Length of Stay in a Coronary Care Unit: The Effect of Shared Experiences

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DEDICATION

To Mom and Dad who have always
been there for me.

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INTRODUCTION

In the past decade there has been an enormous amount of attention given to the rising health care costs of this country. The coronary care unit is an attractive focus as approximately 1.3 million myocardial infarctions occur each year in the United States. In the fiscal year 1985, the average cost per day in the coronary care unit in the state of California was $627.28. If ancillary charges are included, approximately $165.00 may be added to the bill. Surprisingly, hospital expenses per day for a CCU patient are actually higher than the figures mentioned above. It would therefore be of benefit to both hospital and patient to explore whatever measures that would lead to even a modest reduction in length of stay. One area that deserves attention is the psychological status of the patient with a myocardial infarction as it pertains to recovery period.

The coronary care unit is a relatively recent development in medicine, arising from the intensive care units in the early 1960's. The purpose was to provide constant monitoring and immediate intervention in an emergency. These early units consisted of four to six beds

in an open ward with emphasis on technology as opposed to patient comfort or privacy.

The psychological status of the patient became a topic of discussion in the late 1960's when it was observed that some patients became psychotic after the first few days in the unit. It was hypothesized that this phenomenon was due to a combination of compromised health status, sleep deprivation and sensory deprivation inherent in the design of the environment. The wards were described as noisy, lacking privacy and, due to the equipment, immobilizing for the patients. Bruhn (1970) advocated that patients be kept in private rooms as witnessing a cardiac arrest of a fellow patient presented a psychological hazard. On the other hand, other researchers reported that patients were reassured in the open ward environment and relatively few patients were disturbed by witnessing a cardiac arrest. These patients felt that the way in which the medical staff handled the situation was impressive and increased their confidence in the care they received. Several articles mention in passing that open wards provided an opportunity for patients to talk with each other which might have a positive effect on anxiety levels (Hackett and Cassem 1968, Dominion and Dobson 1969, Leigh 1972).

In the study by Leigh (1972) patients in an open unit were compared with those in a closed unit. This was a natural experiment in that the hospital was changing over from an open unit to a closed one and the researchers took

advantage of this opportunity. The two groups were controlled for age, sex, marital status, religion, principal diagnosis, complications, medications, and staff. It was found that the level of anxiety as measured by the Zuckerman anxiety scale was higher for those in the closed unit than for those in the open ward. Furthermore, patients in the closed unit tended to deny and displace hostility, to feel more lonely, and to be fearful of losing love and support as evidenced by higher levels of "separation anxiety."

In another study by Hackett and Cassem (1975) looking at white collar and blue collar responses to heart attacks it was reported that length of stay in the CCU for ward patients was over one day shorter than for patients with private rooms. It should be noted, however, that the ward patients were primarily from low socioeconomic classes. Furthermore it was suggested that this shortened length of stay in the ward CCU was due to a decreased number of beds in the ward versus the number of private rooms available.

This dialogue concerning open and closed wards led to further examination of the psychological status of cardiac patients. The post myocardial infarction patient is characterized by anxiety, denial, depression, and anger (Kaufmann 1985; Krantz 1980; Hackett & Cassem 1968). Several studies suggest the importance of these characteristics on either short term or long term outcome for the patient. Anxiety was found to be correlated with arrhythmias thereby placing the patient at greater risk of

sudden death (Verrier 1983). An inverse relationship was found between denial and mortality. Deniers tend to be less anxious in early phases of illness than non-deniers (Gentry 1972). It was found, however, that deniers had a less favorable long term prognosis due to poorer compliance after discharge from the hospital (Garrity 1976). Post M.I. depression is the most formidable problem in cardiac convalescence and has been attributed to the threat of invalidism and loss of autonomy and control due to illness. It has been associated with excessive physical restriction which, in itself, has a negative effect on recovery (Cassem 1973).

In response to these problems, several studies examined the use of psychological intervention with favorable results. Ibrahim et al. (1974) found a trend toward fewer deaths particularly among the more severely ill patients who had participated in group therapy compared with the control group. In addition there was less social alienation, less competition, and fewer hospital days among the subjects. Gruen (1975) reported that patients who had received individual brief psychotherapy had fewer arrhythmias, fewer episodes of angina, and shorter hospital stays. In a meta-analysis of thirteen studies using length of stay as outcome, it was found that psychological intervention reduced hospitalization by approximately two days below the control group's (Mumford 1982).

In light of these studies, it seems plausible that knowledge gleaned from the areas of social support and social isolation research may be of value. The concept that social support plays a mediating effect between life stress and illness has been examined primarily during the last two decades. It has been postulated that stress activates certain portions of the neuroendocrine system and that social support may act on these same centers to counteract the effect (Bovard 1961). Epidemiologic studies have linked greater distress with immune function in humans and distress reducing interventions may enhance some aspects of immune function (Glaser and Glaser 1986). In animal studies, Conger has shown that an unanticipated series of electric shocks given to animals previously conditioned to avoid them produced high rates of peptic ulcers in animals shocked in isolation. Low rates were observed in animals shocked in the presence of litter mates. In a study by Klein (1968) it was found that the incidence of cardiovascular complications was reduced in patients prepared for transfer and followed by the same nurse and physician throughout their hospitalization.

Research in this field has been somewhat problematical due to varying definitions used to measure both social support and outcome. House and Kahn (in syme) have categorized measures of social support into three groups:

1) Measures of the existence or quantity of social contacts or relationships (social isolation or

integration) -- these are relatively objective, reliable and easy to obtain

2) Measures of the structure of social relationships (social networks) -- these allow for a broader range of contacts to be studied

3) Measures in terms of functional content or quality of the relationships -- the most variable and most difficult to work with.

Confounding factors such as age, sex, health habits, and socio-economic status have also obfuscated the findings.

Research concerning the effect of social support on illness has shown that there is a greater risk of mortality for people with less social connection (Berkman and Syme 1979; House, Robbins and Metzner 1982). Furthermore, actual support may not be a requirement as it has been shown in an elderly population that "perceived" social support was a better predictor of mortality risk (Blazer 1982).

Studies on morbidity have also revealed similar effects of social support. Medalie (1976) has found that men at risk of angina pectoris who did not have the support of their wives at times of high anxiety were more likely to develop chest pain during a five year follow-up period. In a study of Japanese Americans, Joseph and Syme (1981) reported a higher risk of coronary heart disease in people with low social affiliations.

An alternate way of interpreting the effect of social support on health is that a decrement of health is a

demonstration of an exacerbation of life stress by a low sense of support. That is, having a low sense of social support will serve to amplify the effect of a life stress (Gore 1978). In more extreme circumstances, Hyman (1972) suggests that the adverse effect of social isolation may be due to the absence of social support during the rehabilitation period for cardiac patients.

The aim of this study was to ascertain if there was a relationship between social support (as defined by frequency of visits) and length of stay for myocardial infarction patients in a CCU. Another objective was to investigate whether having a roommate, regardless of level or quality of interaction, would have an effect on length of stay.

METHODS

Forty male patients comprised the sample. They ranged in age from 37 to 81 with a mean and median age of 61. Subjects were chosen from a pool of all myocardial infarction patients who were treated at Alta Bates Hospital in Berkeley, California during the years 1985 and 1986. Selection for subjects was performed by chart review based on the following criteria: 1) first myocardial infarction 2) CDC classification number for the diagnosis of uncomplicated myocardial infarctions 3) local resident 4) absence of any known psychiatric history 5) no psychiatric intervention during hospital stay 6) no

concurrent illness other than diabetes mellitus or hypertension. Patients transferred to other wards or other hospitals for further procedures (angioplasty, in particular) were also excluded from this study.

Demographic data gathered from the records for each patient included age, marital status, place of residence, race, and work status. Economic data was calculated using 1980 United States census tract information by patient's address.

Medical data gathered included total length of hospitalization, length of stay in the acute and post acute CCU, cardiac catheterization, time of onset of initial symptoms with respect to admission, peak creatinine phosphokinase (CPK) values, smoking history, total number of sleep medications taken, and total number of anxiolytic medications taken. Sleep medications included Halcion, Restoril, and Dalmane. Anxiolytic medications included Valium and Ativan. Peak CPK values were used as an index of severity of infarction; however, it should be noted that the area under the CPK-time curve would be a more accurate reflection of the extent of infarction.

Social support data was limited to the number of visits recorded in the nurse's progress notes over the entire length of stay. The number of visits are likely to be uniformly underestimated for all subjects. It should be noted that neither quality nor length of the visit were examined; however, visitors who stayed for long periods of

time were likely to be mentioned by the nurse more than once. Furthermore, the number of people per visit could not be examined as notes often referred to "'visitors' or 'friends' in to visit."

In most cases the patients were brought to the Emergency Room and, after an initial assessment, admitted to the CCU. In the acute phase of their hospitalization, patients were treated in single rooms and confined to bedrest. When it was felt that the patient was well enough to walk, he was transferred to the post acute rooms. Post acute rooms were either double or single rooms. Patients were attached to telemetry units which permitted heart monitoring without confining the patient to his room. Visitors were allowed in both the acute and post acute rooms and hours for visiting were very flexible.

Statistical analyses were performed using the CRISP software package. In particular, Pearson correlations (shown below as r=__, p<__) and Mann-Whitney non-parametric rank tests (shown below as p<__) were employed.

DATA

Demographic information for the entire study population is summarized in Table 1. The mean and median age for this sample was 61.0 years. Eighty-five percent of the sample was married. The mean income was found to be $23,500 with a median income of $20,500.

The mean length of stay was 8.5 days with a median of 8.0 days. Total length of stay was not found to correlate with age or income. The mean post acute stay was calculated to be 4.2 days with a median of 4.0. Both the acute and post acute lengths of stay in the CCU were correlated with longer total stays ($r=0.66$, $p<0.0004$ and $r=0.42$, $p<0.04$, respectively); however, there was a trend for acute stays and post acute stays to be inversely related ($r=-0.39$, $p<0.06$).

The mean peak CPK value was found to be approximately 1400 with a median value of 850. Higher CPK values were related to a longer total length of stay ($r=0.48$, $p<0.02$). Cardiac catheterization was performed on Forty-two percent of the subjects. Patients who underwent this procedure had similar post acute stays ($p< 0.73$), however there was a slight trend toward a shorter length of stay ($p< 0.13$).

The mean number of visits for this sample was eight. As a measure of social support, an adjusted value was computed taking into account the total length of stay (total visits during stay/total stay). The mean of these adjusted values was 0.93 (visits). There was no correlation found between adjusted visits and length of stay for the sample as a whole. A higher value for adjusted visits was correlated with married patients ($r=0.44$, $p<0.03$). There was a trend for adjusted visits to be correlated with increased CPK levels ($r=0.33$, $p<0.11$).

In order to investigate the effect that the number of visits might have on length of stay, the subject pool was divided into two subsets, one including all subjects with adjusted visits less than or equal to 0.93 (mean value), and the other comprised of those with scores over 0.93. It was found that subjects with a higher adjusted number of visits correlated with a shorter length of stay in the post acute CCU by 1.1 days ($p<0.01$). These two groups did not differ on severity of illness (as judged by CPK levels), cardiac catheterization, age, retirement status, or income. Similar relationships for total length of stay and for number of days in the acute CCU were not found.

In the hope of finding a significant difference between visits and total length of stay, patients with values for adjusted visits in the lowest quartile were compared with those of the highest quartile (visits <0.72 versus visits >1.1). Age, income, retirement status, catheterization, and severity of infarction were not found to be different between these two groups. There was a trend for acute CCU stays to be 1.4 days longer for those patients with more visits ($p<0.095$). Post acute stays reflected a slight trend toward shorter stays for patients with more visits (0.8 days mean difference between groups ($p<0.12$)). Total length of stay could not be statistically differentiated ($p<0.46$). Although severity of infarction could not be differentiated between the two groups, the mean CPK level for the more

Table 1
Demographic Data

age:	mean 61.0, median 61, range 37-77
marital status:	85% married
income:	mean $23,600, median $20,500, range $10,000 - $44,100
race:	75% White, 10% Black, 15% Asian

Table 2
Mild Myocardial Infarctions
"High" versus "Low" visits

	high	low	mean dif.	p-value p<
acute stay	3.29	3.77	0.48	0.67
post acute stay	3.43	4.70	1.27	0.11
total stay	6.71	8.46	1.75	0.02
age	61.43	66.08	4.65	0.15
CPK level	686.43	543.77	142.66	0.10

(CPK level in units/ml., mild M.I.'s defined as CPK levels less than or equal to 850 units/ml..)

Table 3
Severe Myocardial Infarctions
"High" versus "Low" visits

	high	low	mean dif.	p-value p<
acute stay	5.90	4.20	1.70	0.03
post acute stay	3.60	4.50	0.90	0.07
total stay	9.50	8.70	0.80	0.32
age	58.20	57.00	1.20	0.85
CPK level	2015.00	2434.00	420.00	0.62

(CPK level in units/ml., severe M.I.'s defined as CPK levels greater than 850 units/ml..)

visited patients was 120 units/ml. higher than for the less visited patients ($p<0.40$).

Patients were also subgrouped by severity of infarction (CPK values). Once again the group was divided into those above and below the mean (850 units/ml.), and then between highest and lowest quartile. From this arrangement, it again was found that patients with higher CPK values had longer total stays ($p<0.03$) and longer acute stays ($p<0.01$). Post acute stays could not be differentiated ($p<0.97$) between patients with higher CPK values and those with lower values ($P<0.97$).

Within these subgroups, patients were further divided into those with amount of adjusted visits above and below the mean (see Tables 2 and 3). Among those patients with lower CPK values, it was found that those with a higher amount of adjusted visits had a significantly shorter total stay with a mean difference of 1.7 days ($p<0.02$). In addition, there was a trend for post acute stays to be longer for those with fewer visits (mean difference of 1.2 days, ($p<0.11$)). Length of acute stay could not be differentiated between patients with fewer and those with more visits. There was a trend for patients that had more visits to have higher CPK levels (mean difference of 140 units/ml., $p<0.10$)). These patients did not differ on income or cardiac catheterization; however, there was a trend for patients with a higher number of adjusted visits

to be somewhat younger (mean difference of five years, ($p<0.15$).

Among patients with higher CPK values, the total length of stay for patients with more visits and those with fewer visits could not be differentiated ($p<0.32$). Patients with more adjusted visits had longer acute stays (mean difference of 1.7 days, $p<0.03$)) but a trend toward shorter post acute stays ($p<0.06$). CPK values between these subgroups were not significantly different ($p<0.62$). "High" and "low visit" patients otherwise did not differ (when examined in terms of age, income, or cardiac catheterization).

The effect of visits on use of medications was also explored. The amounts of anxiolytic and sleep medications taken were examined with respect to number of adjusted visits. These values were normalized by length of stay (e.g., total valium taken during stay/total stay). It was found that the adjusted amount of anxiolytic agents taken was inversely correlated with the amount of hypnotic agents taken by a patient ($r=-0.4035$, $p=0.05$). The number of adjusted sleep medications and anxiolytic drugs taken could not be differentiated between patients with many visits and those with fewer. It was found, however, that the number of sleep medications taken over the entire length of stay was significantly higher for those patients with a greater number of adjusted visits (mean difference of 1.4 days, $p<0.05$). The sample was also analyzed by comparing subsets of patients with high medication use versus those with low

use to determine the existence of any difference in adjusted number of visits. No significant relationship could be ascertained.

To examine the possible effect of the presence of a roommate on length of stay, patients were divided into those who had and those who did not have a roommate (n=31 versus n=9, respectively). The two groups did not significantly differ in age, retirement status or peak CPK levels; however, those patients without roommates may have had a higher mean income (mean difference of $5250 ($p<0.22$)). There was a trend for patients without roommates to have fewer adjusted visits (mean difference of 0.24, $p<0.10$). No significant difference in length of total stay, acute stay, or post acute stay could be found between these groups. Despite the lack of statistical significance, it is interesting to note that the mean values for these three measures of length of stay were consistently higher for the group of patients without roommates. Curiously, there was a slight trend for those patients with roommates to use more valium than those without roommates (mean difference of 0.90, $p<0.14$). No difference could be found between these two groups concerning use of sleep medications.

DISCUSSION

There are several caveats that should be kept in mind in the interpretation of the data. Of greatest importance

is the measure of social support in this study. The use of number of visits as a measure limits the amount of information gained. For the sake of simplicity, such factors as timing of visits, number of visitors in the party, duration of visits, and quality of the encounters have been conceded. For example, it is possible that visits are more beneficial to the patient at a specific time in their stay. Or, it is possible that it is the quality and duration of visits that play the greatest roles in shortening recovery. These and various other possibilities that rely on the variable of timing cannot be delineated by the measure of social support used in this study. What can be gained by this measure is a general index that is independent of interpretation by the experimenter.

The severity of infarction is another measure that requires cautious interpretation. High peak CPK values are often correlated with more severe myocardial infarctions, however, mild CPK elevation over a longer duration is also associated with more severe M.I.'s. Furthermore, the monitoring of CPK levels is not a continuous process and it is possible to miss the true peak as the levels rise and fall relatively quickly (usually within 72 hours of infarction). Any sizable delay in reaching the hospital may also result in a missed peak CPK value. It has been reported that M.I. patients with high denial have a longer period of time between onset of symptoms and hospitalization (Greene 1974; Simon 1972). In addition, "deniers" with

M.I.'s tend to have shorter hospitalizations. (It should be noted that there was no correlation between delay in treatment and length of stay in this study ($p<0.54$).)

Sample size is yet another area of concern in the interpretation of the data. When patients were subgrouped, the comparison was often between groups of ten subjects. The statistics do take into account sample size in determining levels of significance; however, as a result of this, small but significant differences between groups could be overlooked.

One final word of caution should be mentioned concerning what is actually being measured in this study. A chosen variable, "visits," has been somewhat arbitrarily divided into groups and then these groups have been compared along other variables. Little can be said about factors that have an impact on the chosen "independent" variable. For example, it is possible that a certain personality type conducive to having more visits or visitors is also associated with a faster recovery. It is therefore possible that a confounding variable not examined in this study is responsible for the effects.

There were several correlations that helped to establish the internal validity of this study. Marital status was correlated positively with adjusted visits, indicating that people who were married were apt to have more visits. CPK levels and total length of stay were positively correlated which would also be expected. The

finding that the amount of valium taken was inversely proportional to the amount of sleep medication taken is reasonable in that patients who were adequately sedated by the anxiolytic medication would not need additional medication for sleep.

It was felt that a roommate might be able to provide either perceived support or actual support to the patient resulting in a faster recovery. Such a relationship was not found. In review of the files and in conversations with patients in the hospital, a plausible explanation is based on the idea that such an expectation relies on compatibility of the roommates. In the nurse's progress notes it was not a rare occurrence to find that the patient was having difficulty with his roommate (for example, complaints that the roommate snored, coughed too much or had too many visitors). Furthermore, this relationship assumes that the roommate is in equal or better physical condition (in terms of recovery) than the patient himself. In informal conversations with M.I. patients not in the study, it was found that a roommate in worse physical condition might serve as a source of distress for the patient. In this light, it is interesting to note the finding in this study that patients with roommates tended to use more valium than those without roommates.

The role of social support as a moderator of stress was examined in terms of number of visits and amount of anxiolytic and hypnotic medications taken. It was posited

that patients with more visits would need less medications. It was found, however, that the number of hypnotic agents taken over the entire length of stay was significantly higher for patients with a greater number of adjusted visits. The number of anxiolytic medications taken showed no relationship to the number of visits. It should be noted, however, that adjusted values for medications were very small and would require relatively large differences in means for small sample sizes in order to be statistically significant. Still, this finding was somewhat perplexing as in the overall sample it was found that anxiolytic and hypnotic medications were inversely related. An hypothesis that could explain this somewhat aberrant finding is that people with more visits may have used less valium during the day -- perhaps as a result of social support -- while at night, after visitors have left, they required the sedation that they may have needed had they not had visitors. Conversely, those patients with fewer visitors may have used more medication during the day and therefore did not require further medication to fall asleep. Some support for this view comes from Tomlin (1977) who states that patients derive substantial emotional benefit from the presence of relatives but this benefit applies only while the relative is physically present.

In examining the effect of visits on length of stay in the hospital it was found that there was a trend for post acute stay to be shorter and acute stay to be longer for

patients who had more visitors. Total length of stay could not be differentiated. This finding was disturbing as it was unclear whether it was due merely to a delayed transfer from the acute beds and thus an apparent decrease in post acute stay. Conversely, it was possible that those patients with fewer visitors were being prematurely transferred from the acute beds and needed more time in the post acute CCU to recover. In addition to this relationship it was noted that there was a mild correlation between CPK levels and adjusted visits such that people with higher CPK levels were visited more frequently. CPK levels were also related to length of acute stay in the CCU. It was therefore thought that the longer acute stay for patients with more visitors might reflect more severe infarction. Statistically, CPK levels between "high visit" and "low visit" patients could not be differentiated; however, there was a consistently higher CPK value for "high visit" patients.

To pursue this possibility, the sample was divided into more severe and less severe cases and then subgrouped into "high visit" and "low visit" groups. Patients with less severe heart attacks who had more visitors showed a trend for shorter acute and post acute stays and a very significant decrease in length of total stay (1.7 days shorter than patients with less visits). Within this group, there was a trend for severity to be greater and a slight trend for age to be younger for those with more visits (see

Table 2). This data is congruent with the hypothesis that more visits would result in decreased length of stay.

Patients with more severe heart attacks, however, did not show this relationship. Those patients with more visits had longer acute stays and a trend toward shorter post acute stays than those with fewer visits. Total stays could not be significantly differentiated. These findings could not be explained by differences in age, income, or severity of infarction. A straight-forward explanation of these findings is that the timing of visits plays a crucial role in recovery from the more severe infarctions. Early visits may be more physically draining on the patient, resulting in an increased recovery period in the acute CCU. It should be noted that despite the lack of a significant difference in total length of stay between the two groups, the mean difference was 1.8 days longer for those patients with more visits. This coincides with the increased length of stay in the acute CCU for these patients.

A second possibility is that there is a difference in severity between "high visit' and "low visit" groups which is not well delineated by CPK levels. The reduction in acute stay that may exist as a result of visits may be offset by the severity of the infarction. The data in this study, however, does not corroborate this hypothesis. The CPK levels could not be differentiated statistically and even showed a mean value of 400 units/ml. less for the "high

visit" group. This difference may indicate a very vague trend in the opposite direction if a trend exists at all.

One interesting explanation explores this relationship in a social context. The above finding may actually be evidence of a negative aspect of social support in terms of cost containment. Physicians of patients with more visits (especially family members) may be more reluctant to transfer the patient to the post acute beds because of increased perception of concern by family and friends. This does not presuppose that there is an active request to delay transfer on the part of family members; rather, the mere presence of family and/or close friends puts the doctor under closer scrutiny. In the case of severe M.I.'s both physical cues concerning health status of the patient as well as pronouncements by the physician may accentuate concern. As a result, these patients may be kept in the acute beds longer which incidentally results in an apparent decrease in post acute stays. From a cost standpoint, post acute beds are less expensive than those beds in the acute CCU and substantial cost savings may be attained if this interaction is addressed.

As patients do not live in a vacuum, one might ask how these findings relate to the real world. There are several things that may influence the relationship of social support and length of stay that have not been addressed in this study. The environment from which the patient has come and will return could certainly affect the length of stay. Coser

(1962) found that hospitalized patients with a variety of ailments who were socially isolated outside the hospital appeared to resist discharge by suffering relapses when discharge was imminent. It seems plausible that any undesirable environment could produce similar results (Winefield 1981). Personality type has also been shown to facilitate the mediating effect of social support on stress. Lefcourt (1984) reported that people with an internal locus of control derive greater benefit from the moderating effect of social support. Past experience in the hospital may also play a role in length of recovery. The hospital environment in itself can be anxiety provoking and past experience with it may alleviate some stress. In a related study, Klein (1968) reported that M.I. patients who were educated concerning the course of their treatment exhibited fewer complications on transfer from the CCU. It is somewhat encouraging that despite these possible influences (and others), a favorable relationship between visits and length of stay was demonstrated in this study.

The concept that visits may play a role in decreasing length of stay is important because it provides a relatively low cost and easily implemented intervention that could result in substantial savings. This study has yielded some data that suggests that this form of social support may provide a cost effective means to reduce length of stay after a myocardial infarction. It was found that for mild heart attacks, patients who received relatively more visits

had a mean stay that was 1.7 days shorter than those with relatively fewer visits. In the case of patients with more severe infarctions, this simple relationship did not exist. Patients with relatively more visits had longer acute CCU stays than those with fewer visits. One possible explanation is that the timing of visits is important. For severe M.I. patients, visits early in the recovery period may interfere with a short period of recuperation. Another explanation for this finding is that the physician has opted to delay transfer of the patient due to perceived social pressure. The findings of this study should be interpreted cautiously and future work to better delineate the role of social support as it pertains to length of stay is warranted.

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