

Mini Review

Charging Appropriately for Emergency Department Visits

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An ongoing debate in health care concerns the charges (and underlying costs) for visits to a hospital's emergency department (ED). Given the current concern with growing healthcare costs, it is an opportune time to look at a more appropriate way for an ED to structure its charges.

Computing a visit's cost (and thus arriving at a charge) is a complicated matter. This is because there are three kinds of costs an ED incurs: (1) the fixed costs of being "ready to serve" such as the depreciation on the ED's space and equipment, (2) some "step-function" costs that also are associated with the ED's readiness to serve, mainly a portion of the salaries for physicians and nurses and (3) the variable costs for the visit itself, which include the remaining portion of provider salaries as well as such consumables as blood products, pharmaceuticals, and medical supplies.

It would not be difficult for an ED to develop an approach that is similar to one used in many corporations for inter-company sales, and in most public utilities. With this approach, there would be a two-part charge: a flat charge for the ED's stand-by capacity, which would be the same for each visit regardless of the patient's presenting condition or discharge diagnosis; and a variable charge, which would be based on the actual services provided.

Overall, this approach would lead to a fairer and more precise way of charging patients and insurers for use of the ED. In particular, it recognizes (and accounts for) the fact that an ED's stand-by costs are independent of a patient's presenting condition and eventual diagnosis. Currently, because stand-by costs are embedded in a per-visit rate, patients with relatively minor conditions are subsidizing those with more complex ones. A two-part charge would change this and move an ED toward a fairer approach to charging patients.

Keywords: Health care costs; Per-visit charge; Fixed costs; Stand-by costs; Two-part charge; Cross-subsidization

Introduction

An ongoing debate in health care concerns the charges (and underlying costs) for visits to a hospital's emergency department (ED). The debate takes on increasing importance now that the Affordable Care Act (ACA) has increased access for 20 million more Americans. Previously, some of these individuals used the ED even though they had no insurance, but others did not unless their health was in serious jeopardy. These latter individuals now can be expected to use the ED for conditions that are serious but not life-threatening. Given the current concern with growing healthcare costs, it is an opportune time to look at a more appropriate way for an ED to structure its charges.

Currently, EDs charge a per-visit fee that varies depending on the services provided. In one study, the median charge for ten outpatient conditions was \$1,233, with a range of \$740 (for an upper respiratory infection) to \$3,347 (for a kidney stone) [1].

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(1) and (3) the variable costs for the visit itself, which include the remaining portion of provider salaries as well as such consumables as blood products, pharmaceuticals, and medical supplies.

If we consider only the last category, the cost for an ED visit would be modest, regardless of whether it were for an upper respiratory infection or a kidney stone. Most of the costs incurred by an ED are for its stand-by capacity: having space, technology, and staff ready to serve an unpredictable number of patients, needing an unpredictable mix of resources, at an unpredictable day of the week, and at an unpredictable time of the day.

From a financial perspective, these stand-by costs are "period costs" that is, they are costs the ED incurs for a period of time independent of the number of patients actually treated [2]. This issue becomes complicated when different levels of "readiness" are required at different times of the week.

By contrast, the variable costs and the portion of the step-function costs needed to treat a patient are "product costs", ones that will vary depending on the patient's condition. Some patients (such as those with a kidney stone) will require a complex (and costly) mix of consumables, nursing care, and physician time, while others (such as those with an URI) will require a less costly mix.

Exhibit 1: The Cost Impact of Using a Stand-by Cost.

	Notes	Annual	Daily	Allocation Basis	Diagnosis 1	Diagnosis 2	Total
Standby fixed costs	1	1,000,000	2,740				
Standby step-function costs (nursing and physicians)	2	700,000	1,918				
Total standby costs		1,700,000	4,658				
Anticipated number of patients					100	50	150
Treatment step-function costs (nursing and physicians)		700,000	1,918				
Treatment Costs Using Old Method					125	350	
Treatment variable costs (consumables)							
Plus:							
Treatment step-function costs per variable cost dollar	3			4.04			
Treatment step-function costs per diagnosis	4				505	1,413	1,918
Standby fixed and step-function costs per variable cost dollar	3			9.81			
Standby fixed and step-function costs per diagnosis	4				12	69	4,658
Total treatment cost					642	1,832	
Treatment Costs Using New Method							
Total standby cost per anticipated number of patients	5		31.05				
Treatment variable costs (consumables)					125	350	
Plus:							
Treatment step-function costs per variable cost dollar	3			4.04			
Treatment step-function costs per diagnosis	4				505	1,413	1,918
Standby fixed and step-function costs per variable cost dollar				n.a.			
Standby fixed and step-function costs per diagnosis	6				31	31	4,658
Total treatment cost					661	1,794	

Notes

- Includes costs allocated to the ED on the Medicare cost report, such as depreciation on the ED space, housekeeping, plant operation, laundry, dietary, and nursing administration. Also includes depreciation on the ED's furnishings and equipment plus the ED's administrative costs.
- Assumes that physician and nursing time is divided 50/50 between standby and treatment activities.
- Uses consumable dollars as the allocation basis.
- Multiplies allocation basis by consumable dollars.
- Daily cost of \$4,658 divided by 150 anticipated patients.
- Standby cost is the same for both diagnoses

While there is no "right" way to deal with these issues, the approaches used to deal with similar problems in other industries can be instructive. In particular there are three complementary approaches that can be adapted for use in an ED.

Approach 1: Two-Part Charge

Many companies, in setting their transfer prices (i.e., the price that one division charges another for intra-company sales), use a two-part charge [3]. One part is a fixed amount, sometimes on a monthly or quarterly basis, that the consuming division pays for access to the selling division's capacity. The other part is a variable amount based on the variable and step-function costs associated with the specific goods and/or services provided. In effect, the fixed charge represents the stand-by costs. In health care, this idea has been discussed in the context of a large integrated delivery system [4].

In a similar fashion, many public utility companies charge their customers a flat amount per month for access to, say, the water and sewer system or the electricity grid. The remainder of the bill to the customer is based on the actual use of the service, such as the gallons

of water or kilowatts of electricity.

1 Step-function costs are costs that increase in lumps (or steps) as volume changes. They are distinct from variable costs (which increase in a linear fashion with increases in volume) and fixed costs (which do not change over a large range of volume).

It would not be difficult for an ED to develop a similar approach. In this case, the amount of the flat charge would be for the ED's stand-by capacity. The stand-by charge would be the same for each visit regardless of the patient's presenting condition or discharge diagnosis. The other portion of the charge would be based on the actual services provided, and would reflect provider time and consumables.

A somewhat tricky aspect of this approach is dividing personnel costs into their fixed and variable components. The fixed (stand-by) amount would need to contain the ED's estimate of the portion of each individual's salary that reflected his or her availability to provide care. By contrast, the variable portion would account for the time spent actually providing care. Clearly, the methodology for dividing costs between these two categories would not be perfect, but with a little

Exhibit 2: Example of Use of Standby Costs and Variable Costs in Computing an ED's Charges All Numbers are Hypothetical.

Item	Note	Annual	Daily	Saturday	Other Days
		Amount	Amount (2)		
Overhead for ED space	1	\$500,000	\$1,370		
Depreciation on ED furnishings and equipment	3	\$200,000	\$548		
ED administrative costs	4	\$250,000	\$685		
Nursing standby salaries for Saturday	5			\$3,500	
Nursing standby salaries for Other days	5				\$2,000
Physician standby salaries for Saturday	5			\$7,000	
Physician standby salaries for other days	5				\$3,500
Estimated number of patients per day				100	50
Standby Costs and Charges	6				
Overhead for ED space				\$14	\$27
Depreciation on ED furnishings and equipment				\$5	\$11
ED Administrative costs				\$7	\$14
Nursing standby cost				\$35	\$40
Physician standby cost				\$70	\$70
Total standby costs per patient				\$131	\$162
Variable costs and Charges, by Condition					
Diagnosis #1 (low variable costs)		Minutes	Rate/minute		
Nursing care	7	20	\$0.70	\$14	\$14
ED physician care	7	10	\$1.75	\$18	\$18
Consulting specialist care (on call)		0	\$2.50	\$0	\$0
Consumables	8			\$125	\$125
Total variable costs for diagnosis #1				\$157	\$157
Total costs for Diagnosis #1				\$288	\$319
Diagnosis #2 (high variable costs)		Minutes	Rate/minute		
Nursing care	7	60	\$0.70	\$42	\$42
ED physician care	7	30	\$1.75	\$53	\$53
Consulting specialist care (on call)		30	\$2.50	\$75	\$75
Consumables	8			\$350	\$350
Total variable costs for diagnosis #2				\$520	\$520
Total costs for Diagnosis #2				\$651	\$682

Notes

- Allocated to the ED on the Medicare cost report. Includes items such as depreciation on the ED space, housekeeping, plant operation, laundry, dietary, and nursing administration.
- Assumes ED is open 24 hours a day, 365 days a year.
- Annual depreciation on items such as beds, work space facilities, and ED equipment
- Direct costs associated with having the ED open, such as receptionist and security.
- An estimate of the amount of salaries that are paid when providers are not treating patients, but are available to treat patients.
- The daily standby costs are the same regardless of the day of week. The differences are due to the anticipated number of patients.
- Rate per minute based on the variable nursing and physician salaries.
- This is the standard variable costs for the standardized mix of supplies used to treat the patient It includes blood products, pharmaceuticals, and other consumables.

effort, an ED manager could provide a reasonable approximation.

Exhibit 1 provides a simplified example of the impact of using a separate stand-by cost rather incorporating stand-by costs into a per-visit rate. As it shows, when stand-by costs are included in the visit rate, and when consumables are used as the basis of allocation, the amount of stand-by costs for a visit requiring relatively low variable costs (\$125) is about 40 percent less than when a separate stand-by

cost figure is used (\$12 versus \$31). By contrast, for a visit requiring relatively high variable costs (\$350), the stand-by costs included in the rate are over 200 percent greater (\$69 versus \$31).

Without a separate charge, the ED's stand-by costs must be absorbed into the per-visit rate. As a result, patients who have high variable costs subsidize those with low variable costs; that is, they pay a higher share of the ED's stand-by costs. And yet, both types of

patients have equal access to the ED's stand-by capacity.

Approach 2: Varying Stand-by Charge Based on Anticipated Demand

Companies such as Uber have a different charge structure based on the day of the week and time of day that its services are requested. Airlines, hotels, and cruise companies also charge more during peak demand periods. It would not be difficult for an ED to take a similar approach with its stand-by charge. Under this scenario, the stand-by charge would vary by day of the week, and perhaps by time of the day, depending, in large measure, on staffing decisions.

Approach 3: Standardized Protocols for Variable Costs

The idea of protocols for inpatient care has been around since 1982 [5]. These protocols (sometimes called "clinical pathways" or "clinical guidelines") are now used in many hospitals. ED protocols would be similar. As with inpatient protocols, they would not need to be followed under all scenarios; a physician would have the authority to override the protocol if, in his or her judgment, some other approach were more clinically appropriate.

When a protocol approach is followed, insurers and patients are charged the standard amount, rather than an amount based on the actual time spent or tests provided. Importantly, a protocol would be for the variable cost of consumables and the variable portion of provider salaries only. As discussed above, the stand-by charge would be separate.

Exhibit 2 provides a simplified example of how such an approach might work. Although the numbers are hypothetical, they demonstrate how stand-by costs can be incorporated into an ED's per-visit charge.

There are several items in this exhibit worth emphasizing. First, many stand-by costs are independent of the day of the week. For example, the amount of plant-wide depreciation allocated to a hospital's ED is the same per day regardless of the day. The same is true for depreciation on the ED's furnishings and equipment.

Second, in the example, the stand-by costs for nurses and physicians are higher for Saturdays than for other days because of the need for greater staffing on Saturdays. The analysis could be made more sophisticated by assessing the stand-by costs required for each day of the week separately, and even for different times of the day.

Third, the amount of stand-by costs per patient depends on an estimate of the number of patients. Using the hypothetical numbers in this exhibit, even though the stand-by costs are higher on a Saturday than on other days, the stand-by costs per patient are lower, due to the greater number of patients seen on a Saturday. Clearly,

these differences would change based on variations in stand-by costs and patient volumes.

Fourth, the variable costs per diagnosis are independent of stand-by costs. These represent the ED's best estimate of the nursing and physician salaries associated with treating patients, as opposed to being ready for patients to arrive. If we assume that the treatment of a patient with a particular diagnosis is about the same regardless of the day of week that he or she arrives in the ED, then there should be no differences in these costs from one day to the next. Indeed, for many common conditions (such as a URI or a kidney stone), the variable costs would be based on the above-discussed protocols.

With little effort, the numbers in Exhibit 2 could be made more precise by an ED manager. The result would be a standardized cost per patient by diagnosis for the variable and step-function costs of providing care. As the exhibit shows, the stand-by cost would be added to this amount. The total would then be increased by a percentage to arrive at the charge.

As with inpatient care, not all patients who receive care in an ED will have only one diagnosis. For these patients, a time-and-materials approach will need to be used instead of a protocol. Nevertheless, the physician and nursing time, as well as the consumables used, would be for the variable and step-function costs only. The stand-by cost still would be separate.

Overall, this approach would lead to a fairer and more precise way of charging patients and insurers for use of the ED. In particular, it recognizes (and accounts for) the fact that an ED's stand-by costs are independent of a patient's presenting condition and eventual diagnosis. Currently, because stand-by costs are embedded in a per-visit rate, patients with relatively minor conditions are being subsidized by those with more complex ones. A two-part charge would change this and move an ED toward a fairer approach to charging patients.

References

1. Caldwell, Nolan, et al., "How much will I get charged for this?" Patient Charges for the top ten diagnoses in the Emergency department". PLOS ONE. 2013; 8: e55491.
2. Young, David W. and Gregory Smith. "New Alternatives to Financing ER Care". Healthcare Financial Management, March 1986.
3. David Solomons. Divisional Performance: Measurement and Control. Homewood, Illinois, Dow Jones-Irwin, Inc., 1965.
4. Young W. David. "Two-Part Transfer Price Improves IDS Financial Control". Healthcare Financial Management. 1998; 8: 56-65.
5. Young W. David and Richard B. Saltman. "Medical Practice, Case Mix, and Cost Containment: A New Role for the Attending Physician". Journal of the American Medical Association. 1982; 247: 801-805.