Management of EMS

CHAPTER 6

Risk Management and Safety
Learning Objectives

6.1 Identify principles of risk management.
6.2 Identify how to calculate the risk in EMS operations.
6.3 Conduct an analysis of a system failure.
6.4 Create an infection-control program for EMS agencies.
Learning Objectives (Cont.)

6.5 Recognize and identify the safety issues surrounding EMS operations and how to mitigate those events.

6.6 Diagram the progression and response to litigation against an EMS organization.
Risk Management Defined

Any activity that involves the evaluation of or comparison of risks and the development, selection, and implementation of control measures that change, reduce, or eliminate the probability or the consequences of harmful actions.
Risk Management

• Risk management in EMS:
  – Preventing monetary losses
  – Preventing disability
  – Preventing loss of life
  – Preventing irreparable business damage
Risk Management (Cont.)

- Risk management in EMS involves:
  - Direct, “hands-on” patient care
  - Indirect aspects of patient care, such as development of effective training programs and selection of qualified personnel
Risk Management (Cont.)

- Risk management has five strategies:
  - Eliminate the risk
  - Avoid the risk
  - Acquire insurance
  - Pool financial resources
  - Transfer the risk
- Identification of potential risks so that uncertainties can be controlled.
- Measurement of risks to determine the probability of potential losses.
- Development of strategies to lessen risks.
- Implementation of those strategies.
- Monitoring of risk-management strategies and activities to ensure their effectiveness.

FIGURE 6.1
Components of A Risk Management System
Identifying Risks

- Risk management is proactive
- It identifies:
  - Root cause of loss
  - Proximate cause
  - Causal factors
Gordon Graham

- Identifies five causes of loss in the field of EMS:
  - Lack of quality people
  - Policy
  - Training
  - Supervision
  - Organizational discipline
“Near Miss”

– An unintentional, unsafe act that could have resulted in an injury, fatality, or property damage

– Contributing factors:
  - Situational awareness
  - Human error
  - Decision making
  - Individual action
- Vehicle collisions, breakdowns, and driving skills.
- Physical fitness of personnel and job-related injuries.
- Station inspections and building safety.
- Skills retention.
- Hazardous materials exposures.
- Stress management.
- Debriefing effectiveness.
- Documentation.
- Hiring selection criteria and employee attrition.
- Continuing education.
- Dispatching procedures.
- Protocols testing and protocol deviations.
- Response times.
- Nontransports.
- Vehicle down times.
- Mutual-aid interactions.
- Controlled-substances losses.
- Probationary supervision.

FIGURE 6.3
Risk Management Program Factors.
Specific Areas of Risk Management in EMS Care

- Patient refusals
  - The no-transport call
  - Question of “informed refusal”
  - Risk management may concentrate on:
    - Improving assessment skills
    - Dealing with the complexities of consent issues
Specific Areas of Risk Management in EMS Care (Cont.)

- Endotracheal intubations
  - Failure to confirm tube placement
  - Improper placement
  - Risk management may concentrate on:
    - Researching success rates and identify the criteria for success
    - Provide frequent education and skills labs
    - Having supervisors respond on all cardiac arrests to observe and assist
EMS System Risk Management Questions

• Are new-member orientation and preceptorship programs providing inexperienced EMTs with sufficient information and training?

• Are the organization’s selection techniques effectively identifying the most qualified personnel for employment?

• Are members from a particular training institution consistently lacking in skills?

• Are continuing-education programs consistently well-attended?
VFIS Risk-Management Formula

- Based on three components:
  - Severity
    - Lost time or equipment, injury, death, and adverse publicity
  - Probability
    - How many accidents or failures will occur if exposed to the hazard
  - Exposure
    - Amount of time, number of events, and people or equipment involved
Risk Value Analysis

- Once risk is evaluated, a score is generated between 0 and 100
- Risk management should focus on high risk/low frequency and high risk/high frequency

<table>
<thead>
<tr>
<th>Severity (S)</th>
<th>Probability (P)</th>
<th>Exposure (E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 No potential for damage or injury</td>
<td>0 Impossible</td>
<td>0 No exposure</td>
</tr>
<tr>
<td>1 Slight &lt;5% or no lost time on equipment or by staff</td>
<td>1 Remote or unlikely in any condition</td>
<td>1 Below average exposure</td>
</tr>
<tr>
<td>2 Minimal 5%–24% lost time with no hospitalization or mechanical fix disrupting service</td>
<td>2 Unlikely in normal conditions</td>
<td>2 Average exposure</td>
</tr>
<tr>
<td>3 Significant 25%–50% required medical care with hospitalization or repair required</td>
<td>3 Chance 50% or less under normal conditions</td>
<td>3 Above average exposure</td>
</tr>
<tr>
<td>4 Major 50%–74% results in a permanent injury or major equipment repair</td>
<td>4 Probability greater than 50%</td>
<td>4 Great exposure</td>
</tr>
<tr>
<td>5 Catastrophic &gt;75% fatalities or death, permanent loss of equipment</td>
<td>5 Very likely to happen</td>
<td></td>
</tr>
</tbody>
</table>

Total Risk = (S) × (P) × (E)

FIGURE 6.5
Risk Value Analysis.  (Reprinted with permission of Volunteer Fire Insurance Services [VFIS])
System Failure

- Failure is a loss of asset availability, failure of or unavailable equipment, and deviation from the status quo (protocol or SOG)
- Failure modes and effects analysis (FMEA)
  - Looking into the future for potential system failures
  - Looking at past failures
- Sentinel events
- Interruption in EMS system delivery.
- Interruption in continuity of care.
- Unavailability of equipment.
- Deviation from SOPs or protocols.
- Not meeting target performance levels.

**FIGURE 6.7**
EMS System Failures
- Any biomedical equipment failure.
- BLS and ALS response >12 minutes.
- Any arrest en route from the scene.
- Any defibrillation or pacing.
- Any vehicle failure with patient embarked.
- Procedural errors.
- All patient complaints against EMS personnel, organization, or system.
- Multiple responses to the same location within 24 hours.
- All utilization of physical restraints on patients.
- All medical air evacuations from the scene.
- Any unexpected diversion from an intended medical-receiving facility.
- Others as defined by your management team, regulatory agency, or labor group.

FIGURE 6.8
Sentinel EMS Events
How to Process a System Failure

- Perform preparatory work
- Collect data
- Summarize results
- Calculate loss
- Determine “significant few”
- Validate results
- Issue a report
Investigating EMS System Failures

- Define the system affected to analyze
- Define failure
- Conceptualize or diagram contacts
- Calculate the gap
- Develop data-collection tools
- Develop schedule and conduct interviews
Conducting an Investigation

• Identify the root cause
  – Determine the who, what, where, and significance

• Supervisors’ response
  – Safety of crew and civilians
  – Photograph the scene
    ▪ Sketches, video
  – Interview witnesses
Investigation Kit

• Investigation kit should contain:
  – Compass
  – Accident forms
  – Graph paper
  – Mechanical pencils
  – Rulers
  – Tape
  – Digital camera
Other Considerations

- Colored cones and paint for marking
- Photographs
  - Skid length
  - Road width
  - Area of impact
  - Gouges and scuffs
  - Debris field
  - Point of rest
Documentation

• Documentation
  – Validates testimony
  – Enables retrospective review
• Documentation that identifies a problem:
  – Must indicate what action was taken to correct the problem
  – The task was completed successfully
• Record-keeping policies
Crew Resource Management

• A system of layers that makes an attempt to trap human errors at various levels by employing a system to reduce risk

• Key components:
  – Communication
  – Situational awareness
  – Decision making
  – Teamwork
  – Barriers
Crew Resource Management Communication

- Focuses on the communication model
  - Speaking directly
  - Speaking respectfully
Crew Resource Management
Situational Awareness

• Keeping people attentive to an event
  – Perceive
  – Observe
  – Recognize stress on personnel
Crew Resource Management
Decision Making Skills

• Focuses on giving and receiving information through a closed feedback loop
• Ensures that all messages are repeated or acknowledged
Crew Resource Management Teamwork

- Leadership and followership
- Results in mutual respect
- Common goal of providing the best patient care
Crew Resource Management
Eliminate Barriers

• Eliminate barrier
  – Communication
  – Situational awareness
  – Decision making
  – Teamwork
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambiguity</td>
<td>Open to more than one interpretation.</td>
</tr>
<tr>
<td>Distraction</td>
<td>Attention is drawn away from the original focus.</td>
</tr>
<tr>
<td>Fixation</td>
<td>Focusing attention on one item, excluding all others.</td>
</tr>
<tr>
<td>Overload</td>
<td>Too busy to stay on top of everything.</td>
</tr>
<tr>
<td>Complacency</td>
<td>A false sense of comfort that masks deficiencies and danger.</td>
</tr>
<tr>
<td>Improper procedure</td>
<td>Deviating from SOPs without justification.</td>
</tr>
<tr>
<td>Unresolved discrepancy</td>
<td>Failure to resolve conflicts or conflicting conditions.</td>
</tr>
<tr>
<td>“No one flying the plane”</td>
<td>Self-explanatory.</td>
</tr>
</tbody>
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**FIGURE 6.11**
Warning Signs of Loss of Situational Awareness.
*(From International Association of Fire Chiefs Crew Resource Management Program. Reprinted with permission.)*
Psychological Applications

- Recognition-prime-decision-making (RPDM)
  - Draws on past experiences
- Emotional intelligence (EI)
  - Looks at how to control emotions to recognize triggers and avoid a negative response
OSHA Standards for Occupational Injuries and Illness

- Occupational diseases:
  - Contracted through the course of a person performing his or her work
- Infectious diseases:
  - Results from the invasion of the body by bacteria, virus, fungi, or parasites
- Communicable diseases
  - Spreads from one person to another
Occupational Injuries and Illness

• Occupational injury
  – Cut, fracture, sprain, amputation from a work-related accident

• Occupational illness
  – Any abnormal condition or disorder caused by exposure to environmental factors associated with employment
    ▪ Inhalation, absorption, ingestion, direct contact with toxic substances
NFPA 1581 Consensus Standard

- Minimum requirements for infection-control practices within emergency services
- Must have a written policy statement
  - Defining mission
- Firefighter protective gear
- Other legislation
  - Presumptive legislation
Building an Infection-Control Plan

- Designate an infection-control officer
- Define an exposure and related key terms
- Training and education
- Vaccination and testing
- Personal protective equipment
- Post-exposure management program
- Compliance monitoring
- Record keeping
Infection-Control Officer

• Responsible for maintaining records

• Liaison
  – Department physician, health and safety officer, infection-control representative at health-care facilities, regulatory agencies
Infection Control Officer (Con't)

- Maintaining compliance
- Investigate incidents with followups
- “Designated infection control officer” program
Infection-Control Training

• Training to include:
  – Proper use of PPE
  – SOP’s for safe work practices
  – Cleaning and decontamination
  – Disposal of contaminates
  – Exposure management
  – Medical followup
EMS Infection-Control Equipment

- Single-use medical gloves
- Fluid-resistant clothing
- Pocket masks and/or NIOSH-approved respirators
- Splash-resistant eyewear and face-protective devices
- Respiratory-assist devices
- Approved sharps containers
- Leak proof bags
Decontamination Areas

- Areas assigned for storage, cleaning, and disinfecting of medical equipment and uniforms
- Contaminated equipment or clothing should not be taken home for cleaning
- NFPA 1581
  - Room separated by four walls
  - Vented to the outside
  - Floor drains
  - Biohazard waste under hazmat laws
Occupational Exposures
Pre-exposure

- Proper vaccinations and protective equipment
- Vaccinations
  - HBV, chicken pox, measles, mumps, rubella, and annual flu vaccine
  - Hepatitis A, pneumonia
- Titers
Infectious-Disease Exposure Factors

• Dose
  – The amount of organisms that enter the body

• Virulence
  – The strength of the organism

• Host resistance
  – The ability of the immune system to fight infection
Mode of Transmission

• Direct transmission
  – Pathogen is transmitted directly from an infected individual to an uninfected one

• Indirect transmission
  – Inanimate object serves as a temporary reservoir for the infectious agent

• Routes of exposure
  – Inhalation, contact with blood or body fluids, ingestion, fecal-oral, intermediate carrier (tick)
Requirements for Reporting

- Name, date, time, and location of incident
- Identification of possible pathogen
- Description of the tasks being performed when exposure occurred
- Source of transmission
- Portal of entry
- Personal protective equipment used
Occupational Exposures

- Centers for Disease Control (CDC) has published post-exposure management procedures
- Rapid HIV test standard of care
- Treatment should begin immediately
  – Administration of antiviral therapies
OSHA Reporting Requirements

- Record needle-stick and sharps injuries involving contamination by another person’s blood or other potentially infectious materials
- Establish a procedure for employees to report injuries and illnesses, and for telling employees how to report
- Guarantee employees access to OSHA 301 forms
OSHA Reporting Requirements (Cont.)

- Protect employee’s privacy
- Routinely update the forms and save them for five years
Confidentiality Issues

• Privacy must be maintained
• Confidentiality issues:
  – Who will own the records?
  – Who is authorized to see them?
  – Where and how will they be stored?
  – If computerized, are they really secured?
EMS Safety

• Safety education should be part of any-risk management program
• Required OSHA training for EMS workers
  – Hazard communication, emergency plan, lock out tag out, respiratory, access to medical records, portable fire extinguishers, ergonomics and equipment, hazardous waste and spills, hearing protection
Top Five Injuries for EMS Workers

- Back injuries
  - Majority of workplace injuries
- Injuries sustained on scene
  - Average of 110 firefighter line-of-duty deaths each year in the United States
Top Five Injuries for EMS Workers (Cont.)

• Exposure to infectious diseases
• Vehicle crashes
  – Responding Code 3, lights and sirens
  – Unrestrained occupants
  – Riding in patient compartment associated with greater injury severity
• Assualts on EMS
Summary

- Risk management and safety operations go hand in hand
- The nature of EMS places personnel in hazardous environments
- Responsibility of every EMS manager to conduct reviews and ongoing assessment of risk management and safety principles
- Risk management and safety require quality policies, training, and management