EMC 445 EMS SYSTEMS MANAGEMENT

System Status Management

Unit Objectives

- Upon completion of this unit, you should be able to do the following:
    - Define system status management (SSM)
    - Explain how SSM matches supply (unit hours) with demand (calls)
    - Compare and contrast SSM and queuing approaches to deployment planning
    - Describe how to perform a demand analysis
    - Describe the steps for performing a geographical analysis.
    - Describe how to develop staffing and redeployment plans using SSM
    - Explain the procedure for monitoring SSM plans.
    - List possible causes of lost unit hours of production

SSM Defined

- "SSM refers to the formal or informal systems, protocols, and procedures which determine where the remaining ambulances will be placed when the next call comes in."

  Stout, JL: System Status Management. JEMS. May, 1983.

Creating SSM Plans

- SSM attempts to match supply "ambulances" with demand "calls."
- Just as demand varies in volume and location, so should supply.
- Demand variation typically follows patterns by time-of-day and location.
- Very different system from queuing approach.
  - Queuing staffs by district; with SSM there are no districts
  - Queuing doesn't address redeployment – redeployment plans are developed after the staffing plans; SSM is a form of redeployment plan

Creating SSM Plans continued

- Demand Analysis
  - 20 week minimum sample data set
  - Examine call demand by hour of day and day of week
- Shift Scheduling
  - Matching unit hours (shifts) to demand (deployment plan)
  - Accomplished by creating shifts of varying duration, starting times, day of week patterns, and seasonal patterns to cover the demand pattern
  - Peak time shifts used to meet high demand periods
  - Long shifts (e.g., 24 hour) are used to provide coverage.
  - System is designed such that prime time units run more calls (high intensity) for a shorter period of time. Long shifts run fewer calls per shift (lower intensity) to avoid excessive fatigue.
  - Goal is to balance adequate response time, providing a variety of work schedules for employees, and maximize efficiency in staffing.

Creating SSM Plans continued

- Geographic Call Distribution
  - Plot locations of calls on map.
  - Each map represents a specific time period (morning commute, mid-day, afternoon, early evening, late evening, night) or may be done by each hour individually.
  - Demand location will be affected by time of day, traffic pattern, seasonal patterns, and special events

Creating SSM Plans continued

- Merging Staffing Plan and Geographic Analysis
  - For each hour, determine number of ambulances necessary to meet demand.
  - Plot call locations on map.
  - Determine where all ambulances should be located.
  - Determine where next level of ambulance resources (one less than full complement) should be located.
  - Repeat process of defining ambulance location for each level of resources until your reach the final ambulance.
  - Repeat process for next hour.

Creating SSM Plans continued

- Considerations
  - Employee input
  - Use technology
  - Natural geographic boundaries
  - Traffic patterns
  - Workload
  - Minimize repostings
  - Adhere to plan for 8-10 weeks then re-evaluate
  - Plan for deviations
    - MCI
    - "hot spots"
    - Traffic flow problems
    - Scheduled calls
    - Reprioritization

Measuring System Performance

- Unit Hour Utilization
  - Number of transports/number of unit hours deployed
- Efficient UHU range is .35-.45
- Time on Task
  - Dispatch Time
  - Chute Time
  - Travel Time
  - On scene Time
  - Hospital Drop Time
- Inefficiencies in any of these times can cause lost unit hours and decrease efficiency

Causes of Lost Unit Hours

- Call completion inefficiencies
- Shift change
- Vehicle problems
- Equipment problems
- Restocking