PEAK-LOAD STAFFING *What's Fair For Personnel And Patients?*

Careful examination of demand and frequency fluctuations in EMS systems capable of generating complete data for entire market areas shows that the prehospital care industry shares an important economic attribute with electric utilities and the law enforcement industry. All three have large fluctuations in the frequency of demand for service following patterns that tend to recycle by time of day and day of week.

These cyclical and often predictable patterns of demand create an unavoidable conflict between staffing practices designed primarily for the convenience of the *system* vs. staffing practices designed primarily for the convenience of *patients*. Well-managed high-performance EMS (HPEMS) systems seek and find a reasonable balance between these two inevitably conflicting purposes.

The basic idea is simple: Put more units on the streets during periods of predictably higher demand and fewer units on the streets during periods of predictably lower demand. With that, the simplicity ends.

Rush-hour periods with traffic congestion require more units for coverage than periods with identical demand but without the traffic congestion. For some hours, *demand fluctuations* are small and predictable, requiring very little surplus production capacity to maintain good response time reliability. But for other hours with identical *average demand*, demand fluctuations are large and unpredictable, requiring considerable (and expensive) surplus production capacity for safe coverage. Thus, even though in a given community, average demand between 7 a.m. and 8 a.m. on Fridays may be identical to average demand between 1 p.m. and 2 p.m. on Saturdays, coverage requirements may be very different due to differences in traffic congestion or differences in patterns of demand fluctuation.

Nature of demand (i.e., emergency vs. routine), geographic patterns of demand distribution (i.e., clustered vs. dispersed), concern for avoiding simultaneous shift changes (a dangerous practice) and numerous other factors complicate the process of matching EMS *supply* with EMS *demand*. Thus, the basic concept of "more calls/more units—fewer calls/fewer units" is, by itself, correct but impractical for use in developing shift schedules.

Skilled practitioners of system status management (SSM) understand and respect these complexities, and cope with them successfully in developing and refining EMS staffing plans. But establishing coverage requirements and associated staffing plans does not end the complexities. Participants in our advanced SSM workshops often raise a crucial question: *How is compensation of field personnel best handled in organizations employing peak-load staffing and a variety of shift types?*

Analyzing Shift Characteristics

Organizations that successfully employ HPEMS use at least two, and often as many as four to six, different types of shifts to create the closest practical match between coverage requirements and employee schedules. Characteristics of these shifts vary from extremes of high-productivity shifts with shorter workweeks to low-productivity shifts with longer workweeks. For example, compare the characteristics of the two sample shifts described below. Most shift characteristics fall between these two extremes.

Sample High-Productivity, Short Shift: Often referred to as the "4-on, 2-off, never-on-Sunday" shift, this sample shift is a nine-hour, daytime shift averaging 41.33 hours per week per person. Three employees with alternating days off make up the two-person crew and produce 62 unit hours of coverage per week. The work cycle is four days on, two days off, and then the cycle repeats. When a scheduled workday falls on Sunday, the employee takes the day off. And when a scheduled workday falls on Friday or Saturday, the shift becomes a 13 hour shift extending into the evening. Thus, employees working this shift always have Sundays off, sometimes have Fridays off, sometimes have Saturdays off and sometimes enjoy a three-day weekend. People working this shift (with no extraordinary overtime) will average 2,149 hours of straight time and about 70 hours of overtime annually.

The purpose of this shift is, of course, to provide extra coverage during weekday peak-load periods, extending into Friday and Saturday evenings. Used properly, the 4-on, 2-off, never-on-Sunday shift simultaneously generates a higher average call volume per on-duty hour (*i.e., higher productivity level*), a higher labor cost per unit hour of coverage and a lower labor cost per patient served than most other shifts.

Sample Low-Productivity, Long Shift: The "24-on, 48-off" shift is common throughout our industry, although its use is declining. This shift averages 56 hours per week per person and produces 168 unit hours of coverage per week. Six employees with alternating days off allow continuous two-person coverage, excluding personal leave. Thus, employees working this shift sometimes have Sundays off, sometimes have Saturdays off and sometimes enjoy a two-day weekend. People working this shift (with no extraordinary overtime) will average 2,080 hours of straight time and about 848 hours of overtime annually.

The purpose of this shift is usually to provide continuous coverage at low cost. Due to the need for adequate rest opportunity for crews working extended shifts, the 24-on, 48-off shift simultaneously generates a lower average call volume per on-duty hour (*i.e., lower productivity level*), a lower labor cost per unit hour of coverage and a higher labor cost per patient served than most other shifts.

The Hidden Benefit

Experienced system status managers understand that a wide variety of optional shifts is needed to produce the best possible

coverage given the resources available. However, a variety of available shifts also produces a hidden benefit—individual choices.

Successful managers of HPEMS systems allocate shifts among employees using a seniority-based shift bid process similar to that used in the airline industry to allocate available flights among flight attendants. The combination of seniority-based bidding for shifts and the availability of a variety of shift choices allows individuals the opportunity to select shift schedules more compatible with family responsibilities and off-duty lifestyles.

Medics enrolled in college can bid for shifts compatible with their class schedules. Medics with small children and spouses with "regular" jobs may prefer high-productivity, daytime shifts with shorter workweeks and weekends free, while older medics may prefer low-productivity, extended shifts, such as the 24-on, 48-off shift. The point is, we are not the same. Each of us has individual off-duty lifestyle preferences, responsibilities and goals. Seniority-based shift bidding with a variety of shift options provides expanded opportunity to satisfy individual preferences (and also adds value to seniority status).

Equal Pay for Equal Work—But What's "Equal?"

Traditional compensation arrangements in our industry rely on tenure-based, hourly rate schedules that don't work well in organizations using a variety of shifts with variable average workweeks. There are two major concerns. The first is a lack of fairness. For example, a tenure-based, hourly rate schedule used with the two sample shifts discussed above would result in dramatically different *effective monthly salaries* (i.e., monthly take-home pay) for medics with the same seniority working the two different shifts.

The medics working the 24-on, 48-off shift may effectively argue that, because they work a longer workweek, they deserve a bigger paycheck. But medics working the 4-on, 2-off, never-on-Sunday shift can just as effectively argue that, because they work harder and never sleep while on duty, their paychecks should be at least as large. Since both arguments have validity, the solution is to offer both shifts at the same effective salary (per seniority level) and let employees choose shifts to suit individual lifestyle preferences.

The second problem is that, when one type of shift produces (for a given individual) an effective salary larger than the take-home pay associated with another type of shift, a financial incentive is created that encourages employees to choose shifts that may conflict with their families' non-financial needs or with their own personal lifestyle preferences. The experience of well-managed HPEMS systems indicates that everyone (i.e., patients, employees, families and employers) benefits when shift choices are based on off-duty interests and family concerns rather than financial considerations.

The Boring Part

There are two ways to approach the problem of establishing identical effective salaries (per level of seniority) for shift schedules producing different average workweeks.

Method One: This method requires "backing into" the effective hourly straight time rate for each shift using the following method:

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Step A: Using your spreadsheet software, determine the annual straight time and overtime hours associated with each type of shift you intend to use. (That's how we came up with the figures for the sample shifts above.)

Step B: Select the annual take-home pay for each seniority level.

Step C: Apply the following formula:

$(BW \times ST) + (1.5BW \times OT) = TC$

BW = base hourly wage
ST = straight time hours per year
OT = overtime hours per year
TC = total annual compensation

Example: A paramedic working the 24-on, 48-off shift for an annual salary of $30,000 requires an hourly base wage as follows:

(BW × ST) +
(1.5BW × OT) = TC
(BW × 2080) +
(1.5BW × 848) = $30,000
BW × 3352 ..... = $30,000
BW ..... = $30,000 ÷ 3352
Therefore: BW .... = $8.95/hr.

Note: With this method, a problem may exist regarding hourly rates of pay for extraordinary overtime—voluntary, mandatory and shift trades. Consult your labor law specialist before proceeding.

Method Two: This method requires establishing a common base wage (for each seniority level), and *shift differential pay* (straight time and overtime separately) unique to each type of shift. Again, the desired result is equal effective salaries for personnel of equal seniority, even if they work different types (and lengths) of shifts.

Assume:
TC = total annual compensation
BW = base hourly wage
ST = straight time hours per year
OT = overtime hours per year
SD = shift differential
(bonus hourly pay per shift type)
(Note: separate calculations are required for each level of seniority.)

Step A: Calculate BW for the shift type having the longest average workweek, as in Method 1.

Example: In the 24-on, 48-off shift with $30,000 effective annual salary:

(BW × ST) +
(1.5BW × OT) = TC
BW(2,080) +
1.5BW(848) ..... = $30,000
BW(2,080) +
BW(1,272) ..... = $30,000
BW × 3,352 ..... = $30,000
BW ..... = $30,000÷3,352
BW ..... = $8.95/hr.

Step B: Calculate SD for all other shifts using the following formula:

[(BW + SD) × ST] +
[1.5(BW + SD) × OT] = TC

Example: In the 4-on, 2-off, never-on-Sunday shift, at $30,000 TC, where BW (all shifts at given seniority) = $8.95/hr.:

[(BW + SD) × ST] +
[1.5(BW + SD) × OT] = TC
[($8.95 + SD) × 2,149] +
[1.5($8.95 + SD) × 70] = $30,000
[($8.95 + SD) × 2,149] +
[($8.95 + SD) × 105] = $30,000
(19,233.55 + 2,149SD) +
(939.75 + 105SD) ..... = $30,000
20,173.30 + 2,254SD .... = $30,000
2,254SD ..... = $9,826.70
SD (straight time only) ... = $4.36/hr.
1.5SD (overtime
shift differential) = $6.54/hr.

A Variation of Method Two: Keep in mind that Method Two creates one shift differential amount for straight time (e.g., $4.36/hr. in the example above) and another for overtime hours (*i.e.*, 1.5 times the straight time shift differential, or $6.54/hr. in the above example). From a labor law perspective, this may be the more conservative approach. The alternative is

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to create a single shift differential amount for every hour worked on a given shift, whether straight time or overtime. (Again, consult your labor law specialist before proceeding.) The formula for this variation is:

$$[(BW \times ST) + (1.5BW \times OT)] + SD(ST + OT) = TC$$

Pretend Bidding

If you aren't already doing it, seniority-based allocation of a variety of shift types can seem pretty scary—what if folks hate it? "Pretend bidding" can be a risk-free way of testing the water without jumping in. The idea is to develop a purely hypothetical peak-load staffing plan using a variety of shift schedules and then allocate those shifts in a strictly non-binding pretend bid process to learn which shifts might actually "sell" on a voluntary basis and which will not. Here's an example from my own experience.

Our firm was once simultaneously retained by two clients to negotiate EMS labor agreements with two different unions in two different cities (Kansas City and Fort Wayne). When negotiations began, Kansas City medics were working 24-on, 48-off shifts, and Fort Wayne medics were working 8-hour shifts—4 days on and 2 off. Neither EMS system was using peak-load staffing at the time, and both were experiencing serious financial problems and response time deficiencies. In short, both systems needed to change their shift schedules and staffing patterns to more closely match the needs of their patients.

Alternating between negotiations with the two labor groups, I learned something important—it's hard for people to change, even when that change improves patient care. To improve productivity and response time reliability, the Fort Wayne system needed to add new types of shifts, including some shifts similar to those used in Kansas City. The Kansas City system needed to add new types of shifts, including some similar to those used in Fort Wayne. We opened negotiations by guaranteeing no reduction in monthly take-home pay, regardless of shift assignment.

During our preliminary negotiations, Fort Wayne's medics insisted that trading even a few of their current shifts for shifts like those used in Kansas City would devastate patient care and destroy families. At the same time, medics in Kansas City swore that trading their existing shifts for shifts similar to those cherished in Fort Wayne would surely produce the same results. In each case, the assumption was made that, where shift schedules are concerned, employees share the same needs and preferences. The pretend bid process proved it just isn't so.

Labor representatives in Fort Wayne agreed that we could develop a peak-load staffing plan tailored to local demand, with shift schedules to match, and then conduct a hypothetical seniority-based shift bid process to see what might happen. After surveying individual employee preferences and analyzing the market area's coverage requirements, we developed a hypothetical staffing plan incorporating four types of shifts, with average workweeks ranging from 37 hours (Fort Wayne's original shift) to 56 hours (the 24-on, 48-off shift). We then conducted a seniority-based pretend bid process to allocate the hypothetical shifts among personnel.

When the non-binding pretend bid process was finished, we posed the question: *How many of you prefer your pretend shift to the one you have now, or like it just as well?* A solid majority raised their hands. After making minor adjustments to the pretend schedule, we developed a contract to make it real. The immediate net results were a near 50 percent improvement in response time performance, the eventual elimination of the need for local tax subsidy and improved productivity sufficient to provide financing for a new communications system, a new fleet of ambulances and a 17 percent increase in medics' monthly take-home pay. (For more on the Fort Wayne system, see "It's Hard to be Afraid," *JEMS* October 1983.)

Over the years, coverage requirements, personal preferences and shift patterns have continued to evolve in both the Fort Wayne and Kansas City systems—and not always without problems. Today, both systems produce levels of clinical performance and response time reliability rivaled by only a handful of EMS systems.

Peak-load staffing and seniority-based bid allocation of a variety of shifts are essential to that performance. But it was the pretend bid process that initially broke the ice.

This topic is expanded upon in Stout's book, High Performance EMS Systems (HPEMS), *to be published by Jems Publishing Company.*

Jack Stout has been at the forefront of innovations in the design and implementation of EMS systems for the past 12 years. If you have a question, problem or solution related to the public/private interface in prehospital care, address your letter to: *Interface*, P.O. Box 1026, Solana Beach, CA 92075.