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.

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

CITATIONS

Bloom, B.S. (Ed.) (1956) Taxonomy of educational objectives: The classification of educational goals: Handbook I, cognitive domain. New York ; Toronto: Longmans, Green. (link to bookseller)