipt of call by the emergency response dispatchers to the moment the emergency response vehicle stops moving. Note that this interval does not begin when the emergency response vehicle begins to move. The call-response interval includes the time required to process the call, dispatch emergency personnel, move personnel from their quarters to the emergency vehicle, start the vehicle in motion, and travel to the scene (Cummins [1991b]).

Even though attempts to clarify key performance indicators occurred beginning in 1991, there are still numerous agencies approaching the definition of response time from different perspectives. Data reported by the International City/County Management Association (ICMA) Performance Measurement Consortium uses a response time definition different than that advocated by the Utstein Template. The Consortium uses a performance measurement of response time that begins upon the dispatching of an appropriate unit (International City/County Management Association [1991]). The National Fire Incident Reporting System does not define response time as an interval, but researchers utilize data derived from the "alarm time" and "arrival time" data components. However, both data elements are interpreted differently by various agencies. The definition used by NFIRS simply states that alarm time as the "time of day that the alarm was received by the fire department (National Fire Protection Association [1976])." If the police department dispatches the fire department, the definition is vague - does the definition mean receipt of call in the police department's 9-1-1 center, or when the alarm is received by the fire department itself (i.e. dispatch time)? The Commission on Fire Accreditation International provides a clear definition of response time, one that was intentionally derived from the Utstein Template. It calculates response time from receipt of alarm in the dispatch center until arrival of emergency units on the scene of the incident (Commission on Fire Accreditation International, [1997]). The federal government has made numerous, and conflicting, attempts to clearly identify key terms. The US Department of Health's recommendation for paramedic response time is nine (9) minutes or less in 90% of calls from the time of dispatch, which is not consistent with the Utstein definition (US Department of Health and Human Services [1993]).

However, even though Utstein was published in 1991, a study of EMS regulatory agencies in California counties found that few use standards that comply with state standards which mirror Utstein (Narad [1999]). What can explain low compliance with state standards? Research that has examined reporting practices in other situations may provide some context.

Conscious Errors

Juran characterized one of the more significant problems in performance measurement as conscious errors. Such conscious errors result in "a deliberate distortion of the sensed data, for a variety of (usually) self-serving human purposes: reduction of workload, avoidance of unpleasant tasks, self-aggrandizement, fear of being punished as the bearer of bad news (Juran [1992])." At present, there is no research examining the impact of different methodologies and definitions on the reporting of paramedic response times. There is no understanding if variance in reported

response times is caused by differences in the definition used, or by various forms of conscious error. Therefore, this research attempts to provide context on the problems of reporting response times identified elsewhere in the literature.

METHODS

POPULATION AND SAMPLE

A survey instrument was mailed to all 211 paramedic agencies within the State of Florida. Fire-rescue agencies provide the majority of paramedic services within the state, a pattern reflective of urban and suburban areas across the nation. Within Florida, approximately 60% of paramedic providers are fire-rescue agencies. A total of 120 useable responses (56.9%) were received from a single mailing of the survey. Of these responses, approximately 72% were from fire-rescue agencies, while third service agencies represented 28% of all respondents.

INSTRUMENTATION

The survey's first three questions examined how response time was calculated, or defined, from three different perspectives. It has been suggested that the use of vignettes may be useful in eliciting judgments from survey respondents (Converse [1986]). For this study three such vignettes, modified by the variable of whose definition of response time the respondent was providing - the agency's, that attributed to a typical parent as perceived by the respondent, or that attributed to an elected official as perceived by the respondent, were used. Each vignette contained various time points, and the respondent was asked to define the point at which the clock started in calculating response time and when the clock stops. This was done for each of the three perspectives or vignettes. The responses from these three questions, regarding response time definitions, were coded to provide comparability across the three scenarios. The coding utilized is shown in Table 1. As can be seen, some scenarios did not have a comparable time point as other

CODE	AGENCY'S PERCEPTION	PARENT'S PERCEPTION	ELECTED OFFICIAL'S PERCEPTION
1	Man collapses.	Soccer player is injured.	
2		Parent dials 9-1-1	When the 9-1-1 call is made
3	Call received by 9-1-1 operator.	Call answered by 9-1-1 operator.	When the 9-1-1 call is answered
4	9-1-1 operator completes obtaining complaint type and location information – incident created in CAD system.	9-1-1 operator obtains information, advises paramedics are enroute, and parent hangs-up telephone.	When the 9-1-1 operator finishes obtaining information and completes the CAD intake form
5	Dispatcher alerts units and they are dispatched to the emergency.	Emergency unit is dispatched to the emergency.	When the dispatcher alerts the emergency units
6	Emergency units advise dispatcher they are enroute.	Emergency unit leaves the station.	When the emergency units actually leave the station
7		Parent hears siren of approaching ambulance.	
8	Emergency units advise dispatcher they are arrival at incident location.	Emergency unit has arrived at the soccer field.	When the emergency unit arrives at the emergency location
9	Emergency units advise they have made patient contact.	Paramedics make contact with the patient.	When the emergency personnel make patient contact or begin emergency operations
10	Other:	Other:	Other:

Table 1 – Mail Survey Codes for Response Time Definitions

scenarios. For example, the parent's perception was the only vignette that made use of the "siren approaching" time point. Differences between the responses to the three vignettes were then analyzed with crosstabulation statistics examined through use of Chi-square analysis.

The survey also examined the use of medical quality assurance in the agency, knowledge of the Utstein Template and the Utstein definition of response time. The Utstein Template defines the call-response interval (response time) as “the period from receipt of call by the emergency response dispatchers to the moment the emergency response vehicle stops moving (Cummins [1991b])”. Questions were asked if the agency conducts medical quality assurance activities, if respondents had heard of the Utstein Template, were they aware of the Utstein definition of response time and did the agency use the Utstein definition in calculating their response time data.

HYPOTHESES

The research questions examined how response time was defined within the EMS agency and compared that agency definition to that which the respondent attributed to a typical parent or elected official. As a practical matter, the definition of response time can be determined by knowing when the response time clock starts and when the response time clock stops. Since these two elements comprise endpoints, they determine the definition of response time being used. To examine the definition being applied, two sets of hypotheses were used which take advantage of the ordinal nature of the data. Each set of hypotheses compared statistically when the response time clock started from various perspectives and when the response time clock stopped from the various perspectives.

The first hypotheses examined if the agency definition of response time was greater than that attributed to the typical parent perception. For the agency definition to have been greater, one would expect the agency to start their response time clock earlier in the process and / or stop their clock later in the process. Therefore, the first sets of hypotheses asked if the agency started the response time clock earlier than the time attributed to a typical parent and / or if the agency stopped the response time clock later than the time attributed to a typical parent. The second set of hypotheses examined the same concept outlined above, but compared the agency definition of response time with that attributed to an elected official.

RESULTS

When examining how agencies define response time, we look at when they start and stop the response time clock. Using responses from the vignettes that were designed to determine various definitions of response time, the data show that agencies start the response time clock later in the process than the perception those same agencies attribute to politicians. Further, both the agency definition and that attributed to politicians start the clock later than the perspective attributed to parents. The data in Table 2 summarizes the percentage of survey responses, from each of the three perspectives, that defines when the response time clock starts. This shows that almost half of the agencies responding indicated they start the clock when the 9-1-1 call was answered. In the parent perspective, as defined by the agency, over 75% of respondents believe the clock started earlier in the process, and almost half of respondents (47%) attributed an earlier start time to

	AGENCY	PARENT	POLITICIAN
Injury/Illness Occurs	1.7%	20.2%	0.0%
Dial 9-1-1	0.9%	57.1%	46.6%
9-1-1 Answered	47.9%	16.0%	31.9%
9-1-1 Call Completed	14.5%	6.7%	2.6%
Emergency Unit Dispatched	33.3%	0.0%	12.9%
Emergency Unit En-Route	1.7%	0.0%	6.0%
Total	100.00%	100.00%	100.00%

Table 2 – Perspectives of When Response Time Starts

politicians. Of agencies responding to the survey, one-third start the response time clock when the emergency unit is dispatched - however from the perspective attributed to the parent, the clock always starts earlier in the response time sequence. From the perspective that the agency attributed to a politician, only 12.9% of respondents would allow the clock to start as late as the dispatch of emergency units.

A similar set of questions examined when the clock stops in the response time calculation. Again, when examining the three perspectives, a review of Table 3 indicates that respondents believed that parents and politicians stop the clock later in the response scenario than do the agencies themselves. As shown, responses to this question fell into one of only two categories - the clock stopped when the emergency unit arrived at the incident location, or the clock stopped when emergency responders made patient contact. For 85.1% of respondents, the agency stopped the response time clock when they arrived at the incident location - this compares to 29.3% for the parent perspective. Respondents attributed patient contact time as the point at which 70.7% of parents would stop the response time clock. The politician's perspective favored stopping the response time clock when the unit arrived at the location.

	AGENCY	PARENT	POLITICIAN
Arrival At Location	85.1%	29.3%	66.1%
Patient Contact	14.9%	70.7%	33.9%

Table 3 – Perspectives of When Response Time Stops

Because of the ordinal nature of the data, a crosstabulation table was constructed and a Chi-square test of independence was calculated. These results are shown in Table 4. The data clearly demonstrated that the agency definition of response time resulted in a significant and more favorable impression of response time than that which would be attributed to a typical parent or to a politician.

	AGENCY VS. TYPICAL PARENT	AGENCY VS. POLITICIAN
When Response Time Starts	146.16 (p = 0.0000)	80.20 (p = 0.0000)
When Response Time Stops	72.96 (p = 0.0000)	11.19 (p = 0.0008)

Table 4: Chi-Square Values for Response Time Perceptions

An additional set of questions assessed the respondent's knowledge and / or agency use of quality assurance practices. Specifically, the questions asked if the agency conducted quality assurance activities, whether the respondent had heard of the Utstein template, whether the respondent was aware of the Utstein response time definition, and whether the agency followed Utstein in their definition of response time. The responses to these questions are contained in Table 5.

Not surprisingly, over 99% of agencies reported conducting some type of quality assurance activity. However, the data showed a decreasing number of respondents who acknowledged hearing of the Utstein template (34.2%) or even knowing the Utstein response time definition (26.8%). Only 10.8% of respondents claimed they used the Utstein response time definition, 71.7% claimed they did not, and 17.5% were unsure.

	YES	NO	DON'T KNOW	TOTAL
Does Agency Conduct Quality Assurance Activities?	99.2%	0.0%	0.8%	100.0%
Have You Heard Of Utstein?	34.2%	63.3%	2.5%	100.0%
Are You Aware Of Utstein Response Time Definition?	26.8%	71.4%	1.8%	100.0%
Do You Follow Utstein Definition?	10.8%	71.7%	17.5%	100.0%

Table 5: Knowledge and Use of Utstein Definition

The Utstein definition would be followed if the respondent had indicated they started the response time clock upon answering the 9-1-1 call and stopped the response time clock upon arrival at the incident location. Of all respondents, this practice of starting the clock and stopping the clock as defined by Utstein was found for 42 respondents (35%). Therefore, a number of respondents who answered they did not use, or were unsure if they followed the Utstein template, unknowingly made use of that definition.

DISCUSSION

One of the critical issues in measuring performance, and the benchmarking of performance among agencies, is the extent to which the definition of a given measure is clear, straightforward and generally agreed upon - if not, it suffers from definitional ambiguity.

Definitional Ambiguity as an Obstacle

Definitional ambiguity was found to be a continuing problem in large part because of a failure by paramedic agencies to reach a generally agreed upon definition of response time. Agencies used six different points at which they might start the response time clock and two different points at which it could stop. In all, nine (9) different definitions of response time were identified.

When examining the different response time definitions used, two definitions were found to be most common. These definitions used a start time of either 9-1-1 answer or dispatch of emergency units, and both ended with arrival on-scene. However, a number of hybrid definitions were found as well. There was no discernable pattern to explain why certain agencies used certain definitions, but several possible explanations could be considered.

Some agencies seemed to use the data that was readily available. For example, for one respondent where time of dispatch was used to start the response time clock, the system was not designed to capture 9-1-1 answer times. Therefore, the definition of response time appeared related to what data was on-hand to perform the calculation. A second potential explanation appears related to the concept of conscious error. In a follow-up conversation with a respondent, the first time stamp captured by the CAD system was time of 9-1-1 answer, yet the agency made a conscious decision to use a more favorable definition - dispatch time until arrival on location. Managers stated that they believed it provided a more comparable assessment against other agencies in the area, but offered no specific information to indicate that such a definition was commonplace in their area. It was unclear, even to them, what definition other agencies in the area applied in calculating response time.

The problem of defining a relatively simple performance measure - response time - continues to plague paramedic providers a decade after the problem was first identified (Cummins [1991b]). While the manner in which response time was defined varied from agency to agency, there appeared to be little desire or effort to address this problem. The Utstein template refers to response time as starting the clock at 9-1-1 answer, and stopping the clock at arrival on location. Numerous regulatory and standards-making organizations have also provided definitions of response time, some of which agree and some of which conflict, with the Utstein definition. For purposes of benchmarking, it was less important which definition was used and more important that a consistent definition be applied by all paramedic agencies.

Conscious Errors as an Obstacle

A second dimension of definitional ambiguity existed, and it was caused by the failure of agencies to use a definition of response time that they believed would be used by parents and elected officials. It has been argued that politicians, and therefore public managers, are accountable to the public (Page [1993], Wholey [1993]) Yet, when public managers define key terms of performance in a manner more favorable than they believe others would define it, this raises ethical questions.

Both elected officials and citizens are intended recipients of performance measurement information. For accountability to exist, measures of performance must not only be used internally, but must also be shared outside the organization. In the design of performance measurement systems, it is surprising that so little attention has been given to obtaining the input of intended recipients as to what to measure and how to define key terms. Often these tasks are left to the very managers whose systems are being evaluated (Poister [1999]). Without such external input, it was not surprising there was an inability to reach agreement on the definitions of key performance terms. However, even in the absence of input into the design of the performance measurement system, managers must consider who will be the recipients of performance measurement information. In this study, it appears no such effort was made. It was particularly troubling to identify a pattern where paramedic agencies used a definition of response time that they believed was different than that attributed to intended recipients. A related issue is also troubling. When reporting response time information, agencies rarely if ever, identified how that term was defined and how their response time was calculated. Some agencies have argued they only report those components of response time over which the agency exerts direct control. Therefore, agencies may decide not to include the time from call receipt until dispatch. Such explanations neither absolve the agency from both monitoring and seeking to improve call processing times - regardless of who controls the 9-1-1 center - nor from clearly noting this limitation when reporting their response time. It has been noted that press releases, government information distributed to citizens and government web sites often report fire-rescue or paramedic response times, yet the definition used by the agency was rarely stated.

Managers of paramedic systems use significantly different definitions of response time than that which they attribute to the public. Their definition also differs significantly from the definition they attribute to their own elected officials. Consequently, paramedic agencies may not be communicating their performance clearly to key stakeholders. Agencies should assure that in their reporting and benchmarking activities that response time is clearly defined and the context for a particular definition is explained.

CONCLUSION

This research has shown that paramedic agencies continue to use various definitions of response time. More importantly, the response time definition employed by agencies provided a more favorable image of agency performance than may otherwise be deserved. There was no effort being made by agencies to establish a shared meaning with others or to communicate their definition of this key performance measure. These obstacles, therefore, limit the ability of providers to benchmark their performance against other systems and to engage in meaningful outcomes based research.

Obstacles to measuring performance in EMS systems were hypothesized to include both definitional ambiguity and conscious errors. The data clearly demonstrated that definitional ambiguity remains an obstacle for benchmarking among EMS systems. The problem with conscious errors, while not directly measured in this study, is suggested both from a theoretical perspective and the practice of agencies reporting their response times in a manner more favorable than may otherwise be justified. This obstacle with conscious errors can be minimized if agency directors assure that clear definitions are used for key terms, or that appropriate justifications are provided should a more favorable definition is used.

EMS managers must consider organizational obstacles to measuring system performance and should assure that benchmarking activities provide a true apples-to-apples comparison.

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NEMSMA Body of Knowedge: Certified Prehospital Manager

National EMS Management Association

One of the early goals of the National EMS Management Association was to establish a certification standard for EMS managers. This was seen as an effective way to improve EMS systems and to enhance the professional credibility of the EMS discipline.

NEMSMA established a certification committee and began discussions of how to address this challenge. Several members of the committee had experience with the American Society for Quality's certification programs and found their Body of Knowledge documents to be excellent starting points for an EMS specific equivalent program. Considerable discussion ensured as to what additional knowledge items should be added to give it more EMS relevance and specificity. The body of knowledge document below is the result of those efforts.

The body of knowledge published herein is a starting point. We fully anticipate and encourage discussion, debate and evolution of the document over time as more EMS professionals make detailed reviews and suggest improvements.

Readers should note that the body of knowledge items are labeled using the six levels of cognition based on Bloom's Taxonomy (1956). These levels and their meanings are described in Table 1.

Table 1 - Bloom's Taxonomy

In addition to content specifics, the subtext detail also indicates the intended complexity level of the test questions for that topic. These levels are based on "Levels of Cognition" from Bloom's Taxonomy, (1956) and are presented below in rank order, from least complex to most complex.

- Knowledge Level - (Also commonly referred to as recognition, recall, or rote knowledge.) Being able to remember or recognize terminology, definitions, facts, ideas, materials, patterns, sequences, methodologies, principles, etc.
- Comprehension Level - Being able to read and understand descriptions, communications, reports, tables, diagrams, directions, regulations, etc.
- Application Level - Being able to apply ideas, procedures, methods, formulas, principles, theories, etc. in job-related situations
- Analysis - Being able to break down information into its constituent parts and recognize the parts' relationship to one another and how they are organized; identify sublevel factors or salient data from a complex scenario
- Synthesis - Being able to put parts or elements together in such a way as to show a pattern or structure not clearly there before; identify which data or information from a complex set is appropriate to examine further or from which supported conclusions can be drawn
- Evaluation - Being able to make judgments regarding the value of proposed ideas, solutions, methodologies, etc., by using appropriate criteria or standards to estimate accuracy, effectiveness, economic benefits, etc.

The NEMSMA CPM Body of Knowledge will serve as the basis for future development of a textbook, educational programs and a certification program.

Contact: Todd Hatley, NEMSMA Certification Committee Chair, thatley@unc.edu
Citation: National EMS Management Association: NEMSMA Body of Knowledge: Certified Prehsopital Manager. *2004 EMS Mgmnt J 1(2):17-24*
Online Access: http://www.emsmj.com/v1n2/BOK/default.htm

CPM BODY OF KNOWLEDGE ITEMS

I. LEADERSHIP

A. ORGANIZATIONAL LEADERSHIP

1. **Organizational development**
   Basic organizational design: matrix, flat, parallel, Big Q/little q; upper management, middle management, quality council; union influence (Application)
2. **Organizational culture**
   Characteristics that determine or identify organizational culture, e.g., union vs. non-union; proactive vs. reactive; expected standards of behavior (Analysis)
3. **NEMSMA Code of Ethics**
   Behaviors and actions presented in scenarios that require response in accordance with the code (Application)
4. **Techniques for facilitating or managing organizational change**
   Various change agent methodologies (Evaluation)
5. **Organizational roadblocks**
   The inherent structures of an organization (e.g., its cultures and constructs) that present basic barriers to improvement and methodologies for overcoming them (Application)
6. **Constraint management**
   Identifying and removing constraints and bottlenecks through the use of affinity diagrams, force field analysis, and other management tools (Knowledge)
7. **Negotiation techniques**
   Tools that help conflicting parties (departments, unions, groups, leaders, staff) recognize common goals and how to work together to achieve them (Analysis)
8. **Motivation techniques**
   Quality approaches that support and sustain employee enthusiasm (Evaluation)
9. **Conflict resolution techniques**
   Consensus techniques, brainstorming, effort/impact, multivoting, interest-based bargaining, etc. (Evaluation)
10. **Employee empowerment**
    Effective techniques for teams and individuals job enrichment vs. job enlargement, etc. (Application)

B. Team Processes

1. **Types of teams**
   Process improvement teams, work groups, self-managed teams; temporary/ad hoc teams, etc. (Synthesis)
2. **Team formation and evolution**
   The stages of team development: forming, storming, norming, performing (Synthesis)
3. **Team-building techniques**
   Basic steps in team building: goals, introductions, agendas (both stated and hidden), handling distractions, disruptions, behaviors, etc. (Synthesis)
4. **Team facilitation techniques**
   Coaching and guidance and the facilitator's limits and responsibilities (Synthesis)
5. **Team leadership techniques**

Sponsor and champion roles, team involvement, etc. (Synthesis)

6. **Team performance evaluation**
   Goals, objectives, and metrics that support team success (Evaluation)
7. **Team reward and recognition**
   When, why, and how to reward teams; common pitfalls and ways to avoid them (Evaluation)

II. Strategy Development and Deployment

A. Environmental Analysis

1. **Legal and regulatory factors**
   Generic understanding of Federal, state and local EMS statutory and regulatory requirements. This should include an understanding of corporate compliance, medical negligence, torts, due process, and contracts. (Comprehension)
2. **Market forces, industry trends, competitive analysis**
   Competitive forces that drive strategy development: entry of new competitors, threat of substitutes, bargaining power of consumers and suppliers, rivalry among existing competitors (Synthesis)
3. **Stakeholder groups**
   Employees, suppliers, customers (patients, family, hospitals, etc…), local community, shareholders; how to align stakeholder needs with the objectives of the organization (Application)
4. **Technology trends and internal capabilities**
   The effect of external technology trends and internal capabilities on strategy formation (Analysis)
5. **S.W.O.T. (strengths, weaknesses, opportunities, and threats) analysis**
   How to identify and prioritize; how to deploy appropriate action in response (Evaluation)
6. **Customer/employee surveys and feedback**
   Not how to create a survey but how to use the resulting information strategically; how to translate data to action (Evaluation)
7. **Internal capability analysis**
   How to measure resources, skills, and process capabilities; need vs. have, etc. (Synthesis)

B. Strategic planning and assessment

1. **Strategic planning techniques and models**
   Definitions of strategy and strategic planning; identification/formulation of strategic themes; use of Leadership Guide to EMS Quality Improvement, Baldrige criteria and ISO 9000 as models (Application)
2. **Competitive comparisons and benchmarks**
   Identifying and using valid comparisons and basic benchmarking methodologies (Synthesis)
3. **Formulating quality policies**
   Recognizing the ripple effect that changes in quality policy have on the organization as a whole, on individual areas or departments, and on customers, suppliers, employees, etc. (Analysis)

C. Deployment

1. **Assure integration between strategic and other plans**
   Horizontal and vertical deployment between plans by mid-level and functional management; resolving conflicts between new strategic outlook and existing programs, etc. (Application)

2. **Deploy strategic goals and objectives into operational plans and improvement projects**
   Translating goals into action plans and ensuring that they support the organization's mission, strategies, and objectives (Application)
3. **Resource allocation planning activities**
   Monitoring resources in terms of priorities and adjusting as necessary (Analysis)
4. **Metrics and goals that drive organizational performance**
   Recognizing the pervasive, cascading effect that strategy has throughout the organization; using balanced scorecards, house of quality, and other organization-wide measures and tools (Evaluation)

III. Quality Management Tools

A. Problem-solving tools

1. **The seven quality control tools**
   Use, interpret, correct, and explain: Pareto charts, cause and effect diagrams flowcharts, control charts check sheets, scatter diagrams, and histograms (Evaluation)
2. **The seven management and planning tools**
   Use, interpret, correct, and explain: affinity diagrams, tree diagrams, process decision program charts (PDPCs), matrix diagrams, interrelationship digraphs, prioritization matrices, and activity network diagrams (Evaluation)
3. **Root cause analysis, Plan-Do-Check-Act (PDCA) and other, like models**
   Use, interpret, and explain various elements of these approaches (Evaluation)
4. **Tools for innovation and creativity**
   Various creative-thinking techniques and exercises for decision-making and problem-solving (Application)
5. **Cost of quality**
   Prevention, appraisal, failure: internal & external cost categories; how each category is affected by various quality, continuous, or process improvement approaches (Application)

B. Process management approaches

1. **Process goals**
   How process goals are established, monitored, and measured (Application)
2. **Cycle time reduction**
   How cycle-time reduction can be used to identify defects and non-value-added activities using Kaizen-type methods to reduce waste of inventory, labor, and other resources (Analysis)
3. **Process analysis and documentation**
   Process mapping, written procedures, work instructions, flowcharting, etc. (Analysis)
4. **Theory of constraints**
   Finite resources increased expectations, do-more-with-less, etc. (Comprehension)
5. **Theory of variation**
   Common and special causes of variation, including six sigma approach (Comprehension)

C. Measurement: Assessment and Metrics

1. **Statistical analysis**
   Apply basic statistical techniques (e.g., measures of central tendency, range, variance, types of distribution, check sheet output) to data sets, charts, and other statistical summaries in order to make decisions and monitor projects and processes (Analysis)
2. **Trend analysis**
   Identify and interpret trends in tabular data sets, graphs, charts, etc., and distinguish different kinds of trends (e.g., cyclical, seasonal, shift, environmental) (Analysis)
3. **Process capability**
   Read charts and interpret data to determine whether a process is in statistical control and capable as measured by Cp and Cpk indices (Analysis)
4. **Reliability and validity**
   Classical measurement theory as it relates to reliability and validity, including content-, construct-, and criterion-related strategies for supporting inferences made about data, especially in relation to the development and use of survey instruments and results (Comprehension)
5. **Qualitative assessment**
   Subjective measures (e.g., verbatim comments from customers (patients), observation data, focus group output) and how they differ from objective measures; when measurements should be made in categories rather than in terms of numeric averages (Evaluation)
6. **Analysis and use of survey results**
   Evaluate survey results and ensure that they are applied appropriately (Evaluation)
7. **Benchmarking: internal and external**
   Philosophy, tools, and techniques (Evaluation)

IV. Customer-Focused Organizations

A. Customer identification and segmentation

1. **Internal customers**
   Who they are, how to work with them effectively to improve process and services, and how an organization's treatment of its internal customers influences its processes for external customers (Analysis)
2. **External customers**
   How to distinguish different customer types (distributor, consumer, end-user) and recognize their various influences on products and services (Analysis)

B. Customer relationship management and commitment

1. **Determining and assuring customer satisfaction**
   How to capture, differentiate, and use complaints and output from focus groups, surveys, and interviews; how to use customer value analysis, guarantee, corrective actions, etc. to measure and improve satisfaction (Analysis)
2. **Customer service principles**
   The proven values of rapid response, courtesy, politeness, smiles, attention to detail, etc. (Application)
3. **Multiple-customer management**
   Recognizing or establishing priorities, resolving conflicting requirements and demands, managing capacity and resources caused by multiple customers (Applications)

4. **Customer retention/loyalty**
   How to measure the value of existing customers and the financial impact of dissatisfied customers (Comprehension)
5. **Anticipate customer expectations, priorities, needs**
   Dissatisfiers, satisfiers, exciters/delighters; projecting future needs (Applications)
6. **Deploy the voice of the customer through QFD**
   How to develop, deploy, and manage the house of quality matrix and other, like models (Analysis)

V. Supplier Performance

- **A. Supplier selection strategies and criteria**
  Internally developed rating programs, external certification standards or models, and their affect on an organization's overall strategy (Application)
- **B. Techniques for communicating requirements to suppliers**
  Planned, regular meetings; reporting procedures (routine and emergency); stated expectations and potential consequences (awareness of criticality) (Application)
- **C. Techniques for assessment and feedback of supplier performance**
  Key measures of supplier performance (e.g., quality, price, and delivery/level of service) and metrics (e.g., defect rates, functional performance, timeliness, responsiveness, availability of technical support) (Application)
- **D. Supplier improvement strategies**
  Audits (e.g., surveillance) and corrective and preventive action plans (Analysis)
- **E. Supplier certification programs**
  Steps in the certification process, ongoing review, and measures of performance (Application)
- **F. Partnerships and alliances with suppliers**
  Steps to developing partnerships and alliances (Application)
- **G. Logistics and supply chain management**
  How purchased products and services impact final total service package, including ship-to-stock, just-in-time, etc. (Comprehension)

VI. Management

A. Principles of Management

1. **Principles of management**
   Planning, leading, controlling, organizing, staffing, monitoring, etc. (Application)
2. **Total quality management (TQM)**
   The basic philosophies of Deming, Juran, Crosby, Feigenbaum, and other contributors to the philosophy of quality approaches in an organization-wide system of management (Application)
3. **Management styles**
   Theories X, Y, and Z; Myers-Briggs type indicator; how to identify different learning styles and respond appropriately (Application)
4. **Organizational structures**
   How management styles and models are influenced by an organization's size, service type, competition, etc. (Evaluation)
5. **Organizational systems and interdependence of functions**
   Internal functional responsibilities such as human resources, training & education, and marketing, finance, R&D, purchasing, accounting, etc.; cross-functional collaboration, systems management theories (e.g., how optimizing a process may result in sub-optimizing a system) (Application)

6. **Staffing**
   Selection processes, performance evaluations, professional development, goals, objectives, quality responsibilities, and job/position descriptions (Application)

B. Communications

1. **Communication techniques**
   Vertical and horizontal methods of communication; written, verbal, non-verbal; communication effectiveness: strategies, media choices, appropriate vehicles for different situations, open- and closed-questioning techniques, listening strategies, etc. (Application)
2. **Information systems**
   How to use information systems (technology) to support a sound performance measurement system; how to use data to monitor organizational goals and objectives (Analysis)
3. **Knowledge management**
   How to capture and share learning, including storing, organizing, and accessing information to enhance an organization's operating performance; the data-information-knowledge development cycle; availability of information and knowledge; how to develop and support a learning organization; how to develop and manage core competencies (Comprehension)

C. Projects

1. **Project justification and prioritization techniques**
   Calculate and explain a benefit-cost analysis (e.g., return on investment (ROI), return on assets (ROA), benefit-cost-ratios) using simple math, round numbers; fundamental knowledge of decision analysis and portfolio analysis as applied to project decisions (Analysis)
2. **Project planning and estimation**
   PERT charts, Gantt charts, critical path method (CPM), work breakdown structure (WBS) and estimation techniques (Application)
3. **Monitor and measure project activity**
   Measurement techniques that ensure successful completion against the plan; risk management activities, stage/gate processes, milestones, etc. (Evaluation)
4. **Project documentation and related procedures**
   Repeatable processes and other PDCA-type activities (Application)

D. The Quality System

1. **The quality function mission**
   Various dimensions of quality; the position and role the quality function has in a quality-driven organization; how the quality function aligns with the organization's broader mission (Application)
2. **Quality plan deployment in the organization**
   How the quality plan meshes with other processes in the organization (Application)
3. **Review the effectiveness of the quality system**
   Managerial review tools and metrics: e.g., management by walking around (MBWA), internal audits, skip-level meetings, employee and customer feedback systems (Evaluation)

E. Quality Models

1. **Malcolm Baldrige National Quality Award (MBNQA) Criteria for Performance Excellence**
   How companies use the principles of the MBNQA criteria for performance excellence as a management model (Analysis)

2. **ISO 9000**
   How companies use ISO 9000 as a systems management model (Comprehension)
3. **Major industry and other international standards**
   NEMSMA's Performance Excellence Criteria, CAAS (Commission on Accreditation of Ambulance Services, (CAMTS) Commission on Accreditation of Medical Transport Systems, NCQA (National Committee for Quality Assurance), etc.; how these standards must be considered in the development of an organization's quality system, plans, and programs (Comprehension)

VII. Training and Development

A. **Alignment with strategic planning and business needs**
   Identifying and linking training plans with the needs of the organization; limits and requirements of training plans (Application)
B. **Training needs analysis**
   What tools are used to develop needs analyses and when to use them (Comprehension)
C. **Training materials and curriculum development**
   Appropriate resources and methodologies; knowledge of adult learning principles (Comprehension)
D. **Methods of training delivery**
   Lectures, workbooks, on-the-job training, videos, computer-based instruction and effectiveness of each method in different settings (Comprehension)
E. **Techniques for evaluating training effectiveness**
   Kirkpatrick's 4 levels of evaluating training effectiveness and other like measures (Analysis)

VIII. EMS Systems and Processes

A. **EMS Industry Documents**
   1. EMS Agenda for the Future
   2. NHTSA Leadership Guide to Quality Improvement of EMS Systems
   3. Selected position papers from various organizations
B. **EMS Systems Principles**
C. **EMS Finance Principles**
D. **EMS Deployment Principles**

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EMS Medical Direction

The following articles were selected from a literature search performed on the National Library of Medicine's PubMed database in February 2004 by *EMSMJ* staff. The results of the search were manually edited to only include those citations which were deemed pertinent to the general topic of EMS medical direction and related issues of online medical control and physician roles in prehospital care. The editing process was made by review of the title and journal in the citation - the actual source documents were not reviewed in this process.

Citations appear in alphabetical order by the last name of the lead author. The PubMed database only goes back to 1966, so citations pre-dating 1966 will not appear in this listing. To retrieve any of these citations via PubMed, go to www.pubmed.gov and type the PMID number into the search box.

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EMS Process Performance Indicator Index

Open Source EMS Initiative

The Open Source EMS Initiative (OSEMSI; http://www.mhf.net/opensource) has developed a draft of the EMS Process Performance Indicator Index. This is intended to be used as the starting point for a more complete hierarchical framework of process and sub-process labels for development of a comprehensive collection of EMS performance indicators. Consistent with the OSEMSI Performance Indicator definition format, a process performance indicator should answer:

- What is the process or sub-process being measured?
- Who is internal or external process customer?
- What is the customer's need?
- What measurement is to be used as an indicator for how well (quality) or how efficiently (cost) the need is being met?
- What data elements are needed to calculate that indicator?
- What are the sources for those data elements?
- What equations are to be used for calculation of the indicator?
- How should the indicator results be displayed (e.g., an 'X bar R' statistical process control chart)?

The names of the top level processes in the PPII were hybridized from the categories of the EMS Agenda for the Future (link), Malcolm Baldrige Criteria for Healthcare Excellence (link), and the criteria used by the Commission on the Accreditation of Ambulance Services (link). Acknowledgement is also given to the seminal work of Stout (1997) in this area.

This draft of the PPII includes only the top level process labels. Each of these top level process labels may have any number of levels of associated sub-process labels. For example, the top level 'Clinical' process category might have sub-process labels for Cardiac, Trauma, Respiratory, etc. The Cardiac sub-process label could have an additional level of sub-processes that include Acute Coronary Syndromes, Resuscitation, and Congestive Heart Failure. The sub-process of Acute Coronary Syndromes may then have multiple performance indicators including aspirin, nitroglycerin, and oxygen administration compliance rates; 12 Lead and Rhythm Strip ECG acquisition rates; 9-1-1 Activation to Hospital Arrival Time Interval; and the Patient Contact to Oxygen Administration Time Interval.

PROCESS PERFORMANCE INDICATOR INDEX (PPII)

- Administration / Leadership
- Field Operations
- Clinical Care
- Medical Direction
- Human Resources
- Fleet Management
- Supply Management

Author: Open Source EMS Initiative, http://www.mhf.net/opensource
Citation: Open Source EMS Initiative*:* EMS Process Performance Indicator Index. *2004 EMS Mgmnt J 1(2):33-34.*
Online Access: http://www.emsmj.com/v1n2/indicator/default.htm

- Dispatch & Communications
- Information Services
- Support Services
- Prevention, Community Education & Access
- Special Events & Services
- Financial Services
- Safety & Risk Management
- Research
- System Measures

PROCESS PATH NOTATION

In communication of performance indicator information, OSEMSI has also drafted a notation to convey the process, applicable sub-processes, customer, need, and the corresponding indicator. The top level process and sub-process labels are separated by a colon(:). Other parts of the notation are separated by the 'greater than' symbol (>). This referred to as process path notation (PPN).

EXAMPLES

Cardiac Arrest Survival Rate:
Clinical : Cardiac : Resuscitation > Patient > Survival > Survival Rate
Ambulance Fleet Critical Failure Rate:
Fleet : Ambulances > Patient > Reliability > Critical Failure Rate

COMMENTS AND CONTINUING DEVELOPMENT

Individuals and organizations interested in proving comments on this or subsequent drafts of the EMS Process Performance Indicator Index are encouraged to learn more and find links to specific performance indicator development groups at the in the OSEMSI Performance Indicator web site (http://www.mhf.net/opensource).

CITATIONS

Stout JL: Capture the Competitive Edge: How Benchmarking Can Improve Your Ambulance Service. 2004 Jan-Mar; *EMS Mgmnt J* 1(1):64-73 [link to full text]

RescueNet – The Best of Both Worlds

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EMS Literaure Search Update: January-March 2004

There are thousands of medical journals published every month. Trying to stay abreast of the EMS related literature by scanning for pertinent articles can be a huge challenge. The EMS Literature Search Update searches all PubMed indexed journals for recently indexed articles pertinent to EMS – many of which are published outside the realm of the EMS and emergency medicine related journals that most EMS professionals are familiar with.

A search was conducted on March 29, 2004 using the PubMed medical literature search engine website at the National Library of Medicine. The Boolean search query string used for this search was: "*emergency medical services OR ambulance OR emergency medical technician OR paramedic OR medical transportation.*" The search results were then restricted to the 90 day period prior to the search using the "Entrez" section of the database. This returns items that were entered into PubMed in the last 90 days regardless of the date of publication. The citations were manually reviewed to exclude those items that did not seem to bear significant relevance to EMS or were too specifically related to hospital issues on the basis of the title and journal in which it was published. This left the citations listed below. Citations are listed in rough order starting from the most recent. To access any of these articles via PubMed, enter the PMID number in to the search box at the PubMed website (www.pubmed.gov), where links to the abstract, source document, source journal and reprint services may be available.

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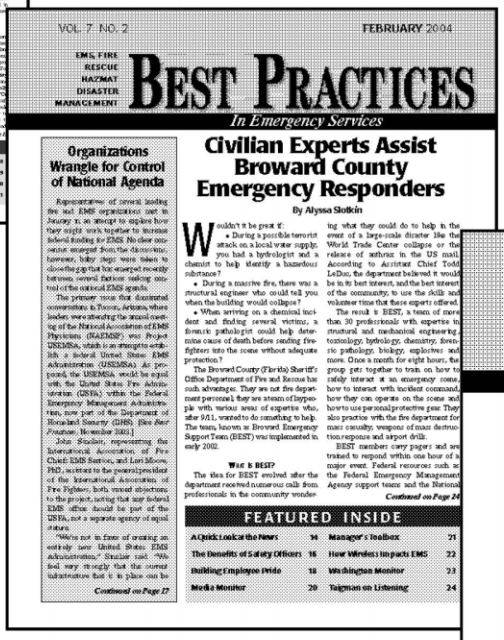
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PREMIER ISSUE

As the founding President of the National EMS Management Association (NEMSMA), I was very excited to see the premier edition of the *EMS Management Journal*. One of NEMSMA's visions is to create opportunities for sharing experiences related to improving care and services provided to the sick and injured. I think the *EMS Management Journal* is a major step in realizing this vision.

Mic Gunderson and the editorial staff at HealthAnalytics have done a superb job in preparing this first edition of the *Journal*. This premier issue set the bar high by providing a EMS Six Sigma improvement case study, a review of the current state of EMS deployment models and a reprint of a historical article on benchmarking by Jack Stout. Wow, what a line up.

Finally, NEMSMA was proud to include our first position paper on the Scope and Philosophy of Quality and Performance Management in EMS. We hope this position paper sets the stage for further position papers and generates discussion related to improving all of what we do in EMS.

I hope that you enjoyed the premier issue of the *EMS Management Journal* and again, thanks to HealthAnalytics and the NEMSMA Board for making this a reality.

Todd Hatley, MBA, MHA, REMT-P, CQM
Immediate Past President, NEMSMA;
Assistant Professor,
PreMIS Clinical Research Associate Director;
Department of Emergency Medicine,
University of North Carolina – Chapel Hill

...on the premiere issue of *EMS Management Journal*. It is excellent, and with some very timely and 'right on point' topics.

I was glad to see the reprint of Stout's articles, too! I found one of them from my archives a few weeks ago and you have saved me from opening about 5 more boxes in my basement to find the other one. Thanks!

I think its very good timing for a more scholarly management journal. It has been over ten years since I published my masters thesis results in *Prehospital & Disaster Medicine* way back in 1990 or 1991 when I was Vice President at EmergyCare in Erie — back when *Prehospital & Disaster Medicine* was the only scholarly journal for EMS.

I think the *Journal* will take off and gain significant altitude very quickly! Hats off to all who played a part in putting it together...

Stephen R. Wirth, Esq.
Page, Wolfberg & Wirth, LLC

The opportunity presented by a peer-reviewed journal dealing with EMS management issues is a great one. Time will tell if we make the most of it. Our profession is coming of age and there is enough collective experience and academic interest to raise our management practice to a new more factual and outcomes based level.

I have been involved in EMS management for two decades. My experience is rich and varied but it is only my experience. There are many of us like this and we have shared our experience over the years and often found great utility out of other systems experience. But, this kind of

sharing of wisdom does not have a foundation in sound evaluation and the scientific method. Add to this the often voiced "my system is unique" mantra, and we will hit a wall in advancing EMS in the interests of the people we are dedicated to serve.

The opportunity here is for a new level of professional management practice to develop through the work of the authors in the *Journal*. It is up to all of us to contribute to the process so the work remains relevant and challenging.

Kurt Krumperman
Regional President
Rural / Metro Corporation
Scottsdale, AZ

BENCHMARKING

Congratulations to HealthAnalytics and the editorial staff of *EMSMJ* on the publication of your first issue. Your accomplishment is groundbreaking as many EMS professionals saw a peer-reviewed EMS management journal as a vision but not a reality. It is my fervent hope that *EMSMJ* will become a source for seminal works in EMS leadership and management.

After reading the *Journal* I am compelled to comment on the article "Capture the Competitive Edge: How Benchmarking Can Improve Your Ambulance Service," written in 1997 and published in another journal (JEMS). The first issue concerns the logic employed in selecting this article. The article lacks proper citation, statements that are unscientific and show the author's bias toward commercial EMS. "Jack Stout, a renowned authority on EMS systems, probably wrote this article from the aft deck of his sailboat" (p. 73). Is it in the *Journal's* best interest to declare someone an "authority" and to publish that individuals work based on his "expertise."

Copi (1978) identified these types of actions as the logical fallacies of both Argumentum ad Verecundiam (appeal to authority) and Argumentum ad Populum (appeal to the people). Appeal to authority is generally thought of as an expert being granted carte blanche authority in areas outside her committed field. Someone may be recognized by many as an authority on EMS systems. Publishing that individual's work in a refereed journal is in violation of the core concepts of peer review and reduces the work to a testimonial. It asks the professional reader to accept a possible fallacy as the literal truth. Appeal to the people occurs when an entity attempts to win over the masses by "arousing the emotions enthusiasms of the multitude, rather than by appeal to the relevant facts" (p. 93). Again, for a professional journal to publish an article without proper citation is a de facto Argumentum ad Populum.

The publication of this ‘Reflection’ is also curious as the article cannot be described as either seminal or as standing the test of time. Benchmarking has been used successfully to identify both successes and failures in many professional industries. It is not without it's own faults or detractors. Witzel (1998) noted that a serious criticism of benchmarking is that it leads to convergence and groupthink. Benchmarking can lead to imitation instead of innovation. The outcome focuses on best current practices not best possible practices.

Benchmarking is not a simple set of measurements that can be used to generalize performance. Griffith and White (2002) cautioned that "even relatively simple measures require substantial work" (p. 181). Some of these complexities include definition, validity, reliability and adjustment. Stout (1997) attempted to identify these issues as lateral benchmarks, but fell short of identifying how these were sources of truth.

Human resources professionals have been especially critical of benchmarking, maintaining that benchmarking fails to "measure, assess, and predict the outcomes of workforce tactics in the same way they do with other parts of business" (Kutik, 2003, p. 74). Another major area of concern is the inside-outside balance needed to assess human resource issues. The most important, specific issue is the failure to account for context. In example, comparing human resource benchmarks between manufacturing and service organizations can mislead human resource profession-

als as to the balance between internal and external information (pp. 75-76). Another major issue is a failure of benchmarking to identify the magnitude of a critical human resource incident. These data are needed to measure actual causes of employee behavior (p. 76). There is obviously more to benchmarking than presented here. These are simply a few examples of the dangers of 'reflecting' on the wrong sources.

This response is not an attack on the author or the subject of benchmarking. The main purpose is to help *EMSMJ* to gain it's place in the professional EMS literature. Many of the articles in this premier edition are well-written and scientifically sound. Congratulations to all of the authors and to HealthAnalytics on a great first issue.

Harold C. Cohen, Ph.D., CHE, EMT-P
Division Chief
Baltimore County Fire Department

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Editor Response:

I'd like to thank Dr. Cohen for his kind remarks on the *Journal* and thoughful comments on the reprinted article by Stout.

"Jack Stout, a renowned authority on EMS systems, probably wrote this article from the aft deck of his sailboat" was in the orginal version of the article. For the sake of accuracy and compleness, it was included in our reprinting.

The potential pitfalls of benchmarking as pointed out by Dr. Cohen are well taken. I think it points to the differentitation that many quality management professionals in mainstream industry make between benchmarking and comparative analysis. As its name implies, comparative analysis is a comparison of performance statisitics. Done well, the comparisons should be between groups that have appropriate similariities so as to make such comparisions meaniningful — while recognizing no two groups are absolutely identical. One of the main goals of comparative analysis is to identify potential best practices among participating groups for the purpose of benchmarking.

Benchmarking, in this context, is a careful search for ideas in one group's processes that can be incorporated into the processes of another group. When one reviews the processes of another group, the differences of definition, validity and reliability must be considered and adjustments made as appropriate — as pointed by Dr. Cohen. This would seem to be the same issue of 'context' that Dr. Cohen cites as a concern about benchmarking in the human resource community.

In closing, I must say that I'm delighted to be having this caliber of dialogue on EMS performance issues. It's long overdue. Thank you so much for your letter Dr. Cohen.

Mic Gunderson
Editor

Please send any correspondence section submissions to Mic Gunderson at mic.gunderson@healthanalytics.net