Jack Stout

INTERFACE

Ambulance System Designs

by Jack L. Stout

Which set of built-in problems and disadvantages do *you* find least objectionable? Every prehospital care system design has them. In some cases the impact of a built-in design flaw can, if recognized, be limited—the way good telephone and dispatch protocols can reduce the dangers inherent in a multi-tiered system. Even so, every design is flawed, and every design has its own special advantages.

Ordinances, licensing procedures, bid processes, clinical standards, rate regulation, subsidies, contracts, efficiency, performance and every other aspect of a prehospital care system are affected by system design. Superb managers can, at least for a while, overcome many of the flaws in a bad design. But superb managers are rarely attracted to work in a poorly-designed system. Where chronic inefficiency is the built-in problem, heavier tax subsidies can fill the gap, but not in communities that either can't or won't fund needless inefficiency.

Increasingly, the performances of prehospital care providers, public and private, are being compared. . . at least public officials, reporters, and other observers *think* it is the work of providers that is being compared. But the truth is that much of the credit or blame should go not to the provider but to the design of the system itself.

Most of today's prehospital system designs either "just happened" or were adopted at a time when most designs were essentially experimental. Even the term "EMS," made popular by the federal grant programs, incorporates a questionable design assumption—that it is desirable and practical to separate and specialize production for the emergency and non-emergency markets.

But now, after a decade or more of real-world field testing, the advantages and disadvantages inherent in our most common system designs are known. While the evolution of system design is far from complete in this young industry, enough has been learned to prove that a great deal of yesterday's "wisdom" was simply and acutely wrong. The purpose of this article is to provide: a framework for analyzing prehospital system designs; a description of the major types of prehospital system designs in use today; and a summary of the advantages and disadvantages of each as exposed by experience.

Regarding This Writer's Biases. Being both a student and designer of prehospital care systems, I have accumulated opinions on the subject over the years. These opinions are not, I believe, the product of bias but of study and experience. However, rather than argue this issue, I shall separate and label those portions of this report which contain conclusions of the sort likely to be attacked as biased by those whose own conclusions may differ.

When Special Interests Conflict. Prehospital care system designs primarily affect the interests of patients, taxpayers, the system's workers, individual and third-party payers, public agencies, owners of private ambulance firms, and elected officials. No system design can simultaneously serve all of these interests; the interests of some must be subordinated to the interests of others. Thus, any system design should be evaluated not in terms of its ability to satisfy every interest but rather in terms of its ability to distinguish that which matters most from that which matters less.

Opinion: *In my own work, I attempt to serve these special interests in accordance with the following pecking order:*

1. *The Critical Patient.* In designing a system I will sacrifice all other interests, if necessary, to meet the needs of the critically ill or injured patient. I will inconvenience field personnel, raise rates, irritate third-party payers, ban cream-skimming non-emergency providers and bend and shape the entire prehospital care industry if required. Even though critical patients are a small minority among ambulance service consumers, the life vs. death nature of their needs justifies primary consideration. Unfortunately, this special interest group is an "after-the-fact" political constituency whose interests must therefore be advocated by others.

2. *Taxpayers.* I believe local tax subsidies for prehospital care should not be spent to support or camouflage an inefficient system, to reduce the cost of service to private-paying patients, or to reduce the financial obligations of third-party payers. While modest subsidies (i.e., less than three dollars per capita per year) may be justified in some communities, there is no evidence that higher subsidies buy better service.

3. *EMTs and Paramedics.* Field personnel are the heart of the system. I will not sacrifice the interests of patients or taxpayers to the interests of field personnel, but I will, if necessary, sacrifice the business interests of private firms (e.g., bans on cream-skimming and on-scene collections). I will even sacrifice the comfort of public officials (e.g., explaining the rates needed to fund decent wages) to protect

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Jack Stout, chairman of The Fourth Party, has been at the forefront of innovation in the design and implementation of EMS systems for the past dozen years. As a national lecturer, Jack will be appearing at the San Diego EMS today series in February 1986.

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Interface

the interests of field personnel.

4. *Business Interests of Primary Care Providers.* Primary providers of paramedic services, public and private, provide an important and essential service often under difficult economic and political circumstances. And while I won't ask taxpayers or rate payers to foot the bill for inefficiency, I must recognize that everything depends upon the financial viability of the primary paramedic service provider. Thus, for example, I will, if necessary, sacrifice the business interests of non-emergency provider firms to preserve the stability of the primary provider organization.

5. *Individual and Third-Party Payers.* Rate payers should not be expected to cover excess costs of an inefficient system and neither should taxpayers. At the same time, taxpayers should not be asked to cover the financial obligations of individual or third-party payers.

6. *Politicians.* I fully understand why some politicians prefer to support a popular but inefficient prehospital care system rather than wade into the political quicksand of change. I can understand it, but I can't respect it. Elected officials should place the interests of patients and taxpayers ahead of their own political interests. Over the years I have been privileged to work with several elected officials who have done exactly that.

7. *Business Interests of Non-emergency Providers.* The business interests of non-emergency providers are not unimportant. They are, however, less important than the interests of patients, taxpayers, and primary paramedic providers. Non-emergency providers can drain vital financial resources from an otherwise healthy prehospital care system—resources which must then be offset by: higher-than-necessary tax subsidies, higher-than-necessary emergency rates, or a lower-than-necessary quality of service.

A system capable of simultaneously serving all of these interests would indeed be a miraculous invention. In such a system a private provider of paramedic transport service would deliver superb paramedic service to every patient who needs it, always arriving promptly but discreetly *after* the arrival of a non-transporting fire department paramedic first responder unit. Subsidies would be low or non-existent, and rates would be just high enough to discourage abuse. All paramedics would work 24-on/48-off shifts and get plenty of rest on duty. Flawless call screening would limit paramedic response to only the most dramatic calls, leaving less press-worthy but more profitable work to the community's multiple non-emergency BLS providers who, guided by the invisible hand of micro-economic theory, would prosper in a shopper's paradise of consumer choice.

In short, such a design would combine all of the advantages of today's prehospital care systems but would omit their disadvantages. Such a system would repeal the law that says, "there ain't no free lunch" and would avoid the awful responsibility of deciding which values are most important and which must be sacrificed.

Production Strategy. Two major and logically opposite production strategies dominate our industry today—one pursues efficiency through specialization of responding units (i.e., multi-tiered systems) while the other pursues efficiency through use of more flexible multi-purpose units (i.e., single-tiered, all-ALS, full-service systems).

The logic behind the multi-tiered approach is that since some patients need less sophisticated care than others, money can be saved by sending more clinically sophisticated (and more expensive) crews to the more critical patients, while less sophisticated (and less expensive) crews serve less critical patients. Sometimes the more expensive crews will be sent by mistake to a less serious case, but a less expensive crew will then be called to make the actual transport.

This approach to organizing production was taken directly from the theories of management science which were popular in the '60s—theories which had proved successful in organizing the production of large volumes of standardized goods or services through task specialization in assembly line production. Reductive systems analysis, operations research techniques, queuing theory, computer simulation models, task analysis, and related methods were applied to fine tune the basic concept of saving money and improving service by having less expensive crews (and equipment) do the simple work, preserving more expensive resources for more complex work.

The alternative approach recognized that some patients need more

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sophisticated care than others but questioned whether specialization was appropriate in an industry whose *combined* emergency and non-emergency production capacity was small and where peak load demand fluctuations required the maintenance of considerable surplus production capacity. Whereas all multi-tiered systems embrace the same basic logic of efficiency through specialization, single-tiered system design is based upon the logic of efficiency through use of more flexible multi-purpose production teams—i.e., the strategy of flexibility which now dominates in the production of "custom" goods and services in quickly changing markets.

When quality and cost are fairly compared, the most efficient, high-performance systems in the U.S. are single-tiered, all-ALS, full-service systems. Such systems also eliminate entirely the risks (medical and legal) of call screening, patient abandonment, and handoffs of patients from ALS crews to BLS crews. On the other hand, depending upon the specific system design, such systems may attract antitrust litigation and often create the most heated opposition from defenders of the status quo.

There are many different types of multi-tiered systems, just as there are many different types of single-tiered systems. Even so, the choice between specialized organization of production vs. use of multi-purpose flexible production methods is the most controversial issue in our industry today and perhaps the most important.

Regarding "first responder" programs. Non-transporting ALS or BLS first responder teams are normally not considered a separate "tier" of the prehospital care system. That is, even in single-tiered, all-ALS, full-service systems, fire department first responder teams operating from fire apparatus—not from ambulances or special medical response rigs—are routinely dispatched simultaneously with a paramedic ambulance to emergency calls classified presumptively as potentially life threatening.

While the presence of a non-transporting first responder program does not make a system "multi-tiered," classification may become complicated when the only paramedic service available is from the first responder program, when first response paramedics accompany BLS transport crews when advanced en route care is needed, or when first responders operate from ambulance units, sometimes transporting—sometimes not. In general, such variations on the first responder theme do involve some strategy aimed at sending less capable crews to less serious calls. When you see such strategies in use, you are looking at a multi-tiered system.

Opinion: *The logic behind multi-tiered systems is simply out of place in this industry. It looked good on paper a decade ago, but in practice, the advantages today (i.e., medical, financial, and legal) of more flexible single-tiered, all-ALS, full-service systems overwhelm the mostly theoretical benefits of multi-tiered specialization. A recent court ruling held a local government responsible for damages resulting from the negligent* design *of a drainage system. It is only a matter of time before attorneys will discover the vulnerability of multi-tiered systems to a similar complaint.*

Medical Quality Control. The medical quality control (Q/C) mechanism inherent in any system design can be classified by three main criteria: Q/C is internal or external, authoritative or advisory, funded or voluntary. In practice, many systems spend more to *tell you* how good their service is than they spend to *find out* how good it is.

Opinion: *The medical quality control function should be in the hands of physicians who are not selected by and do not serve at the pleasure of the organization whose quality of service they are supposed to oversee. When a "medical director" is fired by the very organization he was hired to oversee, the public cannot know whether the medical director was fired for* doing *the job or for* not doing *the job. Medical quality control should be funded (about one to two percent of system operating costs is sufficient in larger systems) and fully empowered by ordinance to effect changes as necessary.*

Type of Competition. Systems can be classified as: eliminating competition; relying upon competition *within* the market (i.e., "retail" competition); or relying upon competition *for* the market (i.e., "wholesale" competition). In practice, many systems are designed to elimi-

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nate competition entirely in the emergency market while relying upon retail competition in the non-emergency market.

Retail competition in the emergency market is widely accepted as medically dangerous and economically ineffective. The benefits to the public of retail competition in the non-emergency market are difficult to document and perhaps non-existent. Finally, the administrative technology for managing contract competition (i.e., competition *for* the market) in this industry is quite complex and poorly understood. As a result of bungled procurement processes, many system designs which purport to incorporate competition *for* the market actually have had the effect of eliminating useful competition entirely.

Opinion: *Organizations, even more than individuals, need the stimulation of periodic competition to sustain efficient performance. Effectively structured competition* for the market *is the longest lever there is for prying performance out of prehospital care systems. On the other hand, stable service of high quality at reasonable cost has never evolved from retail competition in this industry. Thus, systems designed to eliminate competition in the emergency market, while preserving retail competition in the non-emergency market, curiously incorporate the worst of both worlds.*

Socialized vs. Private. Systems can be fully socialized, fully private or mixed. In practice, mixed systems divide the public/private responsibilities vertically or horizontally. An example of horizontal division is a system in which a government agency such as a fire department provides a community's emergency service, including transport, while one or more private firms provide non-emergency service. An example of vertical division is a public utility model system in which a private firm provides both emergency and non-emergency service while a public agency handles rate setting, billing, and collection functions. Another example of vertical division is a system where a government agency provides non-transporting paramedic level services while a private BLS firm provides transportation for the same patients.

Opinion: *Unless there are compelling reasons to the contrary, I prefer to avoid socialization. Non-transporting fire department first responder services, delivered from fire apparatus, offer a unique public service bargain. Rate regulation, quality control, market allocation, and in some cases billing and collection functions, are best done by government. But given the splendid performance record of private paramedic providers operating within sound system designs, there are no compelling reasons to justify continued socialization of production in this industry.*

Level of Subsidy. Prehospital systems can be classified as: unsubsidized; moderately subsidized (i.e., annual per capita local tax subsidies of less than three dollars); or heavily subsidized (i.e., annual per capita local tax subsidies over three dollars). The only effect of ambulance subsidy is to reduce the retail price of service to a level less than production costs. Not surprisingly, the most heavily subsidized systems in the U.S. generally bill at the industry's lowest levels.

More surprisingly, America's least efficient systems are usually so heavily subsidized that their rates are not only well below their own production costs but are even below the rates charged by the industry's most efficient unsubsidized providers. Thus to the public, the least efficient systems often appear to be the most efficient, while the most efficient systems appear least efficient—a distortion of perception that is more than a little frustrating to the superior managers of the more efficient organizations.

Opinion: *The best thing that could happen to our industry's most capable paramedic provider organizations and to our industry's brightest personnel would be the nationwide elimination of local tax subsidies of prehospital care. But as things now stand, the least efficient systems are rewarded by the largest tax supports and enjoy the public relation advantages of providing a dramatic lifesaving service at what appears to be a bargain price. Thus, local tax subsidies do more than reduce prices below cost; they also reward, protect, and preserve the most poorly managed systems in the U.S. while retarding the industry's evolution toward superior systems serving regional medical trade areas.*

Today's Designs: A Smorgasbord of Options

Today's prehospital care systems generally fall into seven major categories, some of which appear in several variations. Experience has shown that success may depend as much upon the variation as upon the basic design chosen and that the designs with the greatest performance potential are those most sensitive to the caliber of management.

Many more variations and combinations are theoretically possible than have actually been implemented to date. However, for purposes of this report I shall deal only with system designs that have actually been implemented in real world settings.

Model Definitions

TYPE A
Shopper's Paradise

This design is the most thoroughly tested of all designs. Multiple firms compete *within* the market (i.e., at the retail level) to provide emergency and non-emergency services. In most cases state and local regulations set minimum standards, and in some cases rates are regulated as well.

While retail competition is an effective force in many industries, its record in the prehospital care industry is dismal. Except in a few cases where the system has evolved into a monopoly or near monopoly, this design has universally failed to produce good results. The "Shopper's Paradise" has, in fact, furnished the primary justification for the widespread socialization of this industry.

Variation 1—Real Competition.

Multiple companies really do compete. This variation is quite unstable and has few, if any, knowledgeable advocates.

Variation 2—Apparent Competition.

Multiple firms appear to compete but actual competition is limited or non-existent. Sometimes identical or overlapping ownerships provide the *appearance* of competition without competing. Where call-rotation exists, the practice of operating under multiple corporate identities, with multiple phone listings, gives an owner a larger share of referrals. In some cases multiple firms actually exist but have made "deals" to divide the market, maintain similar (but not identical) price structures, and to keep out new competitors.

In a few cases where government has failed to implement a more stable design, well-motivated owners have used this variation to create stability so that good service becomes possible. In other applications owners have used this variation solely to their personal advantage. But even where this variation works to the benefit of consumers,

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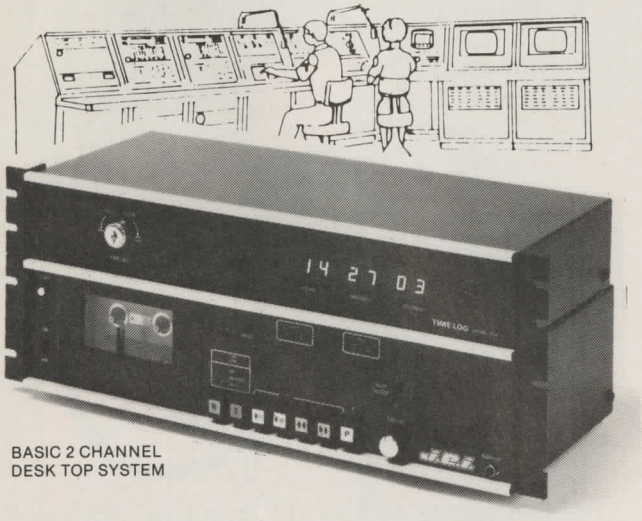

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it does so at great legal risk to the participants (i.e., antitrust violations), and the benefits are entirely dependent upon the motivations of current owners.

TYPE B
The Fire Chief's Delight

This design employs a non-transporting fire department paramedic rescue service as the community's primary paramedic provider. One or more private firms provides emergency transportation and non-emergency service. This model is popular with many fire officials due to the tremendous public relations impact, the added justification provided for the fire department's budget, and general lack of disruption to the department's traditional staffing methods.

Variation 1. With single contracted BLS emergency transport provider; multiple BLS non-emergency firms.
a) With competitive selection of BLS transport provider.
b) Without competitive selection of transport provider.

Variation 2. With multiple BLS emergency transport providers; multiple non-emergency service providers.
a) Transport referrals by call rotation.
b) Transport referrals by assigned coverage zone.

Variation 3. With single contracted BLS emergency transport provider who also enjoys exclusive rights to serve the non-emergency market.

Variation 4. With single contracted ALS emergency transport provider; multiple non-emergency firms.

Variation 5. With single contracted ALS emergency transport provider who also has exclusive rights to the non-emergency market.
a) All work (emergency and non-emergency) performed by ALS crews.
b) Emergency transport by ALS crews; non-emergency service by BLS crews working for same firm.

Variation 6. With emergency transportation by multiple ALS providers; retail competition in non-emergency market.
a) Transport referrals by call rotation.
b) Transport referrals by zone assignment.

Comments: This design and its variations are the progeny of Jack Webb's "Emergency" television series—a series which has profoundly influenced the evolution of prehospital system design. This design enjoys a powerful network of supporters: fire officials and firefighter/paramedics for the reasons stated, third-party payers whose financial obligations are offset by local tax dollars, and the private ambulance companies who enjoy 100 percent of the fee-for-service revenues while providing far less than 100 percent of the system's service. In fact, owners of firms lucky enough to participate in a Variation 3 system, and some who have participated in Variation 1 designs, have reaped tremendous financial benefit.

A few Type B systems have also produced a bizarre system mutation sometimes referred to as "staging." "Staging" is used to prevent the occasional arrival at the scene of a private ambulance *prior* to the arrival of the fire department's rescue unit. To avoid this, the dispatch of the transport ambulance may be slightly delayed or the private ambulance may actually wait a few blocks from the scene until notified by radio that the fire department has arrived. In at least one Type B system the transport ambulance is dispatched upon direction of the previously dispatched rescue crew. In most cases "staging" policies are kept informal for obvious reasons but, incredibly, not always.

Opinion: *Variations 1, 2, 3, 6b and eventually 5b will become extinct as personal injury lawyers discover the "negligent system design" argument. Variation 4 will continue to exist where the taxpayers can afford its inefficiency. Variation 6b will work well in very large communities, especially where competition in the non-emergency market is limited to primary emergency providers. Variation 5a will become increasingly popular since it preserves the role of the fire department, incorporates good opportunity for efficiency, superbly meets the patient's needs, and is capable of functioning with little or no local tax support. In many cases Variation 5a will evolve naturally into Type F1, F3, or Type G designs.*

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Summary of Existing Prehospital System Designs

Type of Design	Most Benefits	Least Benefits	Production Logic	Usual Quality Control	Form of Competition Emerg. Mkt.	Form of Competition Non-emerg. Mkt.	Usual Subsidy Requirements	Prognosis for Future
Type A: Shopper's Delight *Var. 1*	The most cut-throat owners	Patients, workers	None	None	Retail	Retail	Low or none	Extinction
Var. 2	Incumbent owners	Patients, workers	None	None	Fake	Fake	Low or none	Extinction
Type B: The Fire Chief's Delight *Var. 1a*	Fire dept. budget, government workers, private owners, third-party payers	Taxpayers, patients	Specialization	Internal advisory	Paramedic service—none; transport—wholesale	Retail	Moderate, often hidden	Extinction
Var. 1b	Same as above	Taxpayers, patients and private workers	Specialization	Internal advisory	None	Retail	Moderate, often hidden	Extinction
Var. 2a	Same as above; also plaintiff's lawyers	Same as above	Specialization and sheer chance	Internal advisory	None	Retail	Moderate, often hidden	Extinction (very soon)
Var. 2b	Same as above	Same as above	Specialization	Internal advisory	None, or sometimes wholesale	Retail	Moderate, often hidden	Extinction
Var. 3	Fire dept. budget, private owners, third-party payers, government workers	Taxpayers, patients	Specialization	Internal advisory	None or wholesale	None or wholesale	Moderate, often hidden	Extinction
Var. 4	Emergency patients, fire dept. budget, government workers	Taxpayers, non-emerg. patients, private workers	Specialization	Internal advisory	None or wholesale	Retail	Moderate, often hidden	Long life, but eventual extinction
Var. 5a	Patients, all workers, fire dept. budget, taxpayers	Non-emerg. cream-skimmers	Flexible production	External	None or wholesale	None or wholesale	Moderate to low	Long, successful life
Var. 5b	Emerg. patients, emerg. workers, fire dept. budget	Non-emerg. patients, non-emerg. cream-skimmers	Specialization	Internal or external	None or wholesale	None or wholesale	Moderate	Eventual Extinction
Var. 6a	Fire dept. budget, government workers, plaintiff's lawyers	Patients, taxpayers, private workers	Specialization and sheer chance	Internal advisory	None	Retail	Moderate, often hidden	Extinction (very soon)
Var. 6b	Same as above	Taxpayers, non-emerg. patients, private workers	Specialization	Internal advisory	None or wholesale	Retail	Moderate, often hidden	Eventual Extinction
Type C: The Insurance Company's Delight *Var. 1*	Emerg. patients, third-party payers, government workers	Taxpayers, private workers, non-emerg. patients	Specialization	Internal advisory	None	Usually retail	Heavy	Long life in wealthy communities, then extinction
Var. 2	Third-party payers, government workers, plaintiff's lawyers	Taxpayers, some emerg. patients, private workers	Extreme specialization	Internal advisory	None	Usually retail	Heavy	Initial conversion to Type C, Var. 1, then extinction
Type D: Fully Socialized System *Var. 1*	Patients, workers	Private providers	Flexible production	Internal or external	None	None	Moderate	Eventual privatization of existing workforce
Var. 2	Workers, some patients	Other patients, private providers	Specialization	Internal or external	None	None	Moderate	Extinction or conversion to Type D, Var. 1
Type E: Emergency-Only Exclusive Franchise *Var. 1*	Emerg. patients, cream-skimmers	Private workers (non-emerg.), non-emerg. patients	Specialization	External	Wholesale or none	Retail	Moderate to heavy	Conversion to Type E, Var. 2 or to Type F, Var. 1 or 3
Var. 2	Emerg. patients, sometimes taxpayers	Non-emerg. patients, some cream-skimmers	Limited specialization	External	Wholesale or none	Retail	Moderate	Conversion to Type E, Var. 1
Type F: The Full-Service Exclusive Franchise *Var. 1*	Patients, all workers, taxpayers	Non-emerg. cream-skimmers	Flexible production	External	Wholesale or none	Wholesale or none	Moderate to low	Usually long life where design now exists
Var. 2	Taxpayers, some patients	Non-emerg. cream-skimmers	Specialization	External	Wholesale or none	Wholesale or none	Moderate	Conversion to Type F, Var. 1 or 3
Var. 3	Patients, taxpayers, workers	Non-emerg. cream-skimmers	Flexible production	External	Wholesale	Wholesale	Low to none	Too soon to tell; should survive
Type G: The Public Utility Model	Patients, taxpayers, often workers	Non-emerg. cream-skimmers	Flexible production	External	Wholesale	Wholesale	Low to none	Stable after controversial start-up

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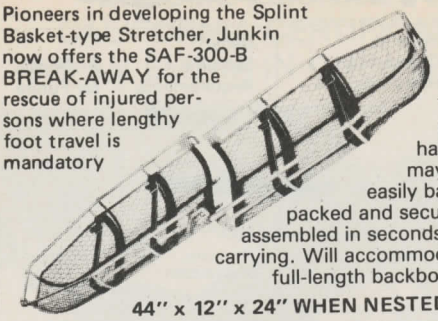

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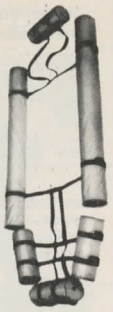

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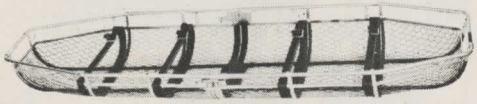

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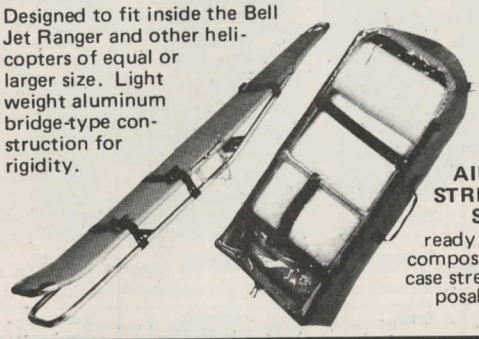

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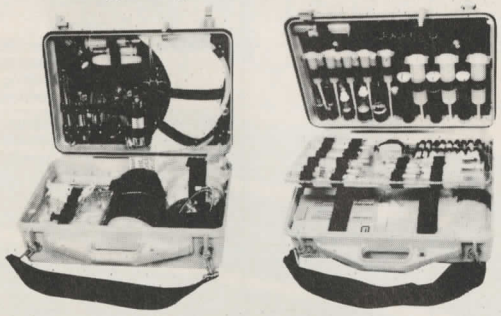

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TYPE C
The Insurance Company's Delight

In this design a government agency, usually a fire department or "third service" department, provides emergency services, including transportation, while multiple private firms compete at the retail level to serve the non-emergency market. (Austin, Texas may be unique in having a two-tiered transporting government emergency service and a single private BLS firm exclusively licensed to serve the non-emergency market.)

Variation 1. With all-ALS emergency service.

Variation 2. With BLS or tiered ALS/BLS emergency service.

Comments: While Type B systems are a boon to third-party payers at local taxpayers' expense, they are second in popularity with third-party payers to Type C systems. That is because the subsidized rates charged by government providers for ALS service, including transportation, are often even lower than the unsubsidized rates charged in Type B systems for transportation alone.

Insurance plans which pay on a "prevailing rate" basis (e.g., Medicare) benefit additionally from Type C designs as the heavily subsidized government rates artificially depress the prevailing rate average of the entire region, thus reducing third-party payments to both subsidized and *unsubsidized* providers. This little understood phenomenon produces subtle but powerful ripples of economic distortion throughout the entire prehospital care industry.

Opinion: *All Type C systems will abandon tiered emergency service, call screening, and, except in rare cases, transport refusals due to the difficulty of defending such practices against a well-prepared negligence suit. Some have already made these policy changes. Later, patients refused service by non-emergency providers due to inability to pay will learn to request service from the government provider who, under the new rules, will rarely refuse the request.*

When it becomes understood that the government service is being indirectly abused by cream-skimming non-emergency providers, Type C systems will either evolve temporarily into Type D systems, ban transport refusals in the non-emergency market, or be replaced by Type E, F, or G designs.

TYPE D
Fully Socialized System

In this design all emergency and non-emergency services are provided by a single government agency.

Variation 1. All-ALS, full-service, single-tiered system.

Variation 2. Tiered response system.

Comment: This is a very rare model. Perhaps the largest of this type is the AMCARE system which now serves Oklahoma City and several surrounding communities using Variation 2. That system evolved almost accidentally when an attempted implementation of a model closely resembling a Type G system failed, and the local ambulance authority (i.e., COAT) was forced to take over the service.

For approximately two years prior to implementation of the public utility model in Fort Wayne, Indiana, that system ran as a Variation 1, Type D system, and reportedly the Austin, Texas system was briefly configured as a Variation 2, Type D design.

Opinion: *The AMCARE system continues to attract my interest. As socialized systems go, it is one of the least subsidized and most cost effective in existence. Furthermore, the quality of AMCARE's service seems to be rising faster than AMCARE's costs—most unusual in a socialized setting.*

For reasons already discussed and to improve efficiency, AMCARE will probably convert to Variation 1 within the next few years. (That's my opinion—not AMCARE's.) However, since there are few advantages and many disadvantages to requiring an otherwise excellent management team to operate an ambulance system while constrained by the accoutrements of

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governmental status, it seems logical and inevitable that Type D systems will eventually "go private"—either by being bought out by large private firms or by being converted into employee-owned private corporations. In either case the system would then be converted to a Type E, F, or G design.

TYPE E
Emergency-Only Exclusive Franchise

In this fairly common design, a single private firm is exclusively franchised, contracted, or licensed to provide all emergency service while multiple private firms compete at the retail level. In some cases, the emergency service provider is competitively selected; sometimes not.

Variation 1. Emergency provider is barred from competing in the non-emergency market or is restricted from using "emergency units" to provide non-emergency services.

Variation 2. Emergency provider is allowed to compete in the non-emergency market without restriction so long as emergency performance is not impaired.

Comments: This model is becoming increasingly popular due to tightening local government budgets, the growth in numbers of qualified private paramedic providers, and the development of more reliable administrative tools (e.g., performance security measures, bid processes, contracting formats, etc.) for safely purchasing this complex public service.

Variation 2 has greater potential for efficiency, stability, and subsidy-free operation than does Variation 1. However, safe implementation and operation of a Variation 2 design require greater expertise and sophistication from both the contractor and government officials. The performance of a Type E system is much more sensitive to mistakes made by government than is the performance of any of the previously discussed designs.

Opinion: *A well-designed, properly implemented and intelligently managed Type E system which incorporates effective competition for the market can outperform any of the previously discussed designs with the possible exception of a well-managed Type B, Variation 5a system. On the other hand, a mismanaged system of the Type E design can be simultaneously expensive and deadly. Type E, F, and G designs should only be attempted where government fully respects the complexity of the industry with which it is dealing.*

TYPE F
The Full-Service Exclusive Franchise

In this design a single private firm is exclusively licensed, franchised, or contracted to provide all ambulance services, emergency and non-emergency, for an entire community. Provider selection may be competitive or non-competitive.

Variation 1. All services are delivered by ALS units—i.e., a single-tiered, all-ALS, full-service system. (Note that if non-transporting first responders operate at the paramedic level, the Type F, Variation 1 design is identical to the Type B, Variation 5a design.)

Variation 2. The system is tiered, using both ALS and BLS ambulances.

Variation 3. The "failsafe franchise model"—i.e., a highly structured means of safely implementing and managing what is essentially a Variation 1 design except that the provider is always selected competitively, certain parts of the system infrastructure are held in the public sector (to enhance competition during bid cycles and for

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performance security reasons), and a hybrid business structure preserves business continuity across bid cycles. (See October 1985 *jems* for a more detailed description of this model.)

Comments: The most cost-effective systems in the entire industry are Type F designs. Ironically, some of the industry's least stable and poorest performing systems are, or in the case of those now defunct, were Type F systems. The well-known Acadian system, which serves on an exclusive basis nearly one-third of the state of Louisiana, is an example of a superbly performing Type F, Variation 2 design serving a large rural area. The system operated by Eastern Ambulance in Syracuse, NY is an example of a Type F, Variation 2 design delivering superb service to an urban community at perhaps the lowest cost in the industry for a comparable level of service.

Very few of the existing Type F systems were originally implemented by virtue of local government action. Some "just happened," and the rest were a byproduct of state certificate-of-need (CON) programs. None to my knowledge have yet selected their current operators by competitive means, although as of this writing the city of Fort Worth, Texas is implementing a Type F, Variation 3 design with competitive provider selection.

Opinion: *Some version of the Type F design (perhaps a variation not yet invented) seems the logical eventual successor to all the other designs. Except for provision of first responder services, the role of local government in the ambulance industry will someday be replaced—either by competitive group purchasing of ambulance services for large geographical medical trade areas by consortiums of third-party payers and HMO organizations or by competitive award of regional market rights (i.e., CON) by regulating state agencies. (Even the public utility model, Type G, is designed for easy conversion to a Type F hybrid when both local tax subsidies and fee-for-service payments are eventually abandoned as our industry's major sources of funding.)*

TYPE G
The Public Utility Model

This design presents a radical departure from all other models, incorporating an unusual division of responsibilities between a competitively selected operations contractor and an overseeing government agency (i.e., "ambulance authority"). This controversial model has been implemented in Tulsa, Kansas City, Fort Wayne and Little Rock. (As of this writing the Little Rock system has not yet implemented a Type G authority/provider contract.)

I have previously written extensively about this model and thus will omit further discussion here. Interested readers will find a three-part series on the model in the May, June and July 1980 issues of *jems*. A followup three-part series entitled, "Public Utility Model Revisited" can be found in the February, March and May 1985 *jems* issues.

Legal Constraints

Two types of legal issues, both complex and rapidly evolving, heavily influence prehospital system design in any local setting. The first involves the application of antitrust laws and the right of local government to intervene in the prehospital care market. The second involves the effects of system design upon the local government's exposure to tort liability. These two distinct design considerations may actually dictate conflicting and incompatible design decisions. And as I have previously noted, some system designs may soon be abandoned as they are so predictably and unnecessarily prone to error as to constitute "negligent system design."

These complex legal issues warrant more detailed discussion in a separate article, and I have asked Attorney George Leonard, an antitrust specialist who is intimately familiar with our industry, to prepare a guest "Interface" column on this complex topic for a future issue of *jems*. For now I shall skirt the issue by warning against proceeding with any design decision without benefit of review by an attorney who is both a specialist in antitrust and knowledgeable of the prehospital care industry.

One Final Opinion/Prediction. Our industry has been experimenting with prehospital system designs almost the way a broad spectrum antibiotic uses a "shotgun" approach to an unknown infection. Design experimentation will and should continue—but using rifles, not shotguns. If the 1990 *jems* Almanac includes an update of this report, it will chronical the demise of many designs reported here and describe new variations on those which have survived. □

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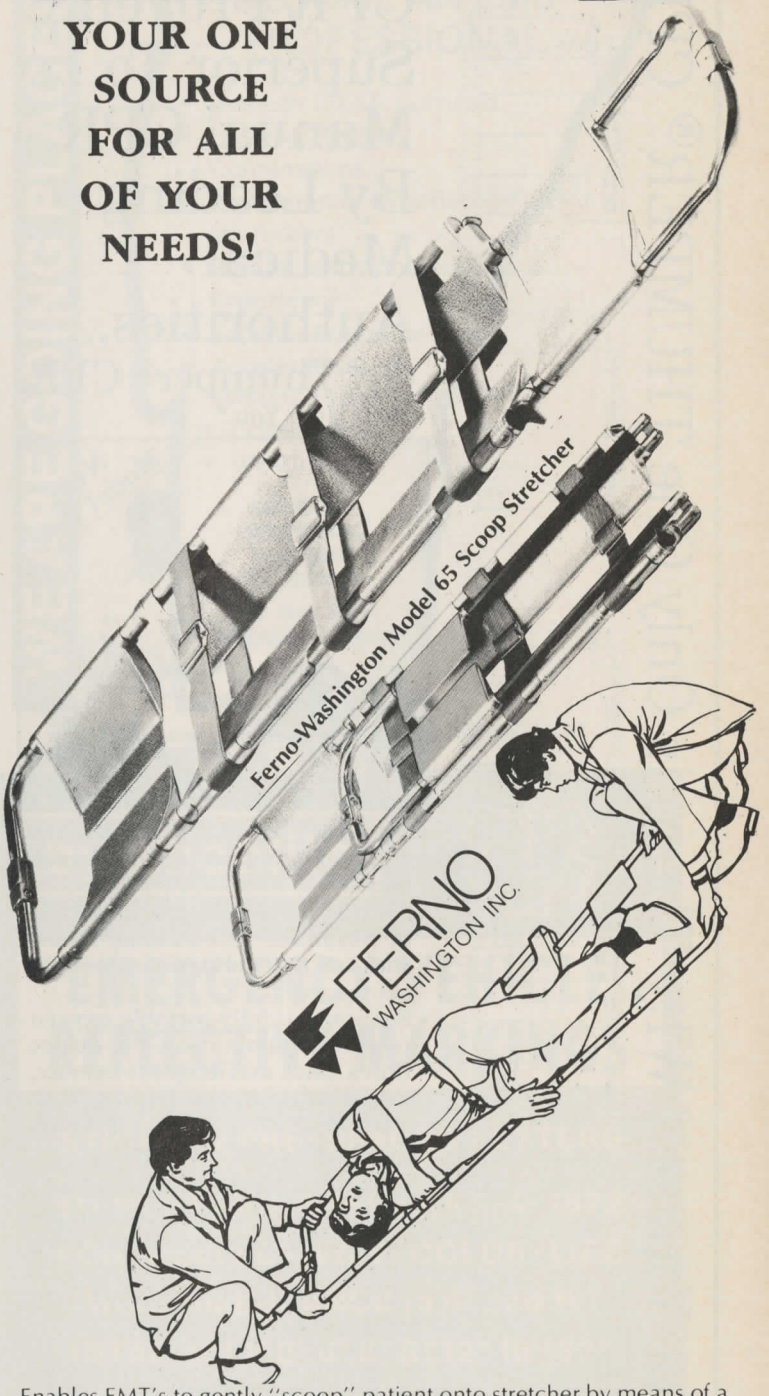

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