Differences in Length of Hospital Stay for Medicaid and Blue Cross Patients and the Effect of Intensity of Services

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IS THE LENGTH OF STAY (L.O.S.) in a hospital determined primarily by the medical need of the patient? Why should there exist consistent patterns of differences in L.O.S. that are somehow related to the source of payment? In the State of Maryland, for example, Medicaid patients experience longer hospital stays than Blue Cross patients. Information from 43 short-term, acute-care hospitals for 20 selected groups of diagnoses indicated that the average length of stay for Medicaid patients was 10.76 days and for Blue Cross patients, 8.30 days.

This information was reported to the Maryland Health Services Cost Review Commission and summarized for the periods April 1976 and January-February 1977. The 20 diagnostic groups were selected from a total of 83 groups because they accounted for the highest total charges: that is, these 20 groups provided the highest amount of inpatient revenue.

The explanation of length of stay differences for hospital inpatients is a topic of significance to planning and public policy. In the earliest days of utilization review, and more recently under the professional standards review organizations (PSROs), the two primary strategies for cost containment have involved decreasing admissions to hospitals or shortening patients' stays, or both. The overall impact of these two strategies would be to reduce the number of units of care that are purchased.

When one considers that even a relatively small State like Maryland had more than 405,000 persons eligible to receive medical assistance during an average month of fiscal year 1977, a total annual budget of $264.2 million devoted to Medicaid, and provided in excess of 500,000 days of Medicaid-funded inpatient hospital care in that year, there is little doubt that even a fractional decrease in the average stay would provide a dramatic overall reduction in total health care expenditures (*1*).

The relationship between the sources of revenue and the average L.O.S. is quite complex. Self-pay patients, those who do not use any fiscal intermediary, account for no more than 10 percent of the total patient population at most hospitals. Most hospital patients use a third-party mechanism; that is, the commercial insurance company, Blue Cross, Medicare, Medicaid, Workmen's Compensation, or any agent who is contracted to pay all or part of the patient's hospital bill.

But why should the source or mechanism of payment be associated with L.O.S. differences? Obviously, when the sources of payment are associated with different patient populations and when the nature of those differences can be expected to have an influence on the length of hospital stay, overall L.O.S. differences by payment source should not be surprising. For example, the elderly

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Medicare-eligible patient is, on the average, more likely to experience additional complicating conditions or secondary diagnoses, exhibit a slower response to the treatment process, and face certain social barriers to a scheduled hospital discharge. Therefore, it is quite predictable that the L.O.S. for the Medicare patient typically will be longer than that of other patients. If we eliminate the Medicare patient from this analysis, however, the possible explanations of L.O.S. differences are less obvious.

Describing the Medicaid-Blue Cross L.O.S. Gap

How pervasive are length of stay differences across diagnostic groups for Medicaid and Blue Cross patients? In only 14 of the 83 diagnostic groups for which information was reported, were the Blue Cross patients' stays even marginally longer than those of the Medicaid patients (table 1). In three diagnostic groups the differences favoring Blue Cross were relatively large (about 2 days or longer): psychoses, neuroses, and other mental disorders. These psychiatric admissions probably represent a unique patient population since relatively few general hospitals accept psychiatric inpatients, a great many Medicaid patients receive such services in Maryland State mental institutions and are therefore not included in these reports, and psychiatrists are poorly represented among Maryland's Medicaid private practice vendor physicians (*2*). In the 69 diagnostic groups in which the Medicaid L.O.S. was longer, the widest differences were for diagnoses of malignancies at various sites and other diagnoses typically requiring surgical intervention. If we rank all 83 diagnostic groups in order based on the average total charges generated by each group and look at the Medicaid-Blue Cross difference, we find that the L.O.S. gap widens as the total charges per case increase, as the following tabulation shows:

	Average length of stay (days)		
Group	*Medicaid*	*Blue Cross*	*Difference*
All 83 groups	9.84	8.49	1.35
20 groups with highest charges	10.76	8.30	2.46
Remaining 63 groups	9.54	8.43	1.11

Generally speaking, this ranking also means that the Medicaid-Blue Cross difference increases with the length of stay, since charges and length of stay are highly correlated for most diagnoses. This issue—the relationship between L.O.S. and charges—will be reviewed subsequently in more detail.

Consistent with the trend identified across diagnostic groups, 35 out of 43 general hospitals in Maryland reported average lengths of stay for all Medicaid patients longer than those of Blue Cross patients. For many hospitals the differences were only marginal, but at 18 hospitals the stay for Medicaid patients was 2 or more days longer than for Blue Cross patients, on the

Table 1. Average length of stay by source of payment for 83 diagnostic groups in 43 Maryland hospitals

Diagnostic group	Length of stay (days)		
	Medic-aid	Blue Cross	Difference
Infectious diseases	7.39	5.80	1.59
Malignant neoplasm of digestive system	21.41	17.31	4.10
Malignant neoplasm of respiratory system	18.05	14.78	3.27
Malignant neoplasm of skin	11.45	7.06	4.39
Malignant neoplasm of breast	14.29	10.69	3.6
Malignant neoplasm of female genital organ	9.61	8.82	.79
Malignant neoplasm of male genital organ	13.50	11.69	1.81
Malignant neoplasm of urinary system	19.34	13.09	6.25
Malignant neoplasm of other and unspecified sites	19.92	13.24	6.68
Neoplasm of lymphatic and hemopoietic tissue	12.54	12.38	.16
Benign neoplasm of female genital organ	7.40	6.80	.6
Benign neoplasm of other sites	6.81	5.61	1.2
Diseases of thyroid and other endocrine glands	10.02	7.38	2.64
Diabetes	12.14	10.47	1.67
Nutritional and other metabolic diseases	10.88	9.99	.89
Diseases of blood and bloodforming organs	8.93	8.94	—.01
Psychoses not attributed to physical conditions	16.10	19.28	—3.18
Neuroses	13.28	15.17	—1.89
Alcoholic mental disorder and addiction	7.61	6.57	1.04
Other mental disorders	11.56	15.85	—4.29
Diseases of central nervous system	14.25	11.65	2.6
Diseases of peripheral nervous system	7.42	6.62	.8
Diseases of eye	5.23	5.29	—.06
Diseases of eye and mastoid process	4.62	3.64	.98
Hypertensive heart disease	10.63	9.48	1.15
Acute myocardial infarction	15.07	15.88	0.81
Ischemic heart diseases except AMI	9.82	9.73	.09
Arrhythmia and slowed condition	9.05	8.25	.8
Heart failure	12.42	12.86	—.44
Carditis, valvular, and other diseases	12.65	10.90	1.75
Cerebrovascular diseases	18.26	13.14	5.12
Diseases of vascular system	14.51	10.19	4.32
Pulmonary embolism	15.10	14.21	.89
Phlebitis and thrombophlebitis	12.82	11.50	1.32
Hemorrhoids	6.57	6.31	.26
Hypertrophy of tonsil and adenoid	1.94	1.67	.27
Acute upper respiratory infection and influenza	4.45	4.07	.38
Other disorders of respiratory tract	3.97	3.49	.48
Pneumonia	8.83	8.10	.73
Bronchitis	6.57	6.54	.03
Asthma	5.11	5.85	—.74
Other lung and pleural diseases	13.19	10.84	2.35
Diseases of oral cavity, salivary glands, and jaws	2.86	2.66	.2
Gastric and peptic ulcer	12.91	10.38	2.53
Upper gastrointestinal tract diseases except gastric and peptic ulcer	8.74	7.79	.95
Appendicitis	6.81	6.46	.35
Hernia of abdominal cavity	5.49	6.21	—.72
Entritis, diverticula, and functional disorder of intestine	10.96	9.65	1.31
Diseases of anus	5.68	5.11	.57
Miscellaneous diseases of intestine and peritoneum	12.08	10.83	1.25
Diseases of liver	15.59	12.41	3.18
Diseases of cell bladder and bile duct	10.63	10.25	.38
Diseases of pancreas	11.50	11.48	.02
Diseases of kidney and ureter	12.07	8.88	3.19
Urinary calculus	9.48	5.89	3.59
Cystitis and other urinary diseases	6.51	3.84	2.67
Diseases of prostate	11.40	7.23	4.17
Diseases of male gentital organs	3.16	3.66	—.5

average. At the same time, the standard deviations for the L.O.S. distribution at each hospital were typically larger (often much larger) for the Medicaid patients. Longer Blue Cross average lengths of stay were also typically accompanied by larger Blue Cross standard deviations.

This analysis suggests that the Medicaid patient exhibits a great deal more variability or heterogeneity as far as stay is concerned. The Medicaid-Blue Cross L.O.S. difference was clearly not limited to a few isolated diagnostic categories, nor was it clustered in a few of the State's acute-care hospitals. The overwhelming proportion of diagnostic groups and hospitals showed a consistently higher length of stay for Medicaid patients. There was, however, considerable variation in the size of the difference, both by diagnostic group and by hospital.

Intensity of Services and Length of Stay

It has also been suggested in the literature that the key to differences in the length of stay is the intensity of services rendered. Intensity is defined as the quantity (or

Table 1 (continued)

Diagnostic group	Length of stay (days)		
	Medic-aid	Blue Cross	Difference
Diseases of female genital organs	5.24	4.95	.29
Diseases of breast	3.62	3.11	.51
Abortion	1.80	1.66	.14
Obstetrical diseases of antepartum and puerperium.	3.38	3.39	—.01
Normal delivery	3.37	3.46	—.09
Delivery with complication	5.15	4.91	.24
Diseases of skin and subcutaneous tissue	10.86	6.69	4.17
Arthritis	14.20	12.16	2.04
Derangement of intervertebral disc	13.32	12.37	.95
Diseases of bone and cartilege	11.81	7.72	4.09
Other diseases of muscleskeletal system	8.53	6.59	1.94
Congenital anomalies	9.43	7.64	1.79
Normal mature born	3.86	3.90	—.04
Certain diseases and conditions peculiar to newborn infants	15.85	11.44	4.41
Symptoms and signs referable to nervous, respiratory and circulatory systems	7.42	6.08	1.34
Symptoms and signs referable to GI and urinary system	7.21	7.09	.12
Miscellaneous signs, symptoms, and ill-defined conditions	6.93	6.20	.73
Fractures	12.24	10.03	2.21
Dislocation and other musculoskeletal injury	6.90	7.16	—.26
Internal injury of cranium, chest, and other organs	9.31	7.17	2.14
Open wound and superficial injury	6.40	5.12	1.28
Burn	18.40	14.29	4.11
Complication of surgical and medical care	11.05	8.97	2.08
Adverse effects of a certain substance	5.60	5.65	—.05
Special admissions and examinations without required diagnosis	4.29	3.20	1.09

volume) of services provided to the hospital patient per day. This concept implies that the same amount of treatment can be given over a shorter or longer period. One study indicates that increasing the intensity of care, all things being equal, should result in a shorter average length of stay, higher per diem costs, lower per case costs, and higher staffing ratios (*3*). The authors use aggregated national hospital data to conclude further that east coast hospitals in the United States provide relatively low intensity and west coast hospitals provide relatively high intensity services.

This explanation for the variation in hospital costs and L.O.S. assumes some standard, appropriate package of services for each case, keyed presumably to the specific diagnosis. A patient may receive this package over a short period (high intensity) or over a longer period (low intensity). If such a system is, in fact, operating, the high intensity patient and the low intensity patient will receive the equivalent amount of ancillary services and the costs of those services will be equivalent. The low intensity patient with a longer stay will generate more routine services per case (that is, the daily charge composed of room and board and standard nursing services) than the high intensity patient. In this analysis we might speculate that the Medicaid patient, on the average, is a lower intensity patient than the Blue Cross patient. It has also been suggested that intensity of services may be positively correlated with certain patient outcomes. One study indicated that hospitals providing the most services to patients and discharging them earlier (high intensity) had lower death rates than those which provided fewer special and more routine services and kept patients longer (low intensity) (*4*).

In this analysis then, two separate questions were addressed:

1. Are there differences in the relationship between average charges and L.O.S. for Medicaid and Blue Cross patients across diagnostic groups and hospitals?
2. Are longer stays for Medicaid patients consistently accompanied by lower intensity of services at the level of the individual hospital?

The answers to these two questions should add to the understanding of the dynamics of intensity and L.O.S. Further, it was anticipated that such inquiry would enable us to formulate alternative explanations for these hospital statistics based on different payment sources.

Length of Stay, Total Charges, and Intensity

Average L.O.S. and average total charge information for the 20 most expensive diagnostic groups were available for Medicaid and Blue Cross subpopulations of 43 Maryland acute-care hospitals. Figure 1 illustrates the distribution of these hospitals according to average L.O.S. The shorter average Blue Cross stay is clearly shown, with only 6 hospitals having Blue Cross stays longer than 10 days, but 20 hospitals exceeding that level for Medicaid patients. The shapes of the distributions differ, with the Blue Cross distribution approximating a normal curve and the Medicaid distribution clearly bimodal.

The distribution of these hospital subpopulations by average total charges (fig. 2) also indicates a trend toward higher Medicaid charges, although the differ-

ence is not as dramatic as for average stays. These distributions of length of stay and charges suggest that, on the average, the Blue Cross patient is a higher intensity care patient than the Medicaid patient. Expressed in other terms, the Blue Cross patient appears to receive more service per L.O.S. unit than the Medicaid patient with increasing length of stay.

To test this assumption, a proxy intensity index was computed by dividing the average total charges by the average L.O.S. for the Medicaid and Blue Cross subpopulations at each hospital. Since the routine per diem charge for each subpopulation is identical at each hospital, the difference between these two levels should be in the volume of ancillary service provided to each group per day. Of course, such a measure is only a proxy or indirect measure of intensity, since no adjustment factor was included for price differentials of both routine and ancillary services among hospitals. These intensity indicators were then arranged in ascending rank order and plotted along an intensity continuum (fig 3). As expected, the Blue Cross subpopulations exhibit a higher intensity level along the range of intensity values except for a segment of values in the middle of the distribution and at the upper end. A note of caution—figure 3 is merely a ranking of Medicaid and Blue Coss subpopulations by intensity level; it is not a comparison of the relative intensity levels within each hospital. Hospital 10, for example, means that it is the 10th highest intensity level for Medicaid and Blue Cross subpopulations. Those figures, however, do not necessarily represent the same hospital.

Explaining the L.O.S. Gap with Intensity

Since it is apparent that there are generally consistent differences in average L.O.S. and intensity between Blue Cross and Medicaid patients, can it be demonstrated that variation in the L.O.S. difference, at the level of the individual hospital, is consistently accompanied by a parellel variation in the relative intensity for these two subpopulations? In other words, are Blue Cross-Medicaid L.O.S. differences highly correlated with intensity differences? The actual differences between Medicaid and Blue Cross patients for average L.O.S. and for the intensity index were computed for each hospital and placed into a 2 by 2 matrix as follows:

Intensity of service	*Medicaid longer stay*	*Blue Cross longer stay*	*Totals*
Medicaid higher	11 I	3 IV	14
Blue Cross higher	24 II	5 III	29
Totals	35	8	43

Note: Roman numerals designate the 4 groups of hospitals which are discussed subsequently.

Figure 1. Distribution of 43 Maryland hospitals by average length of stay of Medicaid and Blue Cross patients for 20 diagnostic groups

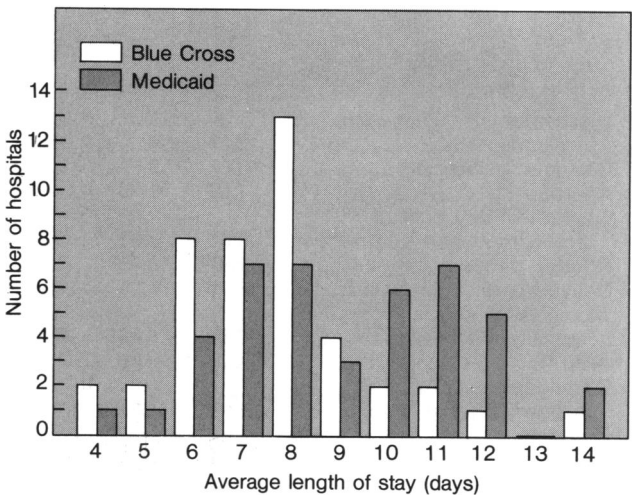


Figure 2. Distribution of 43 Maryland hospitals by average total charges per case, Medicaid and Blue Cross patients, for 20 diagnostic groups

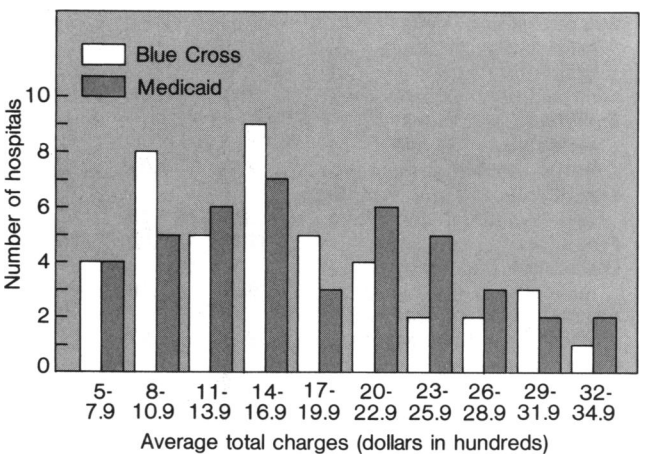
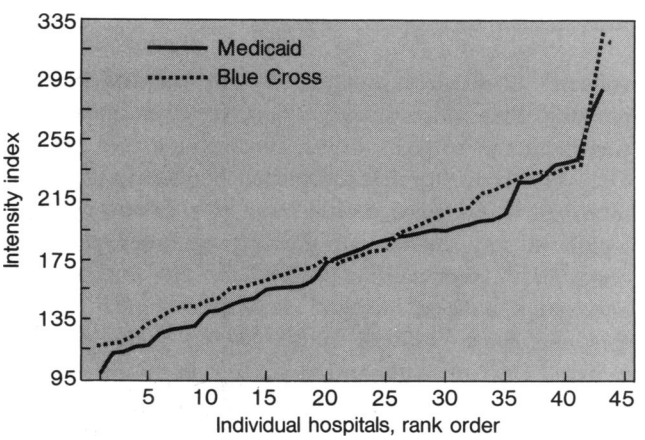


Figure 3. Forty-three hospitals, ordered by increasing intensity of services for Medicaid and Blue Cross patients, for 20 diagnostic groups



If the L.O.S. differences at each hospital were perfectly correlated with intensity differences, we would expect that hospitals which experienced longer stays for Medicaid patients would also show lower intensity of services for Medicaid patients. In fact, of the 35 hospitals in which the average stay of Medicaid patients was longer than for Blue Cross patients, only 24 showed the expected higher intensity advantage to Blue Cross. Conversely, of the 8 hospitals in which the Blue Cross patients had longer stays, only 3 showed the expected higher intensity advantage to Medicaid patients. The general tendency for longer Medicaid stays and higher Blue Cross intensity is noted, although the two variables appear to be relatively independent.

The hospitals in each of the four cells in the preceding table were further compared using a few basic descriptive variables: the number of admissions annually, number of beds, occupancy rate, total annual expenses, and Medicaid income as a percentage of total expenses. Although the small numbers in two cells cause problems of statistical significance, a few general tendencies can be gleaned from the data in table 2. For example, higher Medicaid intensity appears to be associated with generally lower occupancy, irrespective of L.O.S. differences (groups I and IV). In addition, hospitals with longer Medicaid stays are, on the average, much larger in terms of admissions, beds, and expenses than hospitals in which the Blue Cross patients' stay is longer (group I and II).

The Medicaid-Blue Cross L.O.S. difference at each of the 43 hospitals was then paired with these variables and simple Pearson correlation coefficients were computed; the results are shown in table 3.

Total expenses and the number of beds are essentially two different measures of hospitals' volume, expressed in both physical and financial terms. One might specu-

Table 2. Averages for selected variables for hospitals grouped by length of stay and intensity of services for their Medicaid and Blue Cross patients

Group	Annual admissions	Number of beds	Occupancy rate (percent)	Annual expenses	Medicaid income as percent of annual expenses
Group I, 11 hospitals—Medicaid longer stay, Medicaid intensity higher	10,861	274	82	$18,470,000	13
Group II, 24 hospitals—Medicaid longer stay Medicaid intensity lower	9,262	307	91	22,385,000	14
Group III, 5 hospitals—Medicaid stay shorter, Medicaid intensity lower	7,446	199	88	9,860,000	8
Group IV, 3 hospitals—Medicaid stay shorter, Medicaid intensity higher	4,907	138	82	7,879,000	15

Table 3. Medicaid-Blue Cross L.O.S. differences correlated with selected variables

Variable and description	Source of data	r
Total expenses: for a standard full, 12-month reporting period all payroll and nonpayroll (employee benefits, professional fees, depreciation expense, interest expense, all other) expenses	American Hospital Association Guide to the Health Care Field, 1977 Edition	.01
Number of beds: adult and pediatric beds regularly available and staffed for use, excluding any specially assigned or reserved beds	American Hospital Association Guide to the Health Care Field, 1977 Edition	—.02
Occupancy census: beds	American Hospital Association Guide to the Health Care Field 1977 Edition	.02
Proxy intensity index, expressed as the difference between Medicaid and Blue Cross: average total charges divided by average length of stay and expressed in dollars	Maryland Health Services Cost Review Commission	.19
Total FY 1977 Medicaid inpatient income as a percent of total expenses	Maryland Department of Health and Mental Hygiene, Medical Care Programs, and American Hospital Association Guide to the Health Care Field, 1977 Edition	.75

late that volume measures would correlate well with the variability of the hospital product, increasing with both beds and expenses. The correlation coefficients, however, suggest that an increasing difference between Medicaid and Blue Cross L.O.S. is essentially independent of gross volume measures. This finding also suggests that the kind of variability indicated by the wider ranges and larger standard deviations for Medicaid patients is somehow different from the variability which is the subject of case mix studies. Case mix is used in a number of ways in the literature, but it is usually defined as either the average difficulty of the cases being treated or the range of different cases being treated. (*5*). However, case mix defined in either way should correlate well with increasing expenses and beds. The impression gleaned, at least from the aggregated data examined in this paper, is that the Medicaid-Blue Cross L.O.S. difference is not well explained by case mix difference.

The modest correlation coefficient indicates either that intensity is a relatively poor explainer of L.O.S. differences by payment source or that the variable (as computed from aggregate data) is different from one that would be computed from case level data. Of course, the assumption was made that length of stay and charges would be highly correlated for all diagnoses and for all hospitals. If this assumption was correct, it is difficult to see why the intensity index would not correlate highly with L.O.S. differences. In fact, I decided to check on the relationship between L.O.S. and charges for each diagnostic group across 43 hospitals and for each hospital across diagnostic groups. On the average, the correlation between L.O.S. and charges for most diagnostic groups is high, but one can identify some groups in which the covariance is high but not nearly proportional and others in which the charges appear to be independent of length of stay. For most hospitals, the relationship between charges and L.O.S. is strong, but there is a range of r values and, for a few hospitals, the relationship is inexplicably low. The L.O.S.-cost relationship in these institutions is particularly difficult to explain. Compared to their sister institutions, they are either over or undercharging (or both) per unit of length of stay.

The occupancy variable was added to the analysis primarily because it is extensively used by planning and regulatory bodies. The role of occupancy in explaining differences in length of stay by payment source at the level of the individual hospital is unclear. Essentially, occupancy is the result of the interaction between bed size, total admissions, and length of stay. However, whatever differences exist between hospitals based on the composition of total admissions by payment source (and therefore length of stay differences by payment source) would be washed out in the computation of the occupancy rate. Therefore, the correlation between occupancy and Medicaid-Blue Cross L.O.S. differences was quite low, as expected. This finding encourages one to look beyond the occupancy measure for useful descriptors of hospital output. Two hospitals with identical occupancy rates may, in fact, be quite different in almost every respect including the nature of their patient population, the mix of services provided, and their financial viability.

To derive a measure which would give some indication of the financial importance of Medicaid income at each hospital, total fiscal year 1977 inpatient revenue was computed as a percentage of total annual expenses for a comparable reporting period. Total expenses, of course, do not completely describe the financial status of the hospital from all possible perspectives. It might be logically argued that some measure of the relationship between revenues and expenses would be a more accurate indication of a hospital's financial condition. The variable used for this analysis can be considered as a "current Medicaid reliance ratio" since it essentially measures the extent to which the hospital's ability to meet short-term debt is dependent upon Medicaid revenues. In fact, the correlation between this measure and the Medicaid-Blue Cross L.O.S. difference is strong. This correlation means one can expect to find the L.O.S. gap between Medicaid and Blue Cross patients increasing as Medicaid revenue becomes a higher percentage of total hospital expenses. The important fact is that the L.O.S. differences by payment source seem to be more strongly associated with a measure of financial dependency than with gross measures of volume, utilization, or intensity.

Interpretation

Medical necessity may require that a patient stay in a hospital for a longer period or that he receive more services per day during the period of hospitalization, or both. It has been suggested that Medicaid patients, on the average, are sicker than Blue Cross patients for various reasons, and this circumstance explains their longer stays. However, such an assumption does not explain why the greater sickness of the Medicaid patient manifests itself in increased L.O.S. rather than increased intensity. Perhaps we could develop a sickness continuum in which the Medicaid patient with L.O.S. and intensity of care equal to that of the Blue Cross patient is considered "sick," the Medicaid patient with a longer stay but equal intensity to the Blue Cross patient is considered "sicker," and the Medicaid patient with both longer L.O.S. and higher intensity than the Blue Cross patient is considered "sickest."

It may also be that L.O.S. and intensity differences have entirely different origins. For example, differences in L.O.S. may be attributable to the sickness of the patient, but differences in intensity may be more attributable to the standard operating procedures of the institution. Differences in intensity found in hospitals by geographic region, for example, suggest this explanation.

The most cynical explanation, of course, is that increases in L.O.S. and intensity are merely two different strategies for increasing revenues for the hospital. This explanation has a great deal of indirect support from the literature that views the hospital as an income maximizer. It has been suggested that the manner in which a hospital is managed is largely a function of the way in which it is reimbursed (*6*). Authors have variously suggested that revenues, prestige, and profit can all be consciously affected at the hospital level (*7*). More specific to this analysis, it has been determined that increasing the L.O.S. may be a predictable response to financial and regulatory pressures (*8,9*). In general, this analysis tends to support the idea of the hospital as an economic entity, adjusting its outputs to fit the nature of its inputs and seeking to assure its survival. Whatever the mechanism, hospitals have apparently developed their own special variety of break-even dynamics in which the composition of the patient population by payment source exerts an extremely powerful influence.

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SYNOPSIS

STUDNICKI JAMES (Johns Hopkins University School of Hygiene and Public Health): ***Differences in length of hospital stay for Medicaid and Blue Cross patients and the effect of intensity of services. Public Health Reports, Vol. 94, September-October 1979, pp. 438–445.***

In Maryland acute-care hospitals, Medicaid patients consistently exhibit longer stays than Blue Cross patients for the same diagnoses. This Medicaid-Blue Cross length of stay gap tends to be larger for the diagnoses that require the longest average stays, generate the highest levels of costs and charges, and typically require surgical intervention.

It has been speculated that length of stay differences are primarily a function of differences in intensity, that is, the quantity of services provided the patient per day. According to this explanation, the total amount of treatment for a given diagnosis is relatively uniform, but it can be given over a longer (low intensity) or shorter (high intensity) period.

In an analysis of average length of stay and average total charges for 43 hospitals and 20 selected diagnostic groups, overall intensity of care was lower for Medicaid than for Blue Cross patients. However, for the individual hospital, longer stays for Medicaid patients were not consistently accompanied by lower intensity of treatment for Medicaid patients. Higher intensity of care for Medicaid patients was associated with low occupancy rates, regardless of length of stay differences. In addition, variation in the size of the difference between Medicaid and Blue Cross length of stay was most highly correlated with a measure of the hospital's financial dependence upon Medicaid income. In other words, hospitals in which Medicaid income represents a higher proportion of total expenses also tend to exhibit a larger difference between lengths of stay of Medicaid and Blue Cross patients.

Although further research is necessary, this analysis suggests that, at least for some hospitals, levels of intensity and lengths of stay are clearly associated with financial necessity; that is, increases in both intensity and length of stay result in increased revenues for the hospital. The dilemma for researchers posed by this analysis is the failure to conceptualize a method of trading off various costs (represented by intensity and length of stay) against the quality of services rendered in the hospital.