EMS Subspecialty Certification Review Course

Quality Improvement Programs

2025

1

ABEM Learning Objectives

3.1 QUALITY IMPROVEMENT PRINCIPLES AND PROGRAMS

3.1.1 Data Collection, Management, and Analysis

3.1.2 Quality Improvement Programs

2.1.1.2 Indirect medical oversight

2.1.1.2.1 Evidence guided development of medical care protocols

2.1.1.2.2 Quality improvement programs

2

Learning Objectives

Upon the completion of this program participants will be able to:

- Discuss historical examples of performance improvement in medicine
- Define quality measures based upon standards documents and legal standards
- Describe examples of performance measures
- Describe methods for creating a culture of quality
- Describe the concept of evidence-based practice

3

Historical Examples of Performance Improvement in Medicine

- Flexner report in 1910 – accused medical institutions of churning out large numbers of ill-trained, ill-prepared providers
  - 60/155 medical schools closed in 1920
- Codman in 1910 – "*End Result System of Hospital Standardization*" – traced outcomes to physicians; groundwork for "*Minimum Standard for Hospitals*"
  - Only 13% of hospitals met these criteria by 1915

4

Historical Examples of Performance Improvement in Medicine

- Sir William Olser – 1920 work that described morbidity and mortality conferences, grand rounds; physicians learn more from observation/conversation than just books

5

Historical Examples of Performance Improvement in Medicine

- 1952 – ACS, American Hospital Association, and the AMA formed the Joint Commission on Accreditation of Hospitals -> improve quality by evaluating HCO
- By the 1960s, accreditation by JACHO required for hospitals to receive Medicare and Medicaid Funding
- 1970s – Avedis Donabedian publications gave us "structure, process, and outcomes" as a framework for healthcare quality; quality research should examine all 3

6

Historical Examples of Performance Improvement in Medicine

- 2000 – IOM "*To Err is Human: Building a Safer Health System*" -> shift from blaming individuals to improving the system
- 2001 – IOM "*Crossing the Quality Chasm…*" -> fundamental redesign of the HCS to improve quality
  - Safe, effective, patient-centered, timely, efficient, equitable
- Ongoing shift from fee-for-service reimbursement approach to pay-for-performance

7

Frameworks for Quality Improvement

Six Sigma	Model for Improvement
Introduced in 1987 by Motorola Focused on reducing defects to make change • Define • Measure • Analyze • Improve • Control	Published in 1996 3 fundamental questions that are linked to Plan-Do-Study-Act cycles for testing changes Rapidly becoming one of the most popular models used in health care

Sigma ≈ St dev
4 is good, 6 is best

8

QA v CQI

Quality Assurance

- Emphasis on individual's performance
- Monitor and measure compliance against a standard
- Reactive
- *Quality can never be truly assured*

Continuous Quality Improvement

- Emphasis on process
- Modify the system to produce different results
- Integrated approach which includes education
- Proactive
- *Preferred term*

9

More Recent Developments

- 2006 - IOM "*EMS at the Crossroads*" -> development of national evidence-based performance measures
- 2009 – NHTSA publishes a set of 35 consensus-based performance measures
- 2016 – NHTSA + NASEMSO -> EMS Compass Initiative
  - Develop a process for creating, testing, and evaluating performance measures to improve EMS systems
  - 14 performance measures using standardized data elements from NEMSIS

10

More Recent Developments

- EMS Compass -> NEMSQA -> 11 national EMS quality measures in 2019 (more have been added since then)

NEMSQA
National EMS Quality Alliance

11

Variation occurs in all systems…

- Reducing variation as a means to improve quality
- **Common cause variation**: in a stable system, the amount of variation is minimal and predictable
- **Special cause variation**: when external forces act on a stable system, the variation goes outside the expected limits of common cause variation

12

Defining Quality

- 2019 NAEMSP Position statement -> "*Defining Quality in EMS*"
- Historically, EMS has been evaluated by operational measures (response and on-scene intervals)
  - Focus on cardiac arrest was applied to all prehospital care
- Clinical measures: NEMSQA, CARES, Mission Lifeline, etc

13

Performance Measures: NFPA 1710

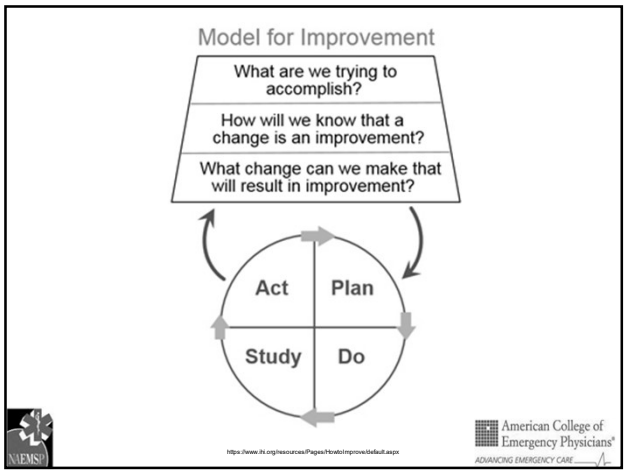
- Turnout time – from receipt of unit notification until wheels rolling – goal is < 60 seconds, 90 percent of the time
- Response time – from wheels rolling until arrival of the vehicle at the address – goals are:
  - First response within 4 minutes, 90% percentile
  - Transport within 8 minutes, 90% percentile
  - ALS within 8 minutes, 90% percentile
- Defibrillation – 50% of first shocks take place within 5 minutes

14

Performance Measures -- NFPA

- Call Processing (NFPA 1221): From call receipt until alert of the responding units – less than 90 seconds, 90 percent of the time
- Employee Illness and Injury – multiple NFPA and Ryan White act – goal is 0% occupational injuries
- Quality Improvement program – NFPA 1710

15



16

Useful Tools for Quality Improvement

- **Causal Tools**: Facilitate exploration of factors that contribute to the outcome of interest
  - Ishikawa (fishbone) diagrams
  - Driver Diagrams
- **Graphic Display Tools**: enable data to be visualized, identifying trends and aiding in the differentiation of common cause vs special cause variation
  - Run chart
  - Control chart

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Legal Concepts of Performance Improvement

- Confidentiality and Immunity
  - **Health Insurance Portability and Accountability Act (HIPAA)** allows for exchange of patient information ("Protected Health Information") necessary for performance improvement among "Covered Entities"
  - Immunity for performance improvement activities is conferred by Peer Review or Medical Review statutes
  - Each EMS system should clearly define membership of review committee and what activities are covered

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18

Legal Concepts of Performance Improvement

- Three types of claims arising from QI:
  - **Defamation** – the provider claims the performance improvement review was slanderous or created libel
  - **Antitrust/tortious interference with business** – the loss of employment or business practice as a result of discipline
  - **Patient claim of negligent supervision** – they were harmed because of improper protocols or allowing a provider to continue to practice

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Evidence-Based Practice

- Most EMS practice is based on:
  - Class of Recommendation C (61%)
    - Fair evidence – clinical service benefits and risk are equivocal
  - Level of Evidence III (60%)
    - Expert Opinion

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Evidence-Based Practice

- Class of Recommendations (COR) (USPSTF):
  - Level A – Good evidence – clinical service is helpful and outweighs risks
  - Level B – Fair evidence – clinical service is helpful and outweighs risk
  - ***Level C – Fair evidence – clinical service benefits and risk are equivocal***
  - Level D – Fair evidence – clinical service risks outweigh the benefits
  - Level I – Insufficient evidence to make a recommendation

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21

Evidence-Based Practice

- Level of Evidence (LOE) from USPSTF:
  - Level I = Well-designed RCT
  - Level IIa = Well-designed, controlled, no randomization
  - Level IIb = Well-designed case control/cohort
  - Level IIc = Multiple or overwhelming data from less well-designed trials
  - ***Level III – Expert opinion***

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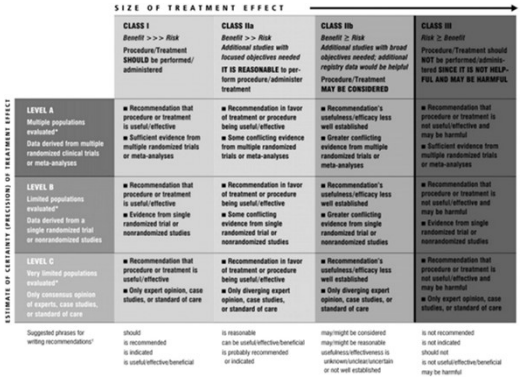
22



23

Sample Question

Which of the following is NOT part of NFPA 1710 regarding response performance:

a) Turnout time (interval from receipt of alarm to wheels rolling) of less than 60 seconds, 90 percent of the time

b) First response arrival within 4 minutes (interval from wheels rolling to arrival at address of request for service), less than 4 minutes, 90 percent of the time

c) ALS arrival within 8 minutes (interval from wheels rolling to arrival at address of request for service), less than 8 minutes, 90 percent of the time

d) First defibrillation provided within 8 minutes (from receipt of alarm to shock delivered), 90 percent of the time

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24

Sample Question

An EMS provider claims that their right to work was falsely impeded by the actions of the medical director as part of quality assurance audit. The legal framework which is the basis of such a lawsuit is:

a) Negligent supervision
b) Antitrust/tortious interference with business
c) Defamation
d) American Disabilities Act

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25

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26

Take-Home Points

- History of quality management includes Flexner, Osler, Codman, ACS and JCAHO
- Methods exist to implement a culture of quality
- Most EMS evidence is LOE III, COR C

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27