Chapter 58

EMS Deployment and System Status Management

Learning Objectives

- Define system status management
- Describe how resource planning and deployment methods affect response times
- Outline two primary ambulance deployment strategies

Learning Objectives (Cont'd)

- Compare the advantages and disadvantages of different deployment strategies
- Define unit hour utilization
- Explain how system coverage costs and customer satisfaction can be balanced
Introduction

- Key principles of the EMS system
  - Ensure access
  - Appropriate response
  - Planning
  - Managing ambulance placement

Introduction (Cont’d)

- EMS deployment and system status management
  - Art and science of matching production capacity to changing patterns of demand
  - Anticipates and prepares for next call

Introduction (Cont’d)

- Deployment
  - Fixed-station
    - Geographically located stations
Introduction (Cont’d)

- Deployment
  - Combination
    - Geographically located stations
    - Demand posts

- Fully deployed
  - Units assigned to “street corner” posts
  - Eliminates “chute” time

- Flexible deployment
  - Predicting when and where ambulances will be needed

- Deployment factors
  - Geospatial demands
  - Temporal demands
Introduction (Cont'd)

![Ambulance Demand Graph]

History of Deployment

- Jack Stout, 25 years ago
- Tulsa, Kansas City analyzed ambulance calls
  - Created demand maps, plans
History of Deployment (Cont’d)

- Computerized deployment plans created
  - Data-driven systemic approach
  - Moved ambulances frequently
    - Made longer shifts detrimental
    - Led to unpopular “street corner deployment”

Basic Principles and Practices of Deployment

- Workload management
  - Planning resources and support around demand
    - Temporal modeling

- Modern deployment
  - Considers workload and resources
    - Balances coverage
    - Response time
    - Crew satisfaction
Basic Principles and Practices of Deployment (Cont’d)

Modern deployment

- Factors considered
  - Required response times
  - Level-of-care requirements
  - Population density
  - Geographic density
  - Call demand patterns
  - Call acuity
  - Road systems
  - Location of healthcare facilities

Dispatch factors

- Communication personnel training and education
  - Rapid call taking
  - Call prioritization
- Reduce chute time
- Reduce hospital offload times
Understanding Unit Hour Utilization

- Measuring unit hour utilization (UhU)
  - Divide number of transports by total unit house available
- Time on task
  - Average time committed to manage incident
  - Off load delays

Understanding Unit Hour Utilization (Cont’d)

- Schedules
  - Shorter shifts can tolerate higher unit hour utilization
- Importance of UhU
  - Demonstrates value of service
  - Greatest value for fair price

Funding

- 55–80% of costs allocated to personnel
- Most expensive aspect of EMS
  - Adequate resources to achieve target response times
  - Achieving target response times and deployment method used are primary determinants of cost
  - Make changes to be cost effective
Issues That Affect Success and Satisfaction

- Response times
  - Measure against accepted benchmarks
  - Fractile response times
- UhU
  - Measures system productivity

Issues That Affect Success and Satisfaction (Cont’d)

- Resource control
  - Functional control of field units
  - Dispatch following plans

Issues That Affect Success and Satisfaction (Cont’d)

- Human factors
  - Unreasonable expectations of management and field staff
  - Commitment to develop and follow plan
  - Lack of baseline knowledge
  - Lack of technology
  - Lack of qualified personnel
Chapter Summary

- Deployment methods can significantly affect clinical, operational, and financial aspects of the EMS system.
- Key deployment strategies include:
  - Fixed-station deployment
  - Mix of geographic, demand deployment when system is busy
  - Fully deployed systems that frequently use street corner posts

Chapter Summary (Cont’d)

- Response times, hours of coverage required to achieve the response time, employee satisfaction, and cost should each be considered in terms of the advantages and disadvantages associated with different deployment strategies.
- Flexible deployment/SSM is an art involving matching the production capacity of the ambulance system to changing patterns of demand placed on the system.
Chapter Summary (Cont’d)

- UhU is an indicator of ambulance service productivity and staff work load
- Variety of factors should be considered when determining the best deployment strategy for a particular community
  - Anticipated call demand, supply and the availability of units, funding, and employee satisfaction

Questions?