CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

A STUDY TO DETERMINE THE IMPACT
OF THE PATIENT COUNSELOR SYSTEM ON
ACCOUNTS RECEIVABLE AND ADMISSION PROCESSING TIME

A project submitted in partial satisfaction of the requirements for the Master of Science in Health Science in the option of Health Administration

by

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## CONTENTS

Table of Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>INTRODUCTION</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A. Statement of the Problem</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>B. Significance of the Problem</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>1. Accounts Receivable</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2. Admitting</td>
<td>5</td>
</tr>
<tr>
<td>II</td>
<td>BACKGROUND</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A. Review of Literature</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>1. Accounts Receivable</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>2. Admitting</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>3. Patient Counselor Concept</td>
<td>11</td>
</tr>
<tr>
<td>III</td>
<td>METHODOLOGY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A. Statement of the Problem</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>1. Objectives</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>B. Sources of Data and Their Measurement</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>1. Research Design</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>2. Data Collection</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>C. Analysis</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>1. Accounts Receivable</td>
<td>18</td>
</tr>
</tbody>
</table>
2. Admission Processing Time
   a. Figure #1

D. Limitations

CHAPTER IV - RESULTS

A. Findings
   1. Accounts Receivable
   2. Admission Processing Time
      a. Graph #1
   3. Additional Analysis--Admission Processing Time
      a. Figure #2
      b. Graph #2
      c. Figure #3

CHAPTER V - CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions
B. Recommendations for Further Study

BIBLIOGRAPHY
ABSTRACT

A STUDY TO DETERMINE THE IMPACT
OF THE PATIENT COUNSELOR SYSTEM ON
ACCOUNTS RECEIVABLE AND ADMISSION PROCESSING TIME

by
Lawrence N. Minden
Master of Health Administration
August, 1976

In recent years hospital costs have increased at a significant rate. Additionally, hospital costs in particular comprise the largest percentage of total health care costs.

With the advent of a national increase in attention given by consumers to the services and products they purchase, a natural result is the increased awareness, which the patient has developed, of the level of hospital service and their associated costs.

At least two national hospital-oriented organizations, the National Association of Patient Counselors and the Hospital Financial Management Association, espouse the concept of reorganizing the hospital business office in order to consolidate certain traditional positions. Under
this concept, the positions of admitting clerk, insurance verification/credit checking clerk, insurance billing clerk, and collection clerk would be brought together in one position, the patient counselor or patient representative. Familiarity with the patient account from admission to collection and resultant increased efficiency purportedly have the effect of reducing inpatient admissions processing time and reduction of accounts receivable, and associated costs, among other benefits. Moreover the patient perceives an atmosphere of professionalism since only one individual handles his account from start to finish.

This study is an effort to determine the impact of a patient counselor program on accounts receivable and admission processing time. The program was implemented in a 217 bed general acute care hospital. Although the findings of this study may not be generalized conclusively to other types of hospitals, it is the author's hope that quantification and analysis of the historical experience of this Project will establish the concept of the Patient Counselor as one worthy of more active pursuit as a means for reducing accounts receivable and admission processing time.
CHAPTER I

INTRODUCTION

A. STATEMENT OF THE PROBLEM

In recent years hospital costs have increased at a significant rate. Additionally, hospital costs in particular comprise the largest percentage of total health care costs.

With the advent of a national increase in the attention given by consumers to the services and products they purchase, a natural result is the increased awareness, which the patient has developed, of the level of hospital services and their associated costs. This awareness and the resultant evaluation of a hospital's efficiency and effectiveness by the public should be of concern to hospital administration.

"Clearly, the manner in which the health professional evaluates the hospital is different from the evaluation that is performed by the average citizen. The professional is both educated and socialized to evaluate the hospital as an institution of great complexity, that performs functions with more or less efficiency, and at higher or lower
levels of quality.\(^1\)

However, the public knows what it wants from the hospital and evaluates the hospital on the extent of fulfillment of those wants.

If the perspective of the public is different from that of the health care professional and the evaluation methods differ as well, it behooves the professional to identify and relate to the methods which the public employs.

Essentially the patient simply compares the performance of the hospital against other images with which he is familiar. For instance, every patient can compare certain images in such areas as quality of food, standards of cleanliness, comfort and personal care. The images are used as standards against which the hospital's performance is judged.

"Another area that is relatively easy for the average patient to evaluate about a hospital is its apparent conduct of business affairs. Individuals can judge the ease at which admission is gained to a hospital, even if the admission procedure itself remains a mystery."\(^2\)

The area of cost of hospital services is evaluated by the patient in a similar manner. Those services visible to the patient such as housekeeping, dietary and accommodations are taken by him to make up


the majority of hospital cost. The patient is therefore hard pressed to reconcile the difference in the cost he associates with those visible services and the actual total of his hospital bill.

A whole series of similar, simple images are available to the average citizen for use in making comparisons about hospital performance.

The problem of improving the image of Desert Hospital located in Palm Springs, California in the areas of inpatient admission and reduction of costs through the reduction of accounts receivable is essential to this study.

It is assumed that the image of the hospital's admitting process would be improved if the total time spent by the patient in this process reduced significantly. Additionally a substantial reduction in accounts receivable would eventually reduce overall hospital costs. Such savings would reflect in patient charges, improving the hospital's image as well.

Actual measurement of any change in the hospital's image is beyond the scope of this study. Measurement and analysis of changes in the two target areas mentioned above however will be the objects of study.

B. SIGNIFICANCE OF THE PROBLEM

1. Accounts Receivable

"One of the more important aspects of the financial management of hospitals is the prompt collections of patients' accounts receivable. It is important because a hospital must collect cash from accounts to maintain a minimum level of cash reserves (liquidity) that is necessary
to meet incurred liabilities."³

For most hospitals, the major source of incoming cash is collection of revenue from patients' accounts. In recent years timely collection of these accounts have developed into a serious problem. Significant increases in relatively short periods of time have occurred nationwide.

In response to the concern expressed by many hospitals about their increased level of accounts receivable, Hospital Administrative Services of the American Hospital Association conducted a special survey to determine the extent of the problem. Data was collected from 749 participating hospitals.

"One of the most significant findings of the survey was that the median increase between January 1976 and January 1970 in the accounts receivable was 49.5 percent."⁴

The increase in the level of accounts receivable has likewise continued since the above survey was completed in 1970. It was noted in April, 1975 that "the recent financial crunch in the U.S. has caused many health care institutions to experience a startling growth in their accounts receivables."⁵


The effect which this increase in receivables has had is that of increasing overall costs for hospitals. "The concept of costs 'associated' with increased...accounts receivable may be clarified if it is considered that, under conditions of inflation, today's dollar will be worth something more than tomorrow's dollar. Thus the longer the period of payment, the greater, in real terms, are the costs to those institutions whose payments are delayed."  

The significance of this resulting increase in hospital costs is the fact that this cost is of course ultimately borne by the public.

2. Admitting

As stated earlier, the ease with which admission is gained to a hospital is one function which is readily evaluated by the patient. Admitting frequently can be a barrier to efficient patient care and to good fiscal management. An efficient pre-admission program which obtains accurate and comprehensive information relative to the financing of the patient account allows for streamlining the patient's entry to a bed on the day of admission. An efficient admitting system allows the patient to stop at the admitting office only long enough to pick up his prepared wristband, and then proceed directly to his assigned room.

The efficiency of the admission process is of significance to both the hospital and the patient. "At the time they are admitted, many patients are unprepared or incapable of giving the financial and person-

al information hospitals require. To detain them until such information is obtained is both irritating and potentially dangerous to patients. Similarly, the need to speed up the admission procedure creates a corresponding deficiency in the hospital's ability to predetermine payment procedures. This is especially true in this day of proliferating third party payment programs."

CHAPTER II
BACKGROUND

A. REVIEW OF LITERATURE

1. Accounts Receivable

In the hospital industry much attention is being paid to the rise in accounts receivable. "Examples of accounts receivable doubling and tripling in a relatively short period of time are commonplace...especially after a price increase in daily rates and ancillary charges."8

The consequences of such a rise on the financial structure are of definite concern to the hospital management. Accounts receivable cannot be used to meet liabilities. Further, they are taxed just as cash is.

"Hospitals typically have been notoriously short of working capital and particularly cash. In recent years this situation has become more critical because of...the accumulation of accounts receivable."9


A ten year study, 1961 through 1970, was conducted by the National Hospital Financial Management Association, to determine the growth of receivables. The multi-area study involved 130 hospitals in Alabama, Louisiana, North Carolina, Oregon, Pennsylvania, Tennessee and Utah. Results showed that ..."receivables almost quadrupled in the ten years." 10

"The cost of having a high level of accounts receivable is sizable. Money must often be borrowed to cover liabilities. Not only is the interest on such borrowed money an incurred cost but the opportunity cost of not being able to realize interest from cash tied up in accounts receivable must also be considered." 11

"Problems, of course, come from many sources: the hospital patient accounting system, the billing office, the claims processor and intermediary, governmental regulations and their administration and so forth. Hospitals, intermediaries and government working together can remove many unnecessary impediments to cash flow. In this manner accounts receivable burden can be reduced and the nonproductive interest and processing expense it generates - a cost that is eventually borne by the patient." 12


"A common measurement of receivables in the hospital industry is 'average days revenue'. The formula used by Hospital Administrative Services is to divide accounts receivable by the average daily billing. Revenue for a period of three months would be representative."\(^{13}\)

This index of the level of receivables "...can be interpreted either as the number of days revenue in the receivables account, or as the average number of days it takes to collect an account."\(^{14}\)

As revenue fluctuates, so will receivables. The index serves as a measure of receivables since receivables are related to current revenue. This index likewise serves to negate the effect of rate and volume increases from one period to another.

For the purposes of this study the accounts receivable index will be computed as follows:

a. Total the patient revenue for the current and the two previous months.

b. Divide a. by total number of days in the three-month period to yield the average daily revenue.

c. Deduct the total amount of all inhouse accounts receivable and the total amount of all accounts assigned to a collection agency from the total accounts receivable. This will result in a figure which represents accounts

---


receivable net of inhouse and collections.
d. Divide the accounts receivable net of inhouse and collections by the average daily revenue to arrive at the index figure.

2. Admitting

"All of the information that can be helpful to the hospital and to the patient simply cannot be gathered in one, quick admission procedure. The first step...is to preadmit as many patients as possible."15

Since actual admission processing time is the subject of this study, the time spent in that process by a patient in the hospital can be significantly reduced if an effective preadmission program is operating.

In the preadmission phase the hospital both gathers and imparts information. Socio-economic information is gathered before the patient is actually admitted. A rapport can be established with the patient and advice can be given regarding such hospital policies as financial responsibility, arrival time for admission and regulations governing credit and valuables.

"Trained personnel with a pleasing telephone personality should be used for the preadmission interview. This contact is the patient's first contact with the hospital and the impression will be lasting - it

15. Daniel S. Schechter, ed., "No Barrier to Admission," p. 34.
should be a good one."16

With the diagnosis and anticipated length of stay, realistic estimation of the amount of the hospital bill can be made. "Comparing that to verified insurance benefits will yield the approximate amount that the patient must pay at the end of the stay."17

Collection efforts can then be focused on this portion of the amount, i.e., "the private pay portion which represents a majority of accumulated accounts receivable."18

With the necessary demographic information collected prior to admission..."the patient needs to invest a minimum amount of time in the admitting office on the day of admission."19

Since both inpatient admissions and the level of accounts receivables fall within the scope of the hospital's patient accounting department (business office) a systematic approach to solving the two problems, i.e. reduction of admission processing time and reduction of receivables was sought.

3. Patient Counselor Concept

At least two national hospital-oriented organizations, the National


17. Ibid.


Association of Patient Counselors and the Hospital Financial Management Association, espouse the concept of reorganizing the hospital business office in order to consolidate certain traditional positions. Under this concept, the positions of admitting clerk, insurance verification/credit checking clerk, insurance billing clerk, and collection clerk would be brought together in one position, the patient counselor or patient representative. Familiarity with the patient account from admission to collection and resultant increased efficiency purportedly have the effect of reducing inpatient admissions processing time and reduction of accounts receivable among other benefits. According to Robert Bravieri, Director of Patient Accounts at the Illinois Masonic Medical Center in Chicago, "the two principal goals of the Patient Representative System are to render the best, most personalized service to the patient and to effect the speediest possible collection for that service."

'Under the traditional system, the patient, and the account must come into contact with many people on the business office staff. Under the patient representative system, all of the business office duties relative to admitting, billing, credit and collection are decentralized. ...Accountability is built into the system because the patient representative is totally responsible for an account from preadmission to final collection. A prime reason for implementing a patient representative system is to increase cash flow and improve the accounts receivable position. The institution also projects a new image to the community. The patient knows that the hospital cares about him as a person. Both
he and the community better understand the needs of the hospital."\(^{20}\)

Swedish-American Hospital, Rockford, Illinois benefitted in several areas due to implementation of the patient representative system. "The total 'packaging' of their patient representative system...has brought a dramatic improvement in the hospital's payment record to concentrate on recovery rather than on how they are going to pay for the care they require."\(^{21}\)

Hospitals have turned to this relatively new system out of necessity. Concern over high receivables has led to scrutiny of overdue accounts. Hospitals are typically "...on the bottom of patients' budget list, much below rent, heat, food and necessities."\(^{22}\) A good portion of the patient representative's value lies in her ability to elevate the hospital on the patient's budget list.

Time spent with the patient, counseling him in the financing of his account has a fairly good rate of return. "Educating them to the hospital's method of billing and collections is an important ingredient in holding receivables down."\(^{23}\)

In addition to the benefits which the patient counselor program offers toward reducing receivables, the admitting processing time like-

\(^{20}\) Ibid.

\(^{21}\) Daniel S. Schechter, ed., "No Barrier to Admission," p. 34.


wise decreases. "A traditional business office system might be organized such that four admitters and eight insurance billers are required. When reorganized, these functions among others may be handled by ten patient counselors. This provides for the type of flexibility which would allow ten people to do admitting during the peak admission hours as opposed to the four people available under the traditional system. Reduction in admitting processing time is a natural by-product." 24

24. Frank DeMuth, President of the National Association of Patient Counselors, interview held during a seminar sponsored by the N.A.P.C., San Francisco, California, June, 1974.
CHAPTER III
METHODOLOGY

A. STATEMENT OF THE PROBLEM

1. Objectives

The objective of this study is to provide justification for the optimism expressed by hospital management relative to the potential benefits which might be derived from the implementation of the patient counselor concept. Specifically the effect of a modified patient counselor concept on the days earnings in accounts receivable index will be measured and analyzed. The effect of the fully implemented patient counselor concept on the time involved for completion of the admission process will also be measured and analyzed.

B. SOURCES OF DATA AND THEIR MEASUREMENT

This study is intended to be an analysis of two of the potential benefits to be derived from the existence of the patient counselor program. The patient accounting department of Desert Hospital in Palm Springs, California is the source of study.

1. Research Design
a. Accounts Receivable: Since the modified patient counselor system was effective in July 1975, two six-month periods of operation will be analyzed; July 1974 through December 1974 and July 1975 through December 1975. It should be pointed out that the system is referred to as a modified patient counselor system due to the fact that this position consolidated only the insurance billing clerk and collection clerk positions. However, the effect of this change was expected to be significant.

The impact of the modified patient counselor program on the accounts receivable index will be determined by comparing data accumulated from the six-month period prior to the implementation of the system, to the same six-month period after implementation.

b. Admission Processing Time: The patient counselor program was implemented in February of 1976. The patient counselor is responsible for all four of the previously mentioned traditional functions.

The impact of this program on admission processing time will be determined by comparing average processing time done by admitting clerks in the Spring of 1975 to average processing time done by patient counselors in the Spring of 1976.

2. Data Collection
   a. Accounts Receivable: Accounts receivable information
was extracted from Desert Hospital's general accounting department files. Existing monthly reports showing change in the accounts receivable index were used.

b. Admission Processing Time: Several steps are involved in the admission process. Most are centered around gathering demographic information on the patient, completing and signing forms, and developing charging and identification devices which accompany the patient to the bed.

Much of this information can be gathered and prepared in advance of the admission date by the pre-admission clerk. The clerk gathers the information either by telephone or forms which are completed by the patient and mailed in. Obviously the patients' admission processing time is dependent, to a significant extent, on the effectiveness of the pre-admission process.

For a sixteen-day period of time in the Spring of 1975 and 1976 admission processing time was recorded by the auxiliary volunteer members, the admitting clerks, or the patient counselors. During these periods the pre-admission clerk function remained constant. During the test period of the Spring of 1975, a normal staff of four admitting clerks performed the admitting functions. During the test period of the Spring of 1976, a normal staff of eight patient counselors per day performed the same functions as those previously performed by the admitting clerks.
A simple form was devised which allowed for the recording of the times of patient entry and departure in the admitting process. Total time spent in the process was ascertained for all patients admitted during each day that the recording was conducted. A sample form is shown in figure #1.

C. ANALYSIS

1. Accounts Receivable

The assumption was made that the two periods of time over which the index will be reviewed come from a general population approximating a normal distribution.

In order to determine whether the difference in the accounts receivable index levels from the test periods before and after introduction of the modified patient counselor program was due to chance alone, a chi-square test was applied. The result was that of either accepting or rejecting the following null hypothesis:

There is no difference in the level of the accounts receivable index after the modified patient counselor system was implemented.

The hypothesis would be rejected with \( \alpha = .05 \) if \( \chi^2 \geq 11.07 \)

2. Admission Processing Time

It was assumed that the two periods of time over which the admission processing was measured come from a general population approximating a normal distribution.

To determine whether one group of observations is significantly
DESER HOSPITAL
PATIENT ACCOUNTING DEPARTMENT
ADMISSION PROCESSING LOG

Name: ____________________________
Admitting Clerk
Patient Counselor

I. Time entered hospital
II. Time completed admission process
TOTAL TIME ELAPSED

INSTRUCTIONS:
Auxiliary Volunteer: Please note the time each patient reported at your information desk for admission. As you escort the patient to the assigned clerk/counselor, form should be handed to the clerk/counselor.

Admitting Clerk/Patient Counselor: Please note the time each patient completed the admission process and compute the total time elapsed. At the end of your shift each day all logs shall be turned in to your supervisor, who will verify that a log is turned in for each patient you admitted.

FIGURE #1
different from another in this circumstance, the following testing statistic was used:
\[ t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_p}{n_1} + \frac{s_p}{n_2}}} \]
\[ s_p = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{(n_1 + n_2 - 2)} \]

The result was that of either accepting or rejecting the following null hypothesis:

There is no difference in the mean processing time for patient admissions subsequent to implementation of the counselor system.

The hypothesis would be rejected with \( \alpha = .05 \) if \( t \geq 1.96 \)

D. LIMITATIONS

1. Implementation of the modified patient counselor system was concurrent with modification of existing, and development of totally new billing and collection procedures. Likewise a comprehensive cross-training program was developed in order to instruct all appropriate personnel in the correct methods of billing and collection. Therefore the difference in the accounts receivable index can only be attributed to the system as a whole and not specifically to any one of the several components of the system.

2. The effect on the receivables index which changes in regulations of third party payors, especially Medicare and Medi-Cal, could not be measured. These regulation changes could have had an effect on the time required to process patient account claims, thereby in-
fluencing the receivables index somewhat.

3. The hospital used for this study was a district hospital which was subject to a credit and collection policy appropriate to a public agency. This policy had definite impact on the mode of collection procedures, which likewise influenced to some degree the receivable index. Therefore the findings may not be generalized to hospital institutions of all types. The results may not necessarily be generalized specifically to proprietary or to other types of nonprofit institutions. One must also be cautious about generalizing the findings of either the accounts receivable index or the admission processing time to a metropolitan area since the study hospital is located in a relatively small, resort community.

4. The effect of staffing alone on admission processing time is difficult to isolate. Additionally since the patient counselor system was implemented subsequent to a training program covering proper admitting procedures, and since this training was done subsequent to the initial measurement of processing time, the effect on processing time of the training program alone is unknown.
A. FINDINGS

1. Accounts Receivable

   a. Hypothesis:

   There is no difference in the level of the accounts receivable index after the modified patient counselor system was implemented.

   Accumulated Data:

<table>
<thead>
<tr>
<th>Month</th>
<th>A/R Index 1975</th>
<th>A/R Index 1974</th>
<th>(O-E)^2/E</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>69.6</td>
<td>80.7</td>
<td>5.41</td>
</tr>
<tr>
<td>Aug.</td>
<td>69.9</td>
<td>84.9</td>
<td>5.55</td>
</tr>
<tr>
<td>Sept.</td>
<td>66.8</td>
<td>86.2</td>
<td>5.49</td>
</tr>
<tr>
<td>Oct.</td>
<td>63.7</td>
<td>88.2</td>
<td>5.46</td>
</tr>
<tr>
<td>Nov.</td>
<td>59.8</td>
<td>84.8</td>
<td>5.19</td>
</tr>
<tr>
<td>Dec.</td>
<td>63.5</td>
<td>81.2</td>
<td>5.20</td>
</tr>
</tbody>
</table>

   \[ \Sigma = 32.30 \]
Test Static:
Chi-square or:
\[ \chi^2 = \frac{(0-E)^2}{E} = 32.30 \geq 11.07, \text{ df } = 5, \alpha = .05 \]

b. Summary: The test statistic shows that in this situation, using this data, there is a significant difference in the level of accounts receivable index after the modified patient counselor system was implemented. The null hypothesis is therefore rejected.

Graph #1 shows that in comparing the index level of the test period subsequent to the modified patient counselor system to the period prior to the system, a marked reduction is shown.

2. Admission Processing Time

a. Hypothesis:
There is no difference in the mean processing time for patient admissions subsequent to implementation of the patient counselor system.

Accumulated Data:
Admission processing time in minutes

<table>
<thead>
<tr>
<th>1976</th>
<th>1975</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \bar{x}_2 = 20.00 )</td>
<td>( \bar{x}_1 = 35.76 )</td>
</tr>
<tr>
<td>( s_2 = 12.05 )</td>
<td>( s_2 = 10.97 )</td>
</tr>
<tr>
<td>( n_2 = 96 )</td>
<td>( n_1 = 92 )</td>
</tr>
</tbody>
</table>

Test Static:

Student t or:
Summary: The test statistic shows that in this situation, using this data, there is a significant difference in the mean processing time for patient admissions subsequent to implementation of the patient counselor system. The null hypothesis is therefore rejected.

Figure #2 displays frequency distributions of the processing time data. Increased frequency on lower processing time is readily visible, further demonstrating the significantly lower processing time subsequent to implementation of the patient counselor program.

3. Additional Analysis - Admission Processing Time

In order to determine whether the reduction of mean processing time was due to the increase of staff available to perform admission tasks this relationship was studied. The mean processing time prior to patient counselor implementation was plotted against the number of persons staffing the admission function to verify the assumption that staffing alone would reduce processing time significantly, (see Graph #2).

a. Hypothesis:

There is not a significant correlation between staffing and
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1 - 10</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>11 - 20</td>
<td>2</td>
<td>37</td>
</tr>
<tr>
<td>21 - 30</td>
<td>31</td>
<td>21</td>
</tr>
<tr>
<td>31 - 40</td>
<td>29</td>
<td>14</td>
</tr>
<tr>
<td>41 - 50</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>51 - 60</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>61 - 70</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

FIGURE #2
ADMISSION PROCESSING TIME - (IN MINUTES)

GRAPH #2
In order to establish the linear relationship shown in Graph #2 the following linear regressing equation was used:

\[ y = a + b x \]

To solve for \( b \) the following equation is used:

\[
\begin{align*}
  b &= \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2} \\
  &= \frac{(16)(2,135) - (60)(581)}{(16)(234) - 5,600} \\
  &= -0.486
\end{align*}
\]

To solve for \( a \) the following equation is used:

\[
\begin{align*}
  a &= \bar{y} - b \bar{x} \\
  &= 36.31 - (4.86)(3.75) \\
  &= 54.54
\end{align*}
\]

With \( a \) and \( b \) known, \( y \) (mean processing time) can be found for each \( x \) (# of staff) selected.

(1) Data from page 31 is used.
admission processing time.

Accumulated Data:

\[
\begin{array}{cccccc}
\xi & y & \xi y & \xi \xi y & \xi x & \xi x^2 \\
1. & 44 & 1,936 & 132 & 3 & 9 \\
2. & 43 & 1,849 & 129 & 3 & 9 \\
3. & 42 & 1,764 & 126 & 3 & 9 \\
4. & 42 & 1,764 & 126 & 3 & 9 \\
5. & 40 & 1,600 & 120 & 3 & 9 \\
6. & 37 & 1,369 & 111 & 3 & 9 \\
7. & 37 & 1,369 & 148 & 3 & 9 \\
8. & 37 & 1,369 & 148 & 4 & 16 \\
9. & 37 & 1,369 & 148 & 4 & 16 \\
10. & 34 & 1,156 & 136 & 4 & 16 \\
11. & 34 & 1,156 & 136 & 4 & 16 \\
12. & 32 & 1,024 & 96 & 4 & 16 \\
13. & 32 & 1,024 & 160 & 4 & 16 \\
14. & 31 & 961 & 124 & 5 & 25 \\
15. & 31 & 961 & 155 & 5 & 25 \\
16. & 28 & 784 & 140 & 5 & 25 \\
\hline
& 581 & 21,455 & 2,135 & 60 & 234 \\
\end{array}
\]

\[
y = 36.31 \\
x = 3.75 \\
(\xi y)^2 = 337,561 \\
(\xi x)^2 = 3,600
\]
Test Statistic:
Correlation coefficient or:
\[ r = \frac{n\bar{xy} - \bar{x}\bar{y}}{\sqrt{n\bar{x}^2 - (\bar{x})^2} \sqrt{n\bar{y}^2 - (\bar{y})^2}} \]
\[
= \frac{(16)(2,135) - (60)(581)}{[(16)(234) - (3,600)][(16)(21,455) - (337,561)]}
\]
\[ r = -.77 \]

b. Summary: The test statistic shows a fairly high inverse correlation between staffing level and mean processing time. It is reasonable to assume that as staff is increased, mean processing time will decrease. The hypothesis is therefore rejected. Likewise through the use of the linear regression technique, Graph #2 indicates that increased staffing alone would reduce processing time. It can therefore only be assumed that the patient counselor program reduced processing time through making additional staff available to do admission work rather than any other variable, or combination of variables.
CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

Based on the statistical findings presented in Chapter 4, I would reject the following hypotheses:

1. "There is no difference in the level of the accounts receivable index after the modified patient counselor system was implemented."

2. "There is no difference in the mean processing time for patient admissions subsequent to implementation of the patient counselor system."

3. "There is not a significant correlation between staffing and admission processing time."

It can be concluded that both the modified and fully implemented patient counselor programs had the positive effect of meeting the goals of Desert Hospital to the extent that both the receivables index and admission processing time were significantly reduced.

Additionally it can be concluded that the decrease in processing time has been correlated more closely with an increase in personnel capable of doing admission tasks, than with any other variable. This
does reflect favorably to some degree however on the program which was introduced.

B. RECOMMENDATIONS FOR FURTHER STUDY

1. Evaluation of the change of the hospital's image related to reduction of admission processing time might well be conducted at a future date. Currently due to high census and related problems patients are processed more quickly by the patient counselors but still wait pending bed availability.

2. The effect of savings brought about by reduced receivables on hospital charges could be studied. If, due to reduced receivables cost, future charges are either reduced, maintained at their present level or increased to a degree less than previous periods; the effect on the hospital's image in the community could be measured.

3. Variables other than staffing might be isolated to determine their effect on admission processing time. Such variables might include scheduling of admissions, inservice training, revision of procedures, and physical layout of the admitting area.

4. The change in the level of job satisfaction perceived by the patient counselors since implementation of the system could be measured. Likewise a study of the turnover rate before and after the counselor program's inception could be done.

5. Personnel costs before and after the patient counselor program could be studied. These costs could be compared to savings realized by reduced receivables.
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