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Silas B. Hays U.S. Army Community Hospital, Fort Ord, California has the potential to lose over \$900 thousand in the supply budget category starting in fiscal year 1991. This reduction will occur during the conversion from a workload measure based on admissions, births and beds occupied (Medical Care Composite Unite, MCCU) to a Diagnosis Related Group (DRG) based workload measurement system. Title 10, Chapter 55 of the U.S. Code, Section 1101 requires the Department of Defense to use DRGs as the primary criterion for allocation of medical resources. The purpose of this study is to analyze the compensation of Silas B. Hays Hospital under DRGs. The approach includes determining compensation's functional relationship to a patient's gender, age, category, admitting service, length of stay, number of diagnoses, number of procedures, and transfer status, through stepwise multiple linear regression analysis. (continued on reverse)					
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19. ABSTRACT (Continued)

The results of this study showed the majority of variance in case mix can be explained by length of stay. The three most significant clinic services were: (a) Newborn nursery, (b) Obstetrics, and (c) Family Practice Obstetrics. Dramatic changes in reimbursement were found possible using peer group management techniques. 

This study included the development of a software program to incorporate the predictive capabilities of the stepwise multiple linear regression formula and the principles of DoD DRG reimbursement. The program allows analysis of any single or multiple change to the case mix of not just Silas B. Hays, but any facility within Health Services Command. An import module allows the program to incorporate output from the Retrospective Case Mix Analysis System (RCMAS)

Implementing DRGs
At Silas B. Hays Army Community Hospital:
Enhancement of Utilization Review



A Graduate Management Project
Submitted to the Faculty of
Baylor University

In Partial Fulfillment of the
Requirements for the Degree
of
Master of Health Administration

by
Major Howard C. May, SP

December 1990

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ABSTRACT

Silas B. Hays U.S. Army Community Hospital, Fort Ord, California has the potential to lose over \$900 thousand in the supply budget category starting in fiscal year 1991. This reduction will occur during the conversion from a workload measure based on admissions, births and beds occupied (Medical Care Composite Unit, MCCU) to a Diagnosis Related Group (DRG) based workload measurement system. Title 10, Chapter 55 of the U.S. Code, Section 1101 requires the Department of Defense to use DRGs as the primary criterion for allocation of medical resources.

The purpose of this study is to analyze the compensation of Silas B. Hays Hospital under DRGs. The approach includes determining compensation's functional relationship to a patient's gender, age, category, admitting service, length of stay, number of diagnoses, number of procedures, and transfer status, through stepwise multiple linear regression analysis.

The results of this study showed the majority of variance in case mix can be explained by length of stay. The three most significant clinic services were: (a) Newborn nursery, (b) Obstetrics, and (c) Family Practice Obstetrics. Dramatic changes in reimbursement were found possible using peer group management techniques.

This study included the development of a software program to incorporate the predictive capabilities of the stepwise multiple linear regression formula and the principles of DoD DRG reimbursement. The program allows analysis of any single or multiple change to the case mix of not just Silas B. Hays, but any facility within Health Services Command. An import module allows the program to incorporate output from the Retrospective Case Mix Analysis System (RCMAS).

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CHAPTER I: INTRODUCTION

Conditions Prompting This Study

Silas B. Hays Army Community Hospital was scheduled to lose over \$45 thousand during the fiscal 1989 midyear review according to J. Jensen (personal communication, April 21, 1989) representing the Resource Management Division of Health Services Command (HSC). This reallocation was based on five percent of the difference between supply dollar amounts calculated by the old Medical Care Composite Unit (MCCU) system and the supply dollar amount calculated by the new congressionally mandated Diagnosis Related Group (DRG) system (a complete listing of definitions and abbreviations are contained in appendix A). Jensen further expected HSC would allocate all supply dollars by the DRG system within two years with a potential loss to the Fort Ord hospital of over \$900 thousand compared to current allocation methods.

Past compensation measurements for resource allocation were based on the MCCU. This system of workload measure provided a large emphasis on admissions and obstetrics while encouraging excessive lengths of stay. The MCCU is based on the following formula:

Admissions	X	10	+
Live Births	X	10	+
Beds Occupied	X	1	+
Outpatient Visits	X	0.3	

The population cared for and the physician practice patterns at Silas B. Hays results in a high level of compensation as measured by the old MCCU methodology. Unfortunately, Silas B. Hays had one of the lowest compensation correlations between the old MCCU method and the new Department of Defense (DoD) mandated DRG method (Jensen, personal communication, April 21, 1989). This low correlation explains one of the highest projected negative supply dollar shifts within HSC medical treatment facilities.

Statement of the Management Problem

What utilization review procedures can be implemented at Silas B. Hays Army Community Hospital in order to enhance compensation as measured by the Department of Defense Diagnosis Related Group System?

Literature Review

Healthcare costs in 1950 stood at only 4.6% of the gross national product (GNP) (Gibson, Waldo & Levit, 1983). This climbed steadily to 7.5% in 1970 causing President Nixon to state that the nation was facing a "health care crisis" (Ginzberg, 1987). In spite of this, the 1982 cost of all health services in the United States stood at 10.5% of GNP (Gibson et al., 1983) and has continued to escalate standing now in excess of 11% (Kimball, 1990).

The Military Health Services System (MHSS) has a cost containment concern which parallels and even exceeds that of the level

for the United States overall. Total health care costs for the military have seen a rise from \$7.05 billion in 1983 to \$11.5 Billion in 1987. This represents an annual growth in excess of 13% (Soule, 1988) compared to 9.6% in 1987 for the United States (Kimball, 1990).

Cost containment in healthcare has been seen as a priority by healthcare planners for many years. However, all attempts to control escalating healthcare costs on any wide scale basis before 1983 were considered a failure as there was no incentive to curb costs in a fee-for-service system (Dowd, Johnson, & Madson, 1986). The most important step in this process toward true cost containment was seen in 1983 through the promulgation of the prospective payment system for Medicare patients.

Utilization Review

Cost containment became a high priority in the face of fixed payments for cases, as measured by DRGs, in the civilian healthcare arena. According to Feldstein, Wickizer & Wheeler (1988), utilization review is an effective mechanism for cost containment. This technique was incorporated by insurance companies, health maintenance organizations, preferred-provider organizations and other forms of managed care organizations.

Utilization review can be traced back to the Allegheny County Medical Society. While their efforts resulted in the Pennsylvania Hospital Utilization Project, few other facilities saw the need to carry out utilization review. Title XVIII of the Social Security Act (Medicare, 1965)

mandated utilization review, but apathy continued (Test Your Resource Management I.Q., 1985).

The general lack of physician support for utilization review resulted in PL 92-603 in 1972 which expanded the utilization review process to include concurrent review of all Medicare, Medicaid, and Maternal and Child Health Program admissions. Professional Standards Review Organizations (PSROs) were also formed by this amendment to the Social Security Act. The Joint Commission on the Accreditation of Hospitals supported this emphasis on utilization review by separating the review requirements into its own standard (Test Your Resource Management I.Q., 1985).

Third party payers are economically tied to the behavior of civilian health care institutions. Therefore, third party payers are progressively influencing decision making by civilian health care institutions. A primary mechanism for controlling the decision making of these institutions is utilization review. According to Test Your Resource Management I.Q., (1985) various utilization review mechanisms are employed to control costs, these may include:

1. Pre-admission authorization for elective admissions.
2. Inpatient concurrent review by outside reviewing agencies.
3. Second opinion programs.
4. Mandatory use of outpatient settings for certain surgical procedures.

5. Capitation on costs. Insurance companies will not pay whatever price the hospital sets.
6. Bill audits--where the medical record documentation is compared to the patient's bill.
7. If a physician's order for the service is not documented, the item is not paid. (p.10,11)

The Department of Defense recognizes the merits found in the civilian sector for utilization review and has issued Directive Number 6025.13 which states utilization review will occur and have at a minimum the following elements:

1. Planned review of care received by hospitalized patients with excessive lengths of stay for diagnosis, diagnosis-related groups (DRG), or procedures as specified by MTF [military treatment facility] or higher headquarters.
2. Review and assessment of resource utilization statistics on accessibility of care, personnel and staffing, and volume of care actually delivered to patients.
3. Mechanisms to evaluate equipment maintenance and procurement policies.
4. Policies on discharge planning. (p. 4)

According to Test Your Resource Management I.Q., (1985) utilization review does not prevent needed health care services, rather it "enhances the delivery of those services in order to eliminate inefficiencies" (p. 15). This conception is not universally held. Robinson

(1988) reports utilization review can lead to the curtailment of needed services in the name of cost control alone. Robinson further reports patients can often be left with the impression the care was inappropriate or unnecessary when utilization review is widespread.

Utilization review can have many advantages in enhancing the efficiency of inpatient care. However, care must always be taken to be sure any changes in practice patterns or hospital function are in keeping with sound quality assurance standards.

Prospective rate setting is one of many forms of reimbursement control methods which have been tried in the past. This method works by the external payer determining what reimbursement will be paid for a specified unit of service before the service is performed (Abe, 1985).

Fixed payment rates for each diagnosis are based on the average patient. If hospitals can treat the average patient below the average fixed payment, then they will make money through a positive marginal return. If the hospital's average costs are above the average fixed payment their marginal return will be negative. Therefore, the incentive for hospitals is to reduce costs in order to have a positive marginal return or change behavior to maintain a higher reimbursement.

Diagnosis Related Groups

Original work on prospective payment was performed by Thompson, Fetter and Mross (1975). They erroneously believed hospitals would desire to become efficient in order to maximize output. When their work was rejected by hospitals, they focused attention towards reimbursement

as a means of increasing incentive (Fetter, Thompson, and Mills, 1976). New Jersey first used DRGs to replace a voluntary rate-setting program (Rosko & Broyles, 1987).

In 1979 the U.S. Government contracted with Yale University to create a usable system of DRGs. The 1981 study results became the foundation for determining prospective payments for Medicare through PL 98-21 by the Health Care Financing Administration (HCFA) of Health and Human Services (Vladeck, 1984). Once embraced by HCFA, the system was rapidly adopted by many third party payers including Blue Cross and Blue Shield.

The establishment of a particular DRG takes into account the diagnosis, procedures performed on the patient, the patient's gender, age and discharge status. According to Vladeck (1984) patients within a DRG are clinically similar and should have relatively uniform costs associated with their care. The relative weight assigned to each DRG influences the payment for the services provided by a hospital. This reimbursement is intended to cover all ancillary services provided by the hospital including radiology, laboratory and nursing services (Abe, 1985).

Department of Defense and DRGs

During the 1980s Congress felt the cost of military health care was rising excessively. They pursued a legislative solution to this problem by amendment to Title 10 Chapter 55 of the U.S. Code Section 1101. This amendment directed DoD to use DRGs as the primary criterion for allocation of resources to MTFs. Congress indicated their approval of a

phased approach to resource allocation through DRGs, but intended all resources, including personnel, shall eventually be controlled in this fashion (Soule, 1988).

Implementation guidance on prospective resource allocation in the MHSS was given in 1988 from then Assistant Secretary of Defense for Health Services, William Mayer (1988). The first phase of implementation would only include the analysis of money from the element of resources for supplies. This phase was expected to take several years to allow time for the services adapt.

A new productivity unit was developed for DoD in order to capture workload from both in and outpatient work centers--the Medical Work Unit (MWU). The MWU is composed of an Inpatient Work Unit (IWU) as well an Ambulatory Work Unit (AWU). A complete discussion of the mathematics for computation of the MWU are contained in Appendix B.

To manage the new system all military treatment facilities (MTFs) were first divided into Medical Centers, CONUS (located in the continental United States), and OCONUS (located overseas) hospitals. Peer groups within these categories based on size and RCMI further subdivided the hospitals. All hospitals started with a base allocation rate per MWU of \$231.04. In order to more fully reflect true costs per MWU each hospital within a peer group was assigned a Resource Allocation Group (RAG) additive. Individual hospitals were further modified through additional additives to reflect individual pharmacy and laboratory costs not otherwise captured by the system. The total supply dollar

allocation for a facility would be the final supply allocation rate multiplied by the total MWUs for the period.

Dr. Mayer recognized that each service had unique requirements for the delivery of healthcare which made comparison between the services difficult. This difficulty led to additives which would prevent the flow of money between services as the result of productivity differences. Therefore, dollars would only flow between hospitals of the same service.

Purpose

The purpose of this study is to analyze the compensation of Silas B. Hays U.S. Army Community Hospital based on the DoD DRG system. The approach includes the analysis of compensation's functional relationship to a patient's gender, age, category, admitting service, length of stay, number of diagnoses, number of procedures, and transfer status. For the purpose of this study, compensation will be considered the case weight assigned to an inpatient disposition.

Healthcare managers must have available many sources of information in order to make wise decisions. Information must include all facts concerning resource consumption and compensation for every patient. The analysis of compensation by this project will assist in the development of an efficient utilization review system. The findings of this study, along with the principles of case mix management, may result in the enhancement of resource allocation from HSC to this facility.

CHAPTER II: METHODS AND PROCEDURES

Subjects

The subjects used in this study were all inpatients reported in the IPDS system during calendar year 1988 at Silas B. Hays Army Community Hospital, Fort Ord, California. Those patients reported as Carded For Record Only (i.e. dead on arrival, stillbirth, and medically retired) and those treated totally Absent Sick (i.e. active duty military members who have been admitted to civilian health care facilities, but are kept on the roles of an MTF) were excluded from the analysis.

Study Design

This study is an ex post facto intensive quantitative investigation of data for eligible inpatients treated at Silas B. Hays Hospital during calendar year 1988, the latest complete year of data available for investigation. The results of this large sample analysis are assumed to be representative of care given at Silas B. Hays Hospital in subsequent years.

Data Collection

PASBA, Fort Sam Houston, Texas collected the data used in this study. PASBA collects raw patient data from all Army MTFs and performs needed statistical calculation and analysis.

Statistical Analysis

This study is built upon a stepwise multiple linear regression analysis. Because of the size of the database the regression was

performed by PASBA using the Statistical Package for the Social Sciences (SPSS-X) Release 3.0 For IBM OS/MVS. The equation determines if the assigned case weight is a function of the gender, age, category, admitting service, length of stay, number of diagnoses, number of procedures, and transfer status for patients included in the study.

Dependent Variable (Y)

CASEWGT (Case Weight)

Independent Variables (X)

MALE

AGE

ACTDUTY (Active Duty)

DACTDUTY (Dependents Of Active Duty)

RETIREE (Retirees)

DRETIREE (Dependents Of Retirees)

AA (General Medicine)

BA (General Surgery)

BE (Oral Surgery)

BI (Urology)

CA (Gynecology)

CB (Obstetrics)

DA (Pediatrics)

DB (Newborn Nursery)

EA (Family Practice Medicine)

EC (Family Practice Obstetrics)

ED	(Family Practice Gynecology)
EF	(Family Practice Pediatrics)
FA	(Orthopedics)
FB	(Podiatry)
GA	(Psychiatry)
HA	(Ophthalmology)
HB	(Otorhinolaryngology)
BEDDAYS	(Length of Stay)
NODIAG	(Number Of Diagnoses Coded)
NOPROC	(Number Of Procedures Coded)
TRANSFIN	(Transferred In)
TRANSOUT	(Transferred Out)

Functional Relationship

CASEWGT = f(MALE, AGE, ACTDUTY, DACTDUTY, RETIREE, DRETIREE, AA, BA, BE, BI, CA, CB, DA, DB, EA, EC, ED, EF, FA, FB, GA, HA, HB, BEDDAYS, NODIAG, NOPROC, TRANSFIN, TRANSOUT).

Operational Definitions

CASEWGT. The weight of the DRG assigned to the individual case under consideration.

MALE. Patient gender. Males coded 1, females 0.

AGE. Defined as the age in years. The number 0 was assigned to all patients less than one year of age. According to R. Devore (personal

communication, February 2, 1990) this is the convention used by PASBA. Complete IPDS Age Codes are in Appendix C.

ACTDUTY. Coded 1 for patients on Active Duty (patient categories A10, F10, N10, M10, C10, O10, P10; all IPDS patient category explanations are found in Appendix D), otherwise 0.

DACTDUTY. Coded 1 for patients who are Dependents of Active Duty personnel (patient categories A50, F50, N50, M50, C50, O50, P50; all IPDS patient category explanations are found in Appendix D), otherwise 0.

RETIREE. Coded 1 for patients who are Permanently Retired (patient categories A30, F30, N30, M30, C30, O30, P30; all IPDS patient category explanations are found in Appendix D), otherwise 0.

DRETIREE. Coded 1 for patients who are Dependents of Retired or Deceased personnel (patient categories A60, F60, N60, M60, C60, O60, P60; all IPDS patient category explanations are found in Appendix D), otherwise 0.

AA. Coded 1 if the primary clinic service for the patient was General Medicine, otherwise 0.

BA. Coded 1 if the primary clinic service for the patient was General Surgery, otherwise 0.

BE. Coded 1 if the primary clinic service for the patient was Oral Surgery, otherwise 0.

BI. Coded 1 if the primary clinic service for the patient was Urology, otherwise 0.

CA. Coded 1 if the primary clinic service for the patient was Gynecology, otherwise 0.

CB. Coded 1 if the primary clinic service for the patient was Obstetrics, otherwise 0.

DA. Coded 1 if the primary clinic service for the patient was Pediatrics, otherwise 0.

DB. Coded 1 if the primary clinic service for the patient was Newborn Nursery, otherwise 0.

EA. Coded 1 if the primary clinic service for the patient was Family Practice Medicine, otherwise 0.

EC. Coded 1 if the primary clinic service for the patient was Family Practice Obstetrics, otherwise 0.

ED. Coded 1 if the primary clinic service for the patient was Family Practice Gynecology, otherwise 0.

EF. Coded 1 if the primary clinic service for the patient was Family Practice Pediatrics, otherwise 0.

FA. Coded 1 if the primary clinic service for the patient was Orthopedics, otherwise 0,

FB. Coded 1 if the primary clinic service for the patient was Podiatry, otherwise 0.

GA. Coded 1 if the primary clinic service for the patient was Psychiatry, otherwise 0.

HA. Coded 1 if the primary clinic service for the patient was Ophthalmology, otherwise 0.

HB. Coded 1 if the primary clinic service for the patient was Otorhinolaryngology, otherwise 0.

BEDDAYS. Total bed and bassinet days; henceforth referred to as Average Length of Stay (ALOS).

NODIAG. Number of diagnoses coded in the IPDS record (values 1 to 8). Actual patient medical record may have more than 8 diagnoses listed.

NOPROC. Number of procedures coded in the IPDS record (values 0 to 8). Actual patient medical record may have more than 8 procedures listed.

TRANSFIN. Coded 1 for those cases transferred into Fort Ord from another facility (admission source 5, 6, 7, 8, 9, or 0), otherwise 0. Appendix E lists IPDS admission source codes with definitions.

TRANSOUT. Coded 1 for those cases transferred out to another facility (disposition status S, T, or U), otherwise 0. Appendix F lists IPDS disposition status codes with definitions.

In order to allow for degrees of freedom, only those clinic services representing greater than 0.5% of the cases were included in the analysis. All clinics below the 0.5% threshold were all coded 0; therefore, only those clinics which reported admissions were included for consideration in this analysis. Those patients not belonging to the listed IPDS patient categories were considered "other" if all four listed patient categories were coded 0.

Validity

As the military has been mandated by Congress to comply with the distribution of resources based on Diagnosis Related Management, a special type of face validity can be presumed. About 50% of the variation in length of stay within a particular DRG has been explained, the other 50% is presumed to be due to disease severity variation (Coventry, 1988).

Reliability

There are three significant sources of error for the DRG system as found in the data base at PASBA: (a) physician errors in not following the definition for the principal diagnosis, secondary diagnosis or surgical procedure; (b) coding errors by patient administration staff transposing of code numbers, not following conventions or guidelines, or simply misinterpreting information; and lastly (c) keying of information into computer terminals (Ashcraft, 1986).

Null Hypothesis

No linear relationship exists between the dependent variable case weight and the independent variables for gender, age, IPDS patient category, clinic service, beddays, number of diagnoses, number of procedures, whether the patient was transferred in, or transferred out.

Alternate Hypothesis

Case weight is a function of gender, age, IPDS patient category, clinic service, beddays, number of diagnoses, number of procedures, whether the patient was transferred in, or transferred out.

Alpha Level

A confidence level of 0.05 was used to determine if the next independent variable would be in the stepwise multiple linear regression equation.

Ethical Considerations

All data in this study was provided by the PASBA services located at Fort Sam Houston, Texas. At no time was patient information reported which would allow disclosure of an individual patient's identity. Any reports obtained from PASBA containing information traceable to individual patients were shredded following analysis. Patient anonymity was preserved throughout all phases of this study. Therefore, no individual's ethical rights were violated.

Assumptions

DoD and HSC are in an unstable environment regarding resource allocation under the DRG based methodology. Full evaluation of the merits of the current implementation strategy are under evaluation by a contractor (Vector Research) according to J. Jensen (personal communication, January 3, 1990). The results of the analysis by the contractor are expected during the month of June or July 1990. Therefore, I made the assumption the implementation strategy for DRGs will follow the principles outlined in the August 5, 1988 memorandum from then Assistant Secretary of Defense for Health Affairs William Mayer (1988).

CHAPTER III: RESULTS

A total of 10,496 records were analyzed. Appendix G gives a complete listing of all steps of the stepwise multiple linear regression analysis. Table 1 displays descriptive statistics of all variables used in

Insert Table 1 here

the regression equation. More females were treated than males. The average age of patients was approximately 27 years. Dependents of active duty comprised over 50% of the patient population treated followed by active duty with approximately 27%.

Table 2 gives more detail on the clinic service variables.

Insert Table 2 here

Obstetrics, Internal Medicine and Newborn Nursery together provided care to over 40% of the patients admitted to Silas B. Hays Hospital. The top producer of RWPS was Internal Medicine with General Surgery next. The service producing the highest average CMI was Psychiatry. Of interest is while the number of RWPS produced by General Medicine and Obstetrics was similar, Obstetrics required more than 500 additional patients to produce those RWPS, a reflection of the low average CMI for patients treated by the Obstetrical Service. The average patient treated

in the Newborn Nursery had a CMI of 0.2080, the lowest CMI of any service.

Table 3 presents the complete stepwise multiple linear regression

Insert Table 3 here

analysis formula prepared for this project. Seventeen variables met the 0.05 confidence level and were therefore included in the equation for predicting case weight. Twelve variables not meeting the criteria for inclusion are found on the last page of Appendix G.

CHAPTER IV: DISCUSSION

Nearly 73% of the variance in case weight between patient dispositions can be explained when using the variables having a significance of 0.05 or greater (Table 3). The majority of variance (62%) can be accounted for by length of stay. The importance of length of stay is not surprising when the formula for calculating the assigned case weight, or RWP is examined (Appendix B). The next four variables showing the most influence on case weight variance were (a) age, followed by the three clinic services of (b) Newborn Nursery, (c) Obstetrics, and (d) Family Practice Obstetrics.

When evaluating the influence of the significant variables, it is important to look not just at the magnitude of influence, but also the direction of influence. As expected, length of stay and age have a positive influence, although the magnitude of the influence of age was

surprisingly small. Of note is the negative influence of the first three services of the equation on case mix. The negative effect on case mix of a patient being newborn is only exceeded if a patient is a transfer into the facility.

The excellent predictive capabilities of regression analysis must be tempered with use of reasonable variable changes. For example, while transferring a patient into Silas B. Hays provides a strong negative influence on a predicted case mix, it can be expected to occur infrequently (only 0.4% of admissions in 1988, Table 1). On the other hand, three of the top four DRGs recorded during 1988: (a) 391, Normal Newborn; (b) 373, Vaginal Delivery Without Comorbidities or Complications; and (c) 383, Other Antepartum Diagnoses With Comorbidities and/or Complications represented 2,423 patient dispositions, or over 23% of the total for the year. Therefore, it would be more reasonable to make a large change in one of the top three volume variables than in the smaller variable.

Twelve variables failed to influence the case mix of a patient at the 0.05 level of confidence. Several of these variables deserve comment. Gynecology is an alternate emphasis for the obstetrician/gynecologist. However, an increase in volume could not be depended upon to produce a significant change in case mix. While Psychiatry had the highest mean for CMI, the predictive qualities for the service were poor. The four IPDS patient categories were expected to correlate with age and therefore show a higher level of significance, but did not.

A double swing in the volume of patients falling into the top three clinic services noted has occurred over the past ten years at Silas B. Hays Hospital. An active midwifery program phase out in the mid 1980s along with a nursing and obstetrician shortage resulted in a dramatic parallel drop in admissions to the obstetrical service and newborn nursery. While this drop vaulted the RCMI of the facility over 0.900 it had a violent affect on the distribution of funds from HSC. As previously discussed, the MCCU methodology of resource allocation richly rewards obstetrical care and ignores case mix. The current leadership of Silas B. Hays noted the trend in reimbursement and moved quickly to reverse the outflow of obstetrical care to the advance of reimbursement but the detriment of RCMI. The current RCMI for Silas B. Hays Hospital now hovers slightly over 0.8200.

The concept of case mix is important only when reimbursement is calculated by the DRG system. As explained in Appendix B, the IWU is calculated by multiplying MEPRS dispositions by the RCMI of the facility. Therefore, case mix strongly influences reimbursement under the DRG system.

Reimbursement depends not just on the number of MWUs, but also on the final supply allocation rate. Silas B. Hays falls into the general category of a CONUS, Non-teaching Hospital. This general category is further subdivided into eight peer groups, each determined by size and RCMI. With a size greater than 100 beds, Silas B. Hays can be in only

one of two peer groups. These two groups are separated into those facilities having an RCMI of over 0.900 and those having a lower RCMI.

The important difference between the two peer groups available for Silas B. Hays is the presence of a RAG additive of \$43.64 for the higher RCMI peer group. The RAG additive alone represents over an eighteen percent difference between the two peer groups. During the period Silas B. Hays shunned obstetrical care, it would have occupied the higher peer group. Silas B. Hays currently qualifies for the lower group.

Sixty percent of the MWUs at Silas B. Hays are earned through AWUs. Therefore, 40% of the workload influences the reimbursement for all of the workload. While the composition of inpatient workload is expected to influence outpatient workload the significance is uncertain. Of note is that an ambulatory visit under the DRG system is weighted heavier for an obstetrical than a gynecological visit (0.0260 vs. 0.0236), a negative correlation between inpatient and outpatient reimbursement. Two facilities with identical outpatient populations and workload could be resourced differently for workload solely due to the reimbursement rate determined by inpatient care.

Prolog Computer Software Program

In order to operationalize the results of this study a software program entitled "The Diagnosis Related Group (DRG) Based Methodology Transition Impact Program" which incorporates the predictive capabilities of the multiple regression formula and the principles of DoD DRG reimbursement was developed. The programming language chosen for

the program was Borland International Turbo Prolog Version 2.0, the language of artificial intelligence. A complete listing of code for this program is contained in Appendix H. The software is in Appendix I for color and Appendix J for Laptop computers.

The incentive for producing this program was the need to understand the economic impact of making case mix changes in the facility. Computer modeling was the logical method, first with a simple spreadsheet showing how single DRG changes affected reimbursement. Later, as insight grew the need was apparent for a model which would make multiple simultaneous changes in case mix.

The Prolog software program allows analysis of any single or multiple change to the case mix of not just Silas B. Hays, but any facility within HSC. It incorporates database workload information from any HSC hospital and all 473 DoD DRGs. An import module enables the program to incorporate output from the Retrospective Case Mix Analysis System (RCMAS), thereby allowing analysis of actual workload data. Modeling of case mix change impact can be done either through analysis of individual or group DRG changes or through mass changes in the variables of the linear regression formula developed for this project. The regression formula is currently available only for Silas B. Hays workload but could be performed by PASBA for any other facility through minor program changes.

Case mix modeling with the software brought many expected, but some unexpected findings. As a general rule, every additional inpatient

disposition resulted in some reimbursement, though the effect on RCMI may be negative. Conversely, not admitting patients had a deleterious effect on reimbursement in almost all cases.

As previously noted, over 23% of patient dispositions from Silas B. Hays were handled by the services having the most significant negative effect on case weight for a disposition. The Diagnosis Related Group (DRG) Based Methodology Transition Impact Program indicates that eliminating care for these patients would result in an increased inpatient reimbursement for Silas B. Hays under the DRG system over the MCCU system of \$143,797 in supply dollars alone! This quirk in reimbursement is the result of a dramatic rise in the RCMI to break the 0.9000 threshold, thus increasing reimbursement by over \$43 per IWU.

CHAPTER V:

CONCLUSIONS AND RECOMMENDATIONS

The scope of this project was limited with the decision to deal strictly with variables as they relate to reimbursement and not as they relate to cost. This was not to devalue cost analysis. Dr. Finstein (personal communication, July 11, 1988) stated the use of statistics has four stages: (a) First you describe phenomena, then (b) you explain, (c) predict, and finally (d) control. My attempt with this research was to produce a foundation of information on those variables at Silas B. Hays Hospital which has a significant influence on case mix. Future research must deal with cost analysis in order to better evaluate efficiency of

healthcare delivery. A refinement of the MEPRS system is strongly recommended in order to track cost to individual patients and providers.

The military healthcare system functions essentially as a not-for-profit organization. However, not-for-profit organizations must be concerned with reimbursement or risk of not being able to provide care. Military healthcare managers have adapted their organizations to the old MCCU resourcing system, frequently shaping the case mix as did Silas B. Hays, to receive resources adequate for delivering healthcare the mission demands.

Costs must be balanced with reimbursements for survival, even in the military health care system. To radically reduce funding to Silas B. Hays or any other MTF is a mandate to the hospital to change its mission. Intention for change is a separate issue. A system which will give economic incentive to not take care of patients, as would be the case for obstetrical patients at Silas B. Hays, is a system fundamentally flawed.

Only two alternatives exist for an MTF in the presence of an underfunded medical mission: (a) Deliver the services by cost shifting from overfunded missions, or (b) provide an alternative means of delivering the services with funding external to the hospital budget. If a medical mission is essential for a military hospital then it should be funded accordingly. Ignoring the effects of economic incentive for military healthcare managers is to ignore reality.

Effective utilization review requires precise information on availability of resources for delivering healthcare. This study provides a foundation of information upon which a better understanding of healthcare delivery decisions can be made.

The software developed will be best used in making decisions on inpatient versus outpatient care for many categories of patients. Additionally, categories such as obstetrical patients will come under serious evaluation on the financial risk of providing direct care versus finding alternative means of healthcare deliver.

The recommendations of the Vector Research analysis and resultant implementing instructions will set the ultimate course for the behavior of Silas B. Hays. Weiner, Maxwell, Sapolsky, Dunn and Hsiao (1987) state decision making in health care normally lies in the hands of clinicians, not health care administrators. These authors state decision making power comes from the area of responsibility having the greater uncertainty associated with it, and issues in medicine are typically more uncertain than those in administration. However, the threat of a near one million dollar shift in supply dollars and the risk of future resource losses will create a temporary shift in power. A clinician-administrator coalition will form to make significant practice pattern changes at Silas B. Hays Hospital. These changes will occur under the realm of utilization review and will reestablish the balance in uncertainty away from fiscal issues back to clinical issues.

CHAPTER VI: REFERENCES

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Table 1

Descriptive Statistics: Variables

Label	Mean	Std Dev	Cases	Variable Label
MALE	0.462	0.499	4,850	
AGE	27.242	21.556		
ACTDUTY	0.269	0.444	2,827	ACTIVE DUTY
DACTDUTY	0.5140	.500	5,392	DEP OF ACTIVE DUTY
RETIREE	0.1110	.314	1,160	RETIREEES
DRETIREE	0.089	0.284	929	DEP OF RETIREEES
* OTPATCAT	0.018	0.133	188	OTHER PATIENT CATEGORIES
AA	0.141	0.348	1,481	GENERAL MEDICINE
* AB	0.000	0.017	3	CARDIOLOGY
* AF	0.000	0.010	1	GASTROENTEROLOGY
* AI	0.000	0.010	1	NEPHROLOGY
* AJ	0.000	0.010	1	NEUROLOGY
BA	0.105	0.307	1,105	GENERAL SURGERY
BE	0.030	0.170	313	ORAL SURGERY
* BF	0.002	0.039	16	PEDIATRIC SURGERY
BI	0.049	0.215	510	UROLOGY
CA	0.029	0.167	301	GYN
CB	0.154	0.361	1,615	OB
DA	0.068	0.251	712	PEDIATRICS
DB	0.123	0.329	1,292	NEWBORN NURSERY
EA	0.039	0.193	407	FP MEDICINE
* EB	0.002	0.047	23	FP SURGERY
EC	0.089	0.284	931	FP OB
ED	0.006	0.075	60	FP GYN
EF	0.019	0.135	195	FP PEDIATRICS
* EG	0.001	0.029	9	FP ORTHOPEDICS
FA	0.066	0.248	692	ORTHOPEDICS
FB	0.010	0.101	108	PODIATRY
GA	0.039	0.193	407	PSYCHIATRY
HA	0.010	0.098	102	OPHTHALMOLOGY
HB	0.020	0.140	211	ENT
BEDDAYS	3.635	5.762		NUMBER OF BED DAYS
NODIAG	2.109	1.537		NUMBER OF DIAGNOSIS CODED
NOPROC	1.266	1.346		NUMBER OF PROCEDURES CODED
CASEWGT	0.667	0.657		CASE WEIGHT
TRANSFIN	0.004	0.062	41	TRANSFERRED IN
TRANSOUT	0.029	0.168	305	TRANSFERRED OUT

* Note. Variable not used in the analysis as significance less than the 0.05 confidence level.

TABLE 2

Descriptive Statistics: Clinic Services

Clinic Service	Code	DISP	% of DISP	CMI	Total RWP	% of RWPS
Internal Medicine	AA	1481	14.11%	0.8897	1317.6457	18.81%
Cardiology	AB	3	0.03%	0.6402	1.9206	0.03%
Gastroenterology	AF	1	0.01%	0.5574	0.5574	0.01%
Nephrology	AI	1	0.01%	0.6032	0.6032	0.01%
Neurology	AJ	1	0.01%	0.7658	0.7658	0.01%
General Surgery	BA	1105	10.53%	0.9244	1021.4620	14.58%
Oral Surgery	BE	313	2.98%	0.5733	179.4429	2.56%
Pediatric Surgery	BF	16	0.15%	0.7572	12.1152	0.17%
Urology	BI	510	4.86%	0.6570	335.0700	4.78%
Gynecology	CA	301	2.87%	0.7592	228.5192	3.26%
Obstetrics	CB	1615	15.39%	0.5864	947.0360	13.52%
Pediatrics	DA	712	6.78%	0.5709	406.4808	5.80%
Newborn Nursery	DB	1292	12.31%	0.2080	268.7360	3.84%
FP-Medical	EA	407	3.88%	0.9053	368.4571	5.26%
FP-Surgical	EB	23	0.22%	0.6741	15.5043	0.22%
FP-Obstetrics	EC	931	8.87%	0.5353	498.3643	7.11%
FP-Gynecology	ED	60	0.57%	0.6576	39.4560	0.56%
FP-Pediatrics	EF	195	1.86%	0.4925	96.0375	1.37%
FP-Orthopedics	EG	9	0.09%	0.7819	7.0371	0.10%
Orthopedics	FA	692	6.59%	0.8490	587.5080	8.39%
Podiatry	FB	108	1.03%	0.8970	96.8976	1.38%
Psychiatry	GA	407	3.88%	1.0140	412.6980	5.89%
Ophthalmology	HA	102	0.97%	0.5730	58.4460	0.83%
Otorhinolaryngology	HB	211	2.01%	0.4915	103.7065	1.48%
Grand Total		10496	100.00%	0.6673	7004.4672	100.00%

Note.

DISP - Dispositions

CMI - Case Mix Index (Total RWP divided by No of Dspo)

RWPS - Relative Weighted Product (Weight of an individual case)

Total RWPS - Total of RWPs for all the cases for the given clinic

TABLE 3

Multiple Regression Analysis Formula

$$\begin{aligned}
 \text{CASEWGT} = & (.086193) \quad X \quad (\text{number of Bed days}) \\
 & + (.003122) \quad X \quad (\text{Age of Patient}) \\
 & + (-.323502) \quad X \quad (1 \text{ if Clinic Service is DB}) \\
 & + (-.134777) \quad X \quad (1 \text{ if Clinic Service is CB}) \\
 & + (-.155038) \quad X \quad (1 \text{ if Clinic Service is EC}) \\
 & + (.028401) \quad X \quad (\text{Number of Procedures coded}) \\
 & + (-.558463) \quad X \quad (1 \text{ if Patient was transferred in}) \\
 & + (.179117) \quad X \quad (1 \text{ if Clinic Service is FA}) \\
 & + (.147480) \quad X \quad (1 \text{ if Clinic Service is BA}) \\
 & + (.020133) \quad X \quad (\text{Number of Diagnoses coded}) \\
 & + (-.124597) \quad X \quad (1 \text{ if Patient was transferred out}) \\
 & + (.162995) \quad X \quad (1 \text{ if Clinic Service is FB}) \\
 & + (.070846) \quad X \quad (1 \text{ if Clinic Service is AA}) \\
 & + (.081358) \quad X \quad (1 \text{ if Clinic Service is EA}) \\
 & + (.086141) \quad X \quad (1 \text{ if Clinic Service is BE}) \\
 & + (.052370) \quad X \quad (1 \text{ if Clinic Service is DA}) \\
 & + (.015908) \quad X \quad (1 \text{ if Patient was male}) \\
 & + (.215037) \quad \text{Constant}
 \end{aligned}$$

Appendix A

Abbreviations and Definitions

- ALOS** Average Length of Stay -- The average length of hospitalization of inpatients discharged during the period under consideration.
- AWU** Ambulatory Work Unit -- An outpatient workload credit measurement. AWU weights and methodology are published in Report HR 88-001 (April 1988), "Military Health Services System Ambulatory Work Unit".
- CMI** Case Mix Index -- Total RWPs for an MTF divided by the total of biometrics dispositions through the individualized Patient Data System (IPDS) for which the RWPs were determined. DRG 469 (Primary Diagnosis Invalid as a Discharge Diagnosis) and DRG 470 (Ungroupable) are excluded from the calculations since their relative weights are zero. The CMI gives the number of RWPs generated by the average dispositions from the MTF.
- Disposition** -- The termination of a period of inpatient hospitalization through the formal release of the inpatient by the hospital.
- DRG** Diagnosis Related Group -- classification of patients by demographic and diagnostic variables into clinically comparable groups with similar lengths of stay and intensity of resource

Appendix A (cont'd)

consumption. The DRG system has been adopted as the basis to credit workload and allocate resources within DoD MHSS.

DRG Assignment -- The five essential elements required before a DRG can be assigned are: 1) principal diagnosis (and complications/comorbidities); 2) principal procedure; 3) patient's age; 4) patient's sex; and 5) discharge status.

DRG WEIGHT (Relative Weight) -- An index number which reflects the relative resource consumption associated with each DRG.

DoD CMI (FY 85) -- Average RWPs per disposition across DoD for FY 85. Total DoD RWPs for the base year (FY85) were 776,023. Total dispositions from biometrics data (less DRGs 469 and 470) were 957,901. The DoD CMI for the base year is then equal to $776,023/957,901$ or 0.8101. This factor is used to adjust all subsequent case mix calculations to the DoD average for the base year.

IWU Inpatient Work Unit -- The workload credit given each MTF disposition. Total IWUs for a MTF are calculated by multiplying a MTF's total MEPRS dispositions by their RCMI. Since there is often a discrepancy between biometrics and MEPRS

Appendix A (cont'd)

dispositions, the official volume count from MEPRS is used. This process makes the assumption that any dispositions counted in MEPRS but not available through biometrics for DRG assignment follow the same case mix distribution as those dispositions which have been assigned to DRGs.

- MHSS Military Health Services System -- This system contains biometrics data from the Army, Navy, and Air Force.
- RCMI Relative Case Mix Index -- The military treatment facilities (MTF) CMI divided by the FY 85 DoD CMI. This calculation standardizes workload credit such that the average discharge across all of DoD receives a workload credit of 1.00. For a given MTF, an RCMI of 1.35 indicates that based on a case mix alone, the MTF's disposition should be 35% more resource intense than the DoD average, everything else being equal. Late records will impact on a hospital's CMI.
- RWP Relative Weighted Products -- Dispositions from biometrics weighted by the MHSS relative cost weights. Each disposition from the Services' biometrics system is assigned to a DRG and weighted by the appropriate MHSS weight for that DRG in accordance with the rules for handling short and

Appendix A (cont'd)

long stay outliers and transfer cases. The sum of weighted dispositions for a Military Treatment Facility (MTF) is the total RWPs for that MTF.

Note.

Definitions and abbreviations are extracted from the multiple reports available from the U.S. Army, Health Services Command's Patient Administration Systems and Biostatistics Activity (PASBA) office and from Mayer (1988).

Appendix B

Calculation of the Medical Work UnitSample Calculation

DRG 198 TOTAL CHOLECYSTECTOMY W/O C.D.E. AGE < 70 W/O C.C.

CHAMPUS WEIGHT = 1.0987

GEOMETRIC MEAN LENGTH OF STAY (LOS) = 5.8 DAYS

SHORT STAY CUTOFF = 4 DAYS LONG STAY CUTOFF = 10 DAYS

Per Diem = CHAMPUS Weight/Geometric Mean LOS = $1.0987/5.8 = 0.1894$ **Calculating RWPS**

1. If LOS < Short Stay Cutoff and patient transferred out:

RWPS = Dispositions X LOS X Per Diem

e.g. Two dispositions = $2 \times 2 \text{ Days} \times 0.1894 = 0.3788 \text{ RWPS}$

2. If LOS < Short Stay Cutoff and patient not transferred:

RWPS = Dispositions X LOS X Per Diem X 200%

e.g. two dispositions = $2 \times 2 \text{ Days} \times 0.1894 \times 2 = 0.7576 \text{ RWPS}$

3. If LOS > Short Stay Cutoff and < Long Stay Cutoff:

RWPS = Dispositions X CHAMPUS Weight

e.g. 15 dispositions = $15 \times 1.0987 = 16.4805 \text{ RWPS}$

4. If LOS > Long Stay Cutoff:

RWPS = Dispositions X CHAMPUS Weight + Dispositions X 60% X CHAMPUS Weight

e.g. one disposition with LOS of 12 days
 $1 \times 1.0987 + (0.6 \times 1.0987 \times 2) = 1.3259 \text{ RWPS}$

Appendix B (cont'd)

MTF WITH 20 PATIENTS IN DRG 198:

DAYS	CALCULATIONS	RWPS
2 (transferred to MEDCEN)	$2 \times 0.1894 =$	0.3788
2	$2 \times 0.3788 =$	0.7576
3	$3 \times 0.3788 =$	1.1364
4, 4, 5, 6, 6, 6, 6, 6,		
6, 7, 7, 7, 8, 9, 9	$15 \times 1.0987 =$	16.4805
12	$1.0987 + (2 \times 0.1136)$	1.3259
20	$1.0987 + (10 \times 0.1136)$	2.2347
RELATIVE WEIGHTED PRODUCTS (RWPS)		22.2762
RWPS PER DISPOSITION (22.2762/20)		1.1138

Note:

1. The above illustration represents examples from all four rules set forth on the first page of this appendix.

2. RWPS per patient cannot exceed the CHAMPUS Weight for patients receiving 200% per diem accumulation of RWPS

** Example from Mayer (1988)

Appendix B (cont'd)

Incorporating RWPS of DRG 198 With Other Facility DRGs

DRG	BIOMETRICS DISPOSITIONS	RWPS
015	10	7.2041
021	21	12.2136
039	47	32.7073
062	74	29.6444
069	215	101.3940
090	124	116.6220
134	81	55.8981
155	40	84.2000
160	124	101.8164
186	94	39.3296
198 (Cholecystectomy)	20	22.2762
254	201	103.9974
294	22	16.6232
356	75	74.9925
373	298	151.9800
391	201	28.2204
430	71	90.4966
445	64	52.3264
467	39	13.6539
468	41	68.7898
TOTAL	1,862 Dispositions	1,204.3859 RWPS

Case Mix Index (CMI or Mean RWPS) = TOTAL RWPS/TOTAL DISPOSITIONS = 0.6468

To compare to other DoD facilities, divide this MTF's CMI by the CMI of DoD during 1986 (0.8109) to obtain the Relative Case Mix Index (RCMI).

$$\text{RCMI} = \text{MTF CMI} / \text{DoD CMI} = 0.6469/0.8109 = 0.7976$$

Note. The RCMI is calculated by determining first the mean RWPS for dispositions from the MTF and then dividing by the DoD CMI. The result is now comparable to other DoD facilities, and direct comparison of average patients between facilities can be made.

Appendix B (cont'd)

CALCULATION OF INPATIENT WORK UNITS (IWU)

IWU = Medical Expense and Reporting Summary (MEPRS) Dispositions X RCM I

Normally the dispositions from an MTF's MEPRS system will indicate a larger number of dispositions than shown on the PASBA Biometric's Summary and will be used when calculating IWUs. The assumption is made that those dispositions which are not used in the RCM I calculations are similar to those used (Soule, 1988).

Thus, if the MEPRS dispositions = 1,987 then:

$$\text{Total IWUs} = 1,987 \times 0.7976 = 1,584.8$$

CALCULATION OF AMBULATORY WORK UNITS (AWU)

The AWU was derived from analysis of 1985 MEPRS data and reflects relative cost for outpatient visits at the third subaccount level (Mayer, 1988). For example:

ORTHOPEDIC CLINIC SUBACCOUNTS

MEPRS CODE	SUBACCOUNT WORK CENTER	AWU WEIGHT
BEA	Orthopedic	0.0362
BEB	Cast	0.0200
BEC	Hand Surgery	0.0232
BED	Neuromusculoskeletal Screening	0.0133
BEE	Orthopedic Appliance	0.0326
BEF	Podiatry	0.0211

Total AWUs for the Orthopedic Clinic Subaccount is derived by multiplying the total clinic visits for each MEPRS code by the AWU Weight and then summing the products. One AWU reflects the same relative resource consumption as one IWU (Mayer, 1988). Thus AWUs and IWUs are able to be added together without conversion to produce the MWU.

Medical Work Unit (MWU)

Inpatient Work Unit (IWU) + Ambulatory Work Unit (AWU)

$$\text{MWU} = \text{IWU} + \text{AWU}$$

Appendix C

IPDS Age Codes

CODES	DEFINITION
T1	Newborn, Preterm (37 weeks or less gestation)
T2	Newborn, Term (38 through 41 weeks gestation)
T3	Newborn, Post-term (42 weeks or more gestation)
D0	0 DYS.....Less than one day
D1	1 DY.....One day, less than two
D2	2 DYS.....Two days, less than three
D3	3 DYS.....Three days, less than four
D4	4 DYS.....Four days, less than five
D5	5 DYS.....Five days, less than six
D6	6 DYS.....Six days, less than one week
W1	7 DYS-13 DYS....One week, less than two
W2	14 DYS-20 DYS...Two weeks, less than three
W3	21 DYS-27 DYS...Three weeks, less than four
W4	28 DYS-31 DYS...Four weeks to one month
M1	1 MO.....One month, less than two
M2	2 MOS.....Two months, less than three
M3	3 MOS.....Three months, less than four
M4	4 MOS.....Four months, less than five
M5	5 MOS.....Five months, less than six
M6	6 MOS.....Six months, less than seven
M7	7 MOS.....Seven months, less than eight
M8	8 MOS.....Eight months, less than nine
M9	9 MOS.....Nine months, less than ten
Y0	10 MOS-11 MOS...Ten months to one year
01	12 MOS-23 MOS...One year, less than two
02-98	2-98.....patient's age in years, 2 through 98 years
99	99 and older....patient's age in years, 99 or older

Appendix D

IPDS Patient Category Codes

CODES TITLE

Active Duty US Uniformed Services:

A10	Army
N10	Navy
M10	Marine Corps
F10	Air Force
C10	Coast Guard
P10	US Public Health Service
O10	National Oceanic and Atmospheric Administration

Reserve/National Guard Personnel:

A20	Army
N20	Navy
M20	Marine Corps
F20	Air Force
C20	Coast Guard
P20	US Public Health Service
O20	National Oceanic and Atmospheric Administration

Cadets of the Uniformed Services Academies:

A70	USMA, West Point, NY
N70	USNA, Annapolis, MD
F70	USAFA, Colorado Springs, CO
C70	USCGA, Cadet, New London, CT

ROTC Cadets:

A80	Army ROTC Cadet
N80	Navy ROTC Cadet
F80	USAF ROTC Cadet

US Uniformed Services Personnel Permanently Retired
(Length of Service or PDRL):

A30	Army
N30	Navy
M30	Marine Corps
F30	Air Force
C30	Coast Guard
P30	US Public Health Service
O30	National Oceanic and Atmospheric Administration

US Uniformed Services Personnel on TDRL:

A40	Army
N40	Navy
M40	Marine Corps
F40	Air Force
C40	Coast Guard
P40	US Public Health Service
O40	National Oceanic and Atmospheric Administration

Appendix D (cont'd)

CODES	TITLE
	Dependents of Active Duty Uniformed Services Personnel:
A50	Army
N50	Navy
M50	Marine Corps
F50	Air Force
C50	Coast Guard
P50	US Public Health Service
O50	National Oceanic and Atmospheric Administration
	Dependents of Retired/Deceased US Uniformed Services Personnel:
A60	Army
N60	Navy
M60	Marine Corps
F60	Air Force
C60	Coast Guard
P60	US Public Health Service
O60	National Oceanic and Atmospheric Administration
	Designees of the Secretaries of the Uniformed Services:
A90	Army
N90	Navy
F90	Air Force
	US Civilians Other Than Dependents of US Uniformed Services Personnel:
H10	Employees of Department of State and Associated Agencies
H20	Employees of Other Federal Departments
H30	Employees of Other Federal Agencies
H40	Nonmilitary Federal Beneficiaries With Special Status
H50	US Government Employee, NEC
J10	Dependents of Authorized Employees/Officers of US Federal
J20	Dependents and Preadoptive Children of DOD Employees at Remote Locations
J30	Dependents, employees of Federal Agency, NEC
K10	VA Beneficiary
K20	OWCP Beneficiary
K30	US Soldier's/Airmen's Home Beneficiary
K40	Beneficiary of Other Federal Agencies
K50	Seamen (Excl MSC/MSTS Vessels) and Employees of Contractors in Service to US Government
K60	Beneficiaries of Private Relief Acts of the US Congress
K70	Beneficiaries of Peace Corps/VISTA/Job Corps

Appendix D (cont'd)

CODES TITLE

Foreign Nationals:

S10	IMET/Foreign Military Sales Trainee Personnel
S20	Foreign Military Personnel
S30	Foreign National Civilian Personnel
S40	Dependents of Foreign Military Personnel
S50	Dependents of Foreign Civilian Personnel
S60	Other Foreign Nationals

Prisoners:

Q10	Prisoners of War/Internees
R10	Other Prisoners

Other Patient Categories, NEC

X10	Applicants/Registrants
X20	Designees, Secretary of Defense
X30	Civilian Claimants
X40	Other Authorized Patient Categories
X50	USO/Red Cross Dependent, NEC
X52	Former Spouse of AD/Retired (effective 1 Jun 83)
X60	Former Service Member - Maternity Care Only
X70	Other Patient Category, NEC

Appendix E

IPDS Source of Admission Codes

CODES	TITLE
0	Direct-Absent Sick
1	Direct
5	Transfer from USN-USAF dispensary
6	Transfer from US Army hospital
7	Transfer from US Navy hospital or hospital ship
8	Transfer from US Air Force hospital
9	Transfer from foreign military medical treatment facility
L	Live-born infants (newborn), delivered this MTF

Appendix F

IPDS Disposition Status Codes

CODES TITLES

US Uniform Service AD or ADT Patients Only:

A	To Duty
B	To Duty from TDRL
C	To PDRL from TDRL
D	AWOL (Dropped from Rolls)

Separation/Retirement under the provision of AR 635-40:

E	PDRL
F	TDRL
G	Separation with Severance Pay
H	Separation without Severance Pay
I	Nondisability Separation of personnel identified in the Drug and Alcohol Abuse Prevention and Control Program at or after transfer or referral to VA or other nonmilitary MTF

Separation under the provision of AR 635-200:

J	Failure to meet medical procurement standards
K	Unfitness or Unsuitability
L	Expiration Term or Service (ETS)
M	Separation under the provision of Other AR

Patients other than AD or ADT US Uniform Service:

O	Discharged Home
P	Left Facility Against Medical Advice (AMA)
Q	Neonatal Death (Under 28 Days of Age)

All Patients:

S	Transfer to Army MTF
T	Transfer to Navy MTF
U	Transfer to Air Force MTF
V	Maternal Death
W	Hospital Death, NEC

Appendix G

Multiple Regression Analysis

Equation Number 1 Dependent Variable: CASEWGT (CASE WEIGHT)

Beginning Block Number 1. Method: Stepwise

Variable(s) Entered on Step Number 1: BEDDAYS

Multiple R	.79057	Analysis of Variance	DF	Sum of Squares
R Square	.62499	Regression	1	2833.74544
Adjusted R Square	.62496	Residual	10494	1700.29602
Standard Error	.40252			

F = 17489.49848 Signif F = .0000

Variables in the Equation				Variables not in the Equation			
Variable	B	SE B	Beta	T	Sig T	Beta In	Partial Min Toler
BEDDAYS	.090184	6.8193E-04	.790565	132.248	.0000	.069127	.112882
(Constant)	.339501	.004646		73.079	.0000	.238174	.386599

EXPLANATIONS: (Provided By PASBA)

B Sample unstandardized regression coefficient (to be used in final equation)

SE B Standard Error of B, tells how good B is.
 $B - 1.96 (SE B) < B < B + 1.96 (SE B)$ where B is the population parameter of the unstandardized regression coefficient.

Beta Population standardized regression coefficient

T Computed B divided by SE B. This value used to compute Sig T

Sig T Significance of T, if less than .05 then null hypothesis is rejected at the .05 level of significance.

Beta In Value of Beta if variable would be in the equation.

Partial Partial Correlation coefficient.

Min Toler Minimum Tolerance of a variable is the smallest tolerance any variable already in the equation would have if this variable were included in the analysis. Tolerance of a variable is the proportion of its variance not accounted for by other independent variables in the equation.

Variable	Beta In	Partial	Min Toler	T	Sig T
MALE	.069127	.112882	.999993	11.637	.0000
AGE	.238174	.386599	.988033	42.940	.0000
ACTDUTY	.060024	.098017	.999989	10.089	.0000
DACTDUTY	-.184430	-.300509	.995611	-32.275	.0000
RETIREE	.135883	.221351	.995116	23.251	.0000
DRETIREE	.089974	.146799	.998273	15.202	.0000
AA	.106908	.174449	.998526	18.148	.0000
BA	.111743	.182401	.999191	19.003	.0000
BE	.023644	.038538	.996215	3.951	.0001
BI	.020968	.034224	.999039	3.508	.0005
CA	.008211	.013406	.999600	1.373	.1697
CB	-.058689	-.095835	.999939	-9.862	.0000
DA	-.008225	-.013421	.998426	-1.375	.1692
DB	-.232428	-.379282	.998583	-41.989	.0000
EA	.053964	.088097	.999435	9.059	.0000
EC	-.049407	-.080670	.999719	-8.290	.0000
ED	-.003703	-.006047	.999989	-.619	.5357
EF	-.016093	-.026270	.999327	-2.692	.0071
FA	.084239	.137548	.999814	14.225	.0000
FB	.030167	.049260	.999952	5.052	.0000
GA	-.011278	-.018214	.978108	-1.866	.0621
HA	.019776	.032264	.998155	3.307	.0009
HB	-.003017	-.004922	.998006	-.504	.6141
NOIAG	.097897	.154644	.935778	16.034	.0000
NOPROC	.087455	.139612	.955688	14.443	.0000
TRANSFIN	-.048313	-.078203	.982574	-8.035	.0000
TRANSOUT	-.024477	-.039949	.998911	-4.096	.0000

Appendix G (cont'd)

Equation Number 1 Dependent Variable: CASEWGT (CASE WEIGHT)

Variable(s) Entered on Step Number 2: AGE

Multiple R	.82525	Analysis of Variance			
R Square	.68104		DF		
Adjusted R Square	.68098	Regression	2	Sum of Squares	Mean Square
Standard Error	.37124	Residual	10493	3087.86963	1543.93481
				1446.17183	.13782

F = 11202.33965 Signif F = .0000

Variables in the Equation				Variables not in the Equation			
Variable	B	SE B	Beta	Variable	Beta In	Partial	Min Toler
AGE	.087212	6.3274E-04	.764511	MALE	.058908	.104205	.986152
AGE	.007262	1.6913E-04	.238174	ACTDUTY	.072472	.128150	.985386
(Constant)	.152468	.006110	24.954	DACTDUTY	-.073470	-.106892	.670024
				RETIREE	-.019928	-.027510	.603501
				DRETIREE	-.008875	-.014314	.821255
				AA	.007848	.012575	.810346
				BA	.064964	.112428	.944643
				BE	.031247	.055195	.984743
				BI	-.008136	-.014292	.973240
				CA	.004851	.008587	.987702
				CB	-.043511	-.076877	.983874
				DA	.066201	.112074	.904630
				DB	-.155112	-.241876	.767393
				EA	.007195	.012482	.949027
				EC	-.042540	-.075281	.987194
				ED	-.002284	-.004045	.987998
				EF	.020312	.035537	.965282
				FA	.081700	.144641	.987819
				FB	.028451	.050375	.987982
				GA	-.007393	-.012944	.966149
				HA	-.010680	-.018739	.971898
				HB	.006416	.011341	.986446
				NODIAG	.026687	.043593	.851088
				NOPROC	.046038	.078433	.925755
				TRANSFIN	-.045832	-.080438	.970728
				TRANSOUT	-.042901	-.075697	.982219

Appendix G (cont'd)

Equation Number 1 Dependent Variable: CASEWGT (CASE WEIGHT)

Variable(s) Entered on Step Number 4: CB OB

Multiple R	.83981	Analysis of Variance	DF	Sum of Squares	Mean Square
R Square	.70529	Regression	4	3197.80379	799.45095
Adjusted R Square	.70518	Residual	10491	1336.23766	.12737
Standard Error	.35689				

F = 6276.60791 Signif F = .0000

Variables in the Equation				Variables not in the Equation			
Variable	B	SE B	Beta	Variable	Beta In	Partial Min Toler	T Sig T
BEDDAYS	.087627	6.0846E-04	.768149	MALE	.047845	.080937	8.317 .0000
AGE	.004590	1.8693E-04	.150543	ACTDUTY	.017126	.029146	2.986 .0028
DB	-.347918	.012332	-.173917	DACTDUTY	-.032200	-.045329	-4.647 .0000
CB	-.139743	.009910	-.076717	RETIREE	.014219	.019738	2.022 .0432
(Constant)	.288078	.007485		DRETIREE	.002953	.004916	.504 .6146
				AA	.004889	.008040	.823 .4103
				BA	.050236	.089414	9.195 .0000
				BE	.011057	.020126	2.062 .0393
				BI	-.020191	-.036697	-3.761 .0002
				CA	-.010750	-.019677	-2.016 .0439
				DA	.010723	.017680	1.811 .0702
				EA	.004916	.008847	.906 .3649
				EC	-.079879	-.143208	-14.820 .0000
				ED	-.010239	-.018832	-1.929 .0537
				EF	-.007402	-.013262	-1.358 .1744
				FA	.058359	.105801	10.897 .0000
				FB	.019227	.035338	3.622 .0003
				GA	-.028604	-.051575	-5.289 .0000
				HA	-.009503	-.017333	-1.775 .0758
				HB	-.011555	-.021097	-2.161 .0307
				NODIAG	.041141	.069160	7.100 .0000
				NOPROC	.056128	.093905	9.661 .0000
				TRANSFIN	-.051943	-.094759	-9.749 .0000
				TRANSOUT	-.041589	-.076326	-7.840 .0000

Equation Number	Dependent Variable:	CASEWGT (CASE WEIGHT)
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Equation Number 1	Dependent Variable:	CASEWGT	(CASE WEIGHT)
Variable(s) Entered on Step Number 6:	NOPROC	NUMBER OF PROCEDURES CODED	
Multiple R	.84694	Analysis of Variance	
R Square	.71730	DF	Sum of Squares
Adjusted R Square	.71714	Regression	6 3252.28649
Standard Error	.34957	Residual	10489 1281.75497

F = 4435.74549 Signtif F = .0000									
Variables in the Equation				Variables not in the Equation					
Variable	B	SE B	Beta	T	Sig T	Variable	Beta	In Partial	Min Toler
BEDDAYS	.085622	6.0998E-04	.750576	140.370	.0000	MALE	.013636	.021727	.640919
AGE	.003713	1.8798E-04	.121763	19.751	.0000	ACTDUTY	.004771	.008181	.619923
DB	-.378662	.012291	-.189285	-30.807	.0000	DACTDUTY	-.006336	-.008758	.540022
CB	-.221307	.010549	-.121495	-20.980	.0000	RETIREE	.003426	.004830	.437306
EC	-.241180	.012902	-.104329	-18.693	.0000	DRETIREE	-.002274	-.003855	.602569
NOPROC	.043487	.002921	.089029	14.886	.0000	AA	5.893E-04	.000974	.605368
(Constant)	.301961	.007799		38.720	.0000	BA	.031392	.056161	.700794
						BE	.001108	.002050	.701425
						BI	-.029944	-.055308	.706731
						CA	-.019519	-.036344	.707400
						DA	-.001140	-.001881	.580879
						EA	.002783	.005097	.688917
						ED	-.014571	-.027341	.708239
						EF	-.013282	-.024193	.675595
						FA	.041092	.075010	.696273
						FB	.012412	.023247	.708341
						GA	-.022556	-.040594	.701336
						HA	-.014142	-.026314	.701148
						HB	-.021039	-.039069	.701601
						NODIAG	.034036	.055638	.657951
						TRANSFIN	-.052006	-.096821	.708723
						TRANSOUT	-.034167	-.063754	.703889

Appendix G (cont'd)

Equation Number 1 Dependent Variable: CASEWGT (CASE WEIGHT)

Variable(s) Entered on Step Number 8: FA ORTHOPEDICS

Multiple R .84946 Analysis of Variance Sum of Squares Mean Square

R Square .72158 Regression 3271.67848 408.95981

Adjusted R Square .72137 Residual 1262.36298 .12037

Standard Error .34695

F = 3397.40756 Signif F = .0000

Variables in the Equation				Variables not in the Equation			
Variable	B	SE B	Beta	Variable	Beta In	Partial Min Toler	T Sig T
BEDDAYS	.086614	6.1136E-04	.759265	MALE	.010316	.016446	1.684 .0922
AGE	.003813	1.8755E-04	.125048	ACTDUTY	-.002849	-.004811	-.493 .6223
DB	-.367972	.012360	-.183942	DACTDUTY	.001166	.001601	.164 .8698
CB	-.208180	.010662	-.114288	RETIREE	.007309	.010363	1.061 .2886
EC	-.227475	.012961	-.098400	DRETIREE	-.001660	-.002832	-.290 .7718
NOPROC	.040412	.002917	.082734	AA	.008612	.014164	1.451 .1469
TRANSFIN	-.551723	.054848	-.052363	BA	.039921	.071070	7.296 .0000
FA	.110071	.014061	.041560	BE	.004305	.007990	.818 .4132
(Constant)	.289867	.007959	36.419	BI	-.026561	-.049196	-5.044 .0000
				CA	-.017334	-.032410	-3.321 .0009
				DA	.006998	.011465	1.174 .2404
				EA	.006077	.011189	1.146 .2519
				ED	-.013493	-.025493	-2.611 .0090
				EF	-.010971	-.020073	-2.056 .0398
				FB	.013967	.026325	2.697 .0070
				GA	-.020255	-.036627	-3.753 .0002
				HA	-.012587	-.023582	-2.416 .0157
				HB	-.018524	-.034560	-3.541 .0004
				NODIAG	.040123	.065787	6.751 .0000
				TRANSOUT	-.030161	-.056573	-5.802 .0000

Appendix G (cont'd)

Equation Number 1 Dependent Variable: CASEWGT (CASE WEIGHT)

Variable(s) Entered on Step Number 9: BA GENERAL SURGERY

Multiple R	.85029	Analysis of Variance	DF	Sum of Squares	Mean Square
R Square	.72299	Regression	9	3278.05453	364.22828
Adjusted R Square	.72275	Residual	10486	1255.98692	.11978
Standard Error	.34609				

F = 3040.87383 Signif F = .0000

Variables in the Equation				Variables not in the Equation			
Variable	B	SE B	Beta	T	Sig T	Beta In Partial	T
BEDDAYS	.086719	6.1002E-04	.760190	142.158	.0000	.011242	.603641
AGE	.003684	1.8792E-04	.120811	19.603	.0000	-.004999	-.865
DB	-.357819	.012408	-.178866	-28.838	.0000	.002647	.373
CB	-.190393	.010911	-.104524	-17.449	.0000	.010145	1.474
EC	-.209480	.013162	-.090616	-15.916	.0000	-.002271	-.398
NOPROC	.037684	.002933	.077150	12.847	.0000	.026212	4.168
TRANSFIN	-.559069	.054721	-.053060	-10.217	.0000	.008470	1.605
FA	.126278	.014201	.047679	8.892	.0000	-.020970	-3.939
BA	.085491	.011717	.039921	7.296	.0000	-.013283	-2.535
(Constant)	.280833	.008035		34.950	.0000	.012956	2.160
						.012076	2.258
						-.011743	-2.276
						-.008659	-1.624
						.016607	3.207
						-.016389	-3.028
						-.009568	-1.834
						-.015349	-2.930
						.049643	8.243
						-.028782	-5.546
							.686672
							.611366
							.523968
							.431225
							.595125
							.574607
							.670557
							.679503
							.676754
							.565080
							.673866
							.684218
							.661219
							.683115
							.670323
							.686669
							.674622
							.641262
							.686672

Appendix G (cont'd)

Equation Number 1	Dependent Variable:	CASEWGT	(CASE WEIGHT)	
Variable(s) Entered on Step Number 12:	FB	PODIATRY		
Multiple R	.85209	Analysis of Variance	Sum of Squares	
R Square	.72605	Regression	12	
Adjusted R Square	.72574	Residual	10483	
Standard Error	.34422			
F = 2315.25040 Signif F = .0000				
----- Variables in the Equation -----				
Variable	B	SE B	T Sig T	
BEDDAYS	.085901	6.1637E-04	.753015	139.365 .0000
AGE	.003327	1.9522E-04	.109116	17.043 .0000
DB	-.359233	.012382	-.179573	-29.012 .0000
CB	-.184652	.010908	-.101372	-16.928 .0000
EC	-.205337	.013133	-.088824	-15.635 .0000
NOPROC	.027562	.003082	.056427	8.944 .0000
TRANSFIN	-.549323	.054573	-.052135	-10.066 .0000
FA	.142947	.014267	.053973	10.019 .0000
BA	.104892	.011897	.048981	8.817 .0000
NODIAG	.022530	.002579	.052701	8.737 .0000
TRANSOUT	-.117527	.020239	-.030036	-5.807 .0000
FB	.128562	.033667	.019740	3.819 .0001
(Constant)	.256657	.008475	30.286	.0000
----- Variables not in the Equation -----				
Variable	Beta	In Partial	Min Toler Sig T	
MALE	.013859	.022184	.599608	2.272 .0231
ACTDUTY	-.001554	-.002594	.611163	-.266 .7906
DACTDUTY	8.412E-04	.001155	.497432	.118 .9059
RETIREE	.010247	.014583	.413715	1.493 .1354
DRETIREE	-.005532	-.009484	.558180	-.971 .3316
AA	.022219	.034149	.549056	3.498 .0005
BE	.014364	.026511	.634577	2.715 .0066
BI	-.012973	-.023444	.629025	-2.401 .0164
CA	-.011698	-.021864	.636916	-2.239 .0252
DA	.009269	.015055	.513249	1.542 .1232
EA	.010714	.019565	.624265	2.004 .0451
ED	-.010978	-.020879	.636950	-2.138 .0325
EF	-.010933	-.020084	.605585	-2.057 .0397
GA	-.016485	-.029842	.635370	-3.057 .0022
HA	-.004662	-.008714	.625444	-.892 .3723
HB	-.012038	-.022484	.633513	-2.303 .0213

Appendix G (cont'd)

Equation Number 1	Dependent Variable:	CASEWGT	(CASE WEIGHT)
Variable(s) Entered on Step Number 13: AA GENERAL MEDICINE			
Multiple R	.85227	Analysis of Variance	
R Square	.72637	DF	Sum of Squares
Adjusted R Square	.72603	13	3293.38598
Standard Error	.34404	10482	1240.65548
F = 2140.38667 Signif F = .0000			
Variables in the Equation			
Variable	B	SE B	Beta
BEDDAYS	.085961	6.1628E-04	.753546
AGE	.003053	2.1025E-04	.100130
DB	-.355766	.012415	-.177840
CB	-.174771	.011262	-.095947
EC	-.195084	.013450	-.084389
NOPROC	.028398	.003089	.058139
TRANSFIN	-.552081	.054549	-.052397
FA	.153403	.014570	.057921
BA	.118880	.012545	.055513
NODIAG	.021252	.002603	.049710
TRANSOUT	-.119302	.020234	-.030490
FB	.138788	.033776	.021310
AA	.041949	.011991	.022219
(Constant)	.254558	.008491	
Variables not in the Equation			
Variable	Beta	In Partial	Min Toler
MALE	.012955	.020730	.548318
ACTDUTY	-.003210	-.005343	.525082
DACTDUTY	.003259	.004457	.453564
RETIREE	.010430	.014851	.373556
DRETIREE	-.005632	-.009662	.489741
BE	.017175	.031427	.548962
BI	-.008499	-.014800	.524536
CA	-.008848	-.016307	.548379
DA	.012319	.019839	.469945
EA	.018975	.032720	.510747
ED	-.009811	-.018629	.549052
EF	-.009878	-.018126	.529607
GA	-.013018	-.023023	.548655
HA	-.002003	-.003704	.530671
HB	-.010238	-.019028	.548382

Appendix G (cont'd)

Equation Number 1	Dependent Variable:	CASEWGT	(CASE WEIGHT)						
Variable(s) Entered on Step Number 14:	EA	FP MEDICINE							
Multiple R	.85244	Analysis of Variance							
R Square	.72666	DF							
Adjusted R Square	.72630	Regression	14						
Standard Error	.34387	Residual	10481						
		Sum of Squares	Mean Square						
		3294.71418	235.33673						
		1239.32727	.11825						
	F = 1990.24446	Signif F = .0000							
	----- Variables in the Equation -----								
Variable	B	SE B	T Sig T						
	----- Variables not in the Equation -----								
	Beta	Variable	Beta In Partial Min Toler						

BEDDAYS	.086005	6.1613E-04	.753933	MALE	.013394	.021440	.510293	2.195	.0282
AGE	.002860	2.1789E-04	.093804	ACTDUTY	-.004777	-.007930	.485626	-.812	.4169
DB	-.352820	.012440	-.176367	DACTDUTY	.004959	.006769	.432578	.693	.4884
CB	-.167095	.011487	-.091733	RETIREE	.011524	.016400	.351171	1.679	.0932
EC	-.187148	.013650	-.080956	DRETIREE	-.005918	-.010157	.460108	-1.040	.2985
NOPROC	.029033	.003094	.059439	BE	.019293	.035121	.510623	3.598	.0003
TRANSFIN	-.553820	.054525	-.052562	BI	-.004673	-.007952	.475631	-.814	.4156
FFA	.161237	.014749	.060878	CA	-.006565	-.011994	.508235	-1.228	.2195
BA	.129245	.012915	.060352	DA	.014879	.023812	.449965	2.438	.0148
NODIAG	.020111	.002624	.047042	ED	-.008912	-.016906	.510678	-1.731	.0835
TRANSOUT	-.123190	.020257	-.031483	EF	.009006	-.016513	.496106	-1.691	.0909
FBF	.146359	.033835	.022472	GA	-.010036	-.017473	.507933	-1.789	.0736
AA	.056027	.012700	.029676	HA	5.791E-06	.000011	.489001	.001	.9991
EA	.064596	.019274	.018975	HB	-.008843	-.016387	.510673	-1.678	.0934
(Constant)	.252950	.008501	29.757						

Appendix G (cont'd)

Equation Number 1	Dependent Variable:	CASEWGT	(CASE WEIGHT)								
Variable(s) Entered on Step Number 17: MALE											
Multiple R	.85286	Analysis of Variance									
R Square	.72737	DF	Sum of Squares								
Adjusted R Square	.72693	17	3297.94009								
Standard Error	.34347	Residual	10478								
		Residual	1236.10136								
			Mean Square								
			193.99648								
			.11797								
F = 1644.44045 Signif F = .0000											
----- Variables in the Equation -----											
Variable	B	SE B	T	Sig T	Variable	Beta	In Partial	Min Toler	T	Sig T	
BEDDAYS	.086193	6.1659E-04	.755582	139.791	.0000	ACTDUTY	-.008239	-.011973	.394036	-1.226	.2204
AGE	.003122	2.3231E-04	.102385	13.438	.0000	DACTDUTY	.011044	.013732	.395883	1.406	.1599
DB	-.323502	.014109	-.161712	-22.929	.0000	RETIREE	.004844	.006092	.277605	.624	.5329
CB	-.134777	.013405	-.073991	-10.055	.0000	DRETIREE	-.002936	-.004576	.395770	-.468	.6395
EC	-.155038	.015273	-.067066	-10.151	.0000	BI	.001498	.002387	.431799	.244	.8070
NOPROC	.028401	.003107	.058145	9.141	.0000	CA	.002368	.004059	.418282	.415	.6778
TRANSFIN	-.558463	.054489	-.053002	-10.249	.0000	ED	-.005376	-.010090	.447964	-1.033	.3017
FA	.179117	.015540	.067629	11.526	.0000	EF	-.002859	-.005041	.419422	-.516	.6059
BA	.147480	.013448	.068868	10.966	.0000	GA	-.003248	-.005386	.447929	-.551	.5815
NODIAG	.020133	.002650	.047094	7.597	.0000	HA	.002508	.004596	.434002	.470	.6381
TRANSOUT	-.124597	.020255	-.031843	-6.151	.0000	HB	-.003895	-.007038	.445383	-.720	.4713
FB	.162995	.034164	.025026	4.771	.0000						
AA	.070846	.013130	.037525	5.396	.0000						
EA	.081358	.019554	.023898	4.161	.0000						
BE	.086141	.021179	.022293	4.067	.0000						
DA	.052370	.016273	.020037	3.218	.0013						
MALE	.015908	.008047	.012067	1.977	.0481						
(Constant)	.215037	.011735		18.324	.0000						

Appendix H

The Diagnosis Related Group (DRG) Based Methodology
Transition Impact Program

MAIN MODULE

```
code = 1500
project "drgcolor"
include "glob_drg.pro"
```

PREDICATES

```
start
main_menu
process_main_menu(integer)
data_status
rcmas_file
load_databases1
load_databases2
change_hospitals(SELECTION)
error
```

CLAUSES

```
start:- % Call from goal
makewindow(9,31,0,"",1,0,9,80),
makewindow(30,31,0,"",10,0,9,6),
makewindow(31,31,0,"",10,6,9,4),
makewindow(32,31,0,"",10,12,9,8),
makewindow(33,31,0,"",10,20,9,60),
makewindow(16,31,0,"",2,28,6,16),
makewindow(20,31,0,"",2,45,6,13),
makewindow(17,31,0,"",2,62,6,13),
makewindow(1,31,145,"",0,0,24,80),

load_databases1, load_databases2,

cursorform(0,8), data_status,
main_menu,

/***** exit from program *****/

shiftwindow(1), clearwindow,
makewindow(3,110,110,"",10,23,7,35), shiftwindow(3),nl,
write("      Thank You For Using"),nl,nl,
write("The DRG Impact Prediction Program"),pause,
```

Appendix H (cont'd)

```

/*****
Loads all databases up front
*****/
load_databases1:- makewindow(2,31,0,"",0,0,25,80),
file_str("main0.txt",Text0),write(Text0),
makewindow(5,110,110,"",21,25,3,29),
write("      LOADING PROGRAM"),
rcmas_file, shiftwindow(5),clearwindow,attribute(111),
write(" PRESS ANY KEY TO CONTINUE"),readchar(_),attribute(110),
removewindow(5,1),
shiftwindow(1),clearwindow,
file_str("main1.txt",Text1),write(Text1),patience,
cursor(20,3),write("Loading Databases"),
cursor(20,69),write("█"),
consult("mdc1.db1",mdc1),cursor(20,21),write(" "),
consult("mdc2.db1",mdc2),cursor(20,23),write(" "),
consult("mdc3.db1",mdc3),cursor(20,25),write(" "),
consult("mdc4.db1",mdc4),cursor(20,27),write(" "),
consult("mdc5.db1",mdc5),cursor(20,29),write(" "),
consult("mdc6.db1",mdc6),cursor(20,31),write(" "),
consult("mdc7.db1",mdc7),cursor(20,33),write(" "),
consult("mdc8.db1",mdc8),cursor(20,35),write(" "),
consult("mdc9.db1",mdc9),cursor(20,37),write("█"),
consult("mdc10.db1",mdc10),cursor(20,39),write("█"),
consult("mdc11.db1",mdc11),cursor(20,41),write("█"),
consult("mdc12.db1",mdc12),cursor(20,43),write("█"),!.

load_databases2:-
consult("mdc13.db1",mdc13),cursor(20,45),write("█"),
consult("mdc14.db1",mdc14),cursor(20,47),write("█"),
consult("mdc15.db1",mdc15),cursor(20,49),write("█"),
consult("mdc16.db1",mdc16),cursor(20,51),write("█"),
consult("mdc17.db1",mdc17),cursor(20,53),write("█"),
consult("mdc18.db1",mdc18),cursor(20,55),write("█"),
consult("mdc19.db1",mdc19),cursor(20,57),write("█"),
consult("mdc20.db1",mdc20),cursor(20,59),write("█"),
consult("mdc21.db1",mdc21),cursor(20,61),write("█"),
consult("mdc22.db1",mdc22),cursor(20,63),write("█"),
consult("mdc23.db1",mdc23),cursor(20,65),write("█"),
consult("mdc24.db1",mdc24),cursor(20,67),write("█"),
consult("mdclist.db1",mdclist),cursor(20,68),write("█"),
removewindow(22,0),pause,!.

/*****
Searches for the RCMAS processed file. If it exists it is
imported. If it does not exist the predicate succeeds. If
an error is found in the consultation process the "error"
predicate is called from a trap.
A longmenu should eventually be used to assist in locating
the RCMAS file.
*****/
rcmas_file:-not(existfile("rcmas.out")),!.
rcmas_file:-trap(consult("rcmas.out",top_drgs),_,error),!.

```

Appendix H (cont'd)

```

rcmas_file:-existfile("c:\\rcmas\\rcmas.out"),
    trap(consult("c:\\rcmas\\rcmas.out",top_drgs),_,error),!.
rcmas_file:-!.

error:-makewindow(2,110,238," ERROR ",18,26,5,30),
    file_str("error.txt",TEXT),write(TEXT), pause, removewindow(2,1),!.

/*****
    data_status breaks up what would be too large a predicate.
*****/
data_status:- current,data_1_status, data_2_status,!.

/*****
    If a hospital has been selected during another session it
    is saved in the "current.db1" database file. At the start
    of each session the user is given the option of changing this
    hospital. If no prior hospital has been selected, the current
    allows predicate displays a longmenu of all 37 HSC facilities
    to chose from. The chosen hospital then becomes the "current"
    hospital for future sessions.
*****/
current:-existfile("current.db1"),consult("current.db1",current_hospital),
    current_hospital(_NAME,_,_,_),
    shiftwindow(1),clearwindow,file_str("main2.txt",Text),
    write(Text),str_len(Name,Space), Space1=(80-Space)/2-1,
    Space2 = round(Space1),cursor(11,Space2),attribute(30),write(Name),
    attribute(31),
    longmenu(16,21,2,111,110,
    [" YES, Keep The Current Hospital",
    " NO, Provide A List of Alternatives "],"",1,CHOICE),
    change_hospitals(CHOICE),!.

current:-consult("mtf.db1",all_hospitals),
    findall(Name,mtf(_Name,_,_,_),L),
    repeat,shiftwindow(1), clearwindow,
    makewindow(22,113,0,"",23,0,1,80),
write("    There Are 37 Facilities to Choose From, Use PgUp,PgDown, Home, End or"),
    longmenu(3,16,15,111,110,L,"Select A Hospital",1,Choice),
    mtf(Choice,NAME,CATEGORY,RATE,DISP,RWPS),removewindow(22,1),
    openwrite(this_hospital,"current.db1"),writedevise(this_hospital),
    write("current_hospital(",Choice,', ',"", NAME,"", ', '
    "", CATEGORY,"",', ' , RATE, ', ' , DISP, ', ' ,RWPS, ')'),
    closefile(this_hospital), consult("current.db1",current_hospital),
    shiftwindow(1),clearwindow,retractall(mtf(_Name,_,_,_)),!.

```

Appendix H (cont'd)

```

/*****
    longmenu predicate calls from "current"
*****/
change_hospitals(1).

change_hospitals(2):-deletefile("current.db1"),
    retractall(current_hospital(_,_,_,_)),
    trap(deletefile("rcmas.out"),_,true),
    retractall(top_drgs(_,_,_,_)),current,!.

/*****
    Writes into a window the DRG Allocation Rate, MEPRS Dispositions,
    Total RWPS and the MCCU Allocation Rate for the current hospital.
*****/
data_1_status:-
    shiftwindow(1), clearwindow, cursor(0,14),
    write("All Calculations Are Based on FY 1988 Data For:"),
    current_hospital(_NAME,_RATE,DISP,RWPS),
    retract(money(_)),pay_for_mccu(MCCU_MONEY),
    retract(originalMoney(_)),assert(originalMoney(RATE)),
    str_len(Name,Space), Space1=(80-Space)/2-2,
    Space2 = round(Space1),cursor(1,Space2),attribute(30),
    write(Name), attribute(31),
    assert(money(RATE)),retract(old(_,_,_,_)),
    assert(old(DISP,RWPS,0,0,0,0)),
    makewindow(2,110,110,"",4,2,11,37),

    makewindow(3,110,0,"",6,4,1,33),
    writef("DRG Allocation Rate = $%0.2",RATE),

    makewindow(4,110,0,"",8,4,1,33),
    write("MEPRS Dispositions = ",DISP),

    makewindow(5,110,0,"",10,4,1,33),
    writef("Total RWPS = %0.2",RWPS),

    makewindow(7,110,0,"",12,4,1,33),
    writef("MCCU Allocation Rate = $%0.2",MCCU_MONEY),

    makewindow(6,110,110,"",4,41,11,37),!.

/*****
    Writes into a window the CMI, RCMI, IWU and IP Reimbursement
    for the current hospital. Longmenu selection allows the user
    to change the information in data_1_status predicate call.
*****/
data_2_status:- repeat, calculate(CMI,RCMI,IWU,MONEY),
    shiftwindow(6),clearwindow, nl,
    writef(" CMI = %0.4",CMI),nl, nl,
    writef(" RCMI = %0.4",RCMI),nl, nl,
    writef(" IWU = %0.2",IWU),nl, nl,
    writef(" IP Reimbursement = $%0.2",MONEY),

```

Appendix H (cont'd)

```

longmenu(16,24,6,111,110,
["      ACCEPT",
"  Change DRG Allocation Rate",
"  Change MEPRS Dispositions ",
"    Change Total RWPS",
"  Change MCCU Allocation Rate",
"    Definition of Terms"],"",1,CHOICE), data(CHOICE), CHOICE=1,
shiftwindow(1),clearwindow,removewindow(7,1),
removewindow(6,1), removewindow(5,1), removewindow(4,1),
removewindow(3,1), removewindow(2,1),!.

/*****
data_2_status longmenu choices.
*****/
data(1):- !.

data(2):- %% CHANGE DRG ALLOCATION RATE
shiftwindow(3),clearwindow,
write("DRG Allocation Rate = "),readreal(RATE2),
retract(money(_)), assert(money(RATE2)),
current_hospital(Choice,NAME,CATEGORY,_,DISP,RWPS),
retract(current_hospital(_,_,_,_,_)),
assert(current_hospital(Choice,NAME,CATEGORY,RATE2,DISP,RWPS)),
nl,writef("DRG Allocation Rate = $%0.2",RATE2),!.

data(3):- %% CHANGE MEPRS DISPOSITIONS
shiftwindow(4),clearwindow,
write("MEPRS Dispositions = "), readreal(DISP2),
old(_,RWPS,CMI,RCMI,IWU,MONEY),
retract(old(_,_,_,_,_)),
assert(old(DISP2,RWPS,CMI,RCMI,IWU,MONEY)),
retract(last(_,_,_,_,_)),
assert(last(DISP2,RWPS,CMI,RCMI,IWU,MONEY)),
current_hospital(CHOICE,NAME,CATEGORY,RATE,_,_),
retract(current_hospital(_,_,_,_,_)),
assert(current_hospital(CHOICE,NAME,CATEGORY,RATE,DISP2,RWPS)),
nl,write("MEPRS Dispositions = ",DISP2),!.

data(4):- %% CHANGE TOTAL RWPS
shiftwindow(5),clearwindow,
write("Total RWPS = "), readreal(RWPS2),
old(DISP,_,CMI,RCMI,IWU,MONEY),
retract(old(_,_,_,_,_)),
assert(old(DISP,RWPS2,CMI,RCMI,IWU,MONEY)),
retract(last(_,_,_,_,_)),
assert(last(DISP,RWPS2,CMI,RCMI,IWU,MONEY)),
current_hospital(Choice,NAME,CATEGORY,RATE,_,_),
retract(current_hospital(_,_,_,_,_)),
assert(current_hospital(Choice,NAME,CATEGORY,RATE,DISP,RWPS2)),
nl,write("Total RWPS = ",RWPS2),!.

```

Appendix H (cont'd)

```

data(5):- %% CHANGE MCCU ALLOCATION RATE
shiftwindow(7),clearwindow,
write("MCCU Allocation Rate = "),readreal(MCCU_MONEY),
retract(pay_for_mccu(_)),assert(pay_for_mccu(MCCU_MONEY)),
nl,writef("MCCU Allocation Rate = $%0.2",MCCU_MONEY),!.

data(6):-define,!. %% CALLS DEFINITIONS MODULE

/*****
    Performs all the calculations and database corrections
    for data_2_status. Declutters the predicate.
*****/
calculate(CMI,RCMI,IWU,MONEY):- old(DISP,RWPS,_,_,_),money(RATE),
CMI=RWPS/DISP, RCMI=CMI/0.8109, IWU=DISP*RCMI,
MONEY=RATE*IWU,
retract(old(_,_,_,_,_)),
assert(old(DISP,RWPS,CMI,RCMI,IWU,MONEY)),
retract(last(_,_,_,_,_)),
assert(last(DISP,RWPS,CMI,RCMI,IWU,MONEY)),!.

/*****
                                MAIN MENU
*****/
main_menu:- repeat,clearwindow,
longmenu(7,23,6,111,110,
[ " Change Case Mix Of Facility ",
  "     Examine Data Status",
  "     Change Current Hospital ",
  "     Import RCMAS Data",
  "     DOS Shell ",
  "     QUIT"],"Main Menu", 1, CHOICE),
shiftwindow(1),clearwindow,
trap(process_main_menu(CHOICE),_,true),
shiftwindow(1),clearwindow,CHOICE=6,!.

/*****
    Main Menu longmenu calls
*****/
process_main_menu(1) :- %% CHANGE CASE MIX OF FACILITY
changeCaseMix,!.

process_main_menu(2) :- %% EXAMINE DATA STATUS FOR CURRENT HOSPITAL
data_1_status, data_2_status,
shiftwindow(1),clearwindow,!.

process_main_menu(3) :- %% CHANGE THE CURRENT HOSPITAL
%% Eliminate the RCMAS output file so as not
%% to make a RCMAS comparison with the wrong
%% facility
existfile("rcmas.out"),deletefile("rcmas.out"),

```

Appendix H (cont'd)

```

deletefile("current.db1"),retract(top_drgs(_,_,_,_)),
retract(current_hospital(_,_,_,_)),
current, data_1_status, data_2_status,
shiftwindow(1),clearwindow,!.

process_main_menu(3):- %% CHANGE THE CURRENT HOSPITAL
    deletefile("current.db1"),
    retract(current_hospital(_,_,_,_)),
    current, data_1_status, data_2_status,
    shiftwindow(1),clearwindow,!.

process_main_menu(4) :- %% GO TO THE RCMAS IMPORTING MODULE
    rcmas_top,!.

process_main_menu(5):- %% DOS SHELL SELECTION
    system(""),!.

process_main_menu(6).    %% QUIT PROGRAM

/*****
    Allows a delay in execution of program at any point
    predicate is called with a number. The delay is only
    through recursion processing.
*****/
delay(0):-!.
delay(N):-N1=N-1,delay(N1).

/*****
    Allows a stop point for backtracking
*****/
repeat.
repeat :- repeat.

/*****
    "Longmenu Statusline"
*****/
arrowkey_statusline:- makewindow(21,113,0,"",24,0,1,80),
    write("    Make Selection With Arrow Keys, Then Press <RETURN> or F10 To Continue"),!.
/*****

    "Please Be Patient Statusline"
    window 22 must be removed afterwards
*****/
patience:- makewindow(WINDOW,_,_,_,_),makewindow(22,113,0,"",24,0,1,80),
    write("        Please Be Patient While Processing Occurs"),
    shiftwindow(WINDOW),!.
/*****

    "PAUSE Statusline"
*****/
pause:- makewindow(23,113,0,"",24,0,1,80),
    write("        Press Any Key To Continue"),
    readchar(_),removewindow(23,1),!.

```

Appendix H (cont'd)

```
/******
```

```
Initial Database Assertions
```

```
*****/
```

```
old(0,0,0,0,0,0).  
last(0,0,0,0,0,0).  
new(0,0,0,0,0,0).  
change(0,0,0,0,0,0).  
money(0).  
originalMoney(0).  
total_disp(0).  
pay_for_mccu(22.23).  
top_drgs(0,0,"",0,0,0).  
scenarioDb(0,0,0,0).  
scenarioWindowDb(0,0).
```

Goal start.

Appendix H (cont'd)

POPUP MENU MODULE

```

/*****
    This Popup menu is adapted from TURBO PROLOG's Toolbox.
    The code in raw form is copyrighted and may not be used
    without ownership of the original software or permission
    from BORLAND International Inc., Scotts Valley, CA 95066.
    It is provided for educational purposes only. The executable
    program using this code is not copyright protected and
    may be copied without violating copyright law.
*****/

```

```

project "drgcolor"
include "glob_drg.pro"

```

PREDICATES

```

longmenuinit(ROW,COL,integer,integer,integer,STRINGLIST,STRING,ROW,COL,ROW,COL,ROW)
longmenu1(SYMBOL,ROW,COL,ROW,COL,WATTR,STRINGLIST,ROW,ROW,ROW,ROW,ROW,
    ROW)
longmenu2(SYMBOL,ROW,ROW,ROW,ROW,ROW,ROW,ROW,KEY)
longmenu3(ROW,ROW,ROW,ROW,ROW,ROW)
wr_part_if_changed(ROW,ROW,ROW,COL,STRINGLIST)
write_part_list(ROW,ROW,ROW,ROW,COL,STRINGLIST)
max(ROW,ROW,ROW)
max(COL,COL,COL)
max(LEN,LEN,LEN)
max(INTEGER,INTEGER,INTEGER)
min(ROW,ROW,ROW)
min(COL,COL,COL)
min(LEN,LEN,LEN)
min(INTEGER,INTEGER,INTEGER)
adjustwindow(ROW,COL,ROW,COL,ROW,COL)
adjframe(FATTR,ROW,COL,ROW,COL)
reverseattr(integer,ATTR)          /* Returns the reversed attribute */
readkey2(KEY,INTEGER)
writelist(ROW,COL,STRINGLIST)      /* used in the menu predicates */

```

CLAUSES

```

longmenu(ROW,COL,MAXH,WATTR,FATTR,STRINGLIST,HEADER,STCHOICE,CHOICE):-
    arrowkey_statusline,
    longmenuinit(ROW,COL,MAXH,WATTR,FATTR,STRINGLIST,HEADER,AROW,ACOL,
    HEIGHT,LEN,NOOFROW),
    STOFFSET=STCHOICE-1,
    longmenu3(NOOFROW,HEIGHT,0,STOFFSET,BASE,OFFSET),
    longmenu1(cont,AROW,ACOL,HEIGHT,LEN,WATTR,STRINGLIST,NOOFROW,-1,BASE,
    OFFSET,BASE1,OFFS1),
    CHOICE = BASE1 + OFFS1+1,
    removewindow,removewindow(21,1).

```

```

longmenuinit(ROW,COL,MAXH,MAXW,WATTR,FATTR,STRINGLIST,HEADER,AROW,ACOL,
HEIGHT,NOOFCOL,NOOFROW):-
maxlen(StringList,0,MAXNOOFCOL),
str_len(Header,HeadLen),
HEADL1=HeadLen+4,
max(HEADL1,MAXNOOFCOL,NOOFCOL),
listlen(StringList,N), N > 0 , NOOFROW=N,
min(NOOFROW,MAXH,HEIGHT),
adjframe(FATTR,HEIGHT,NOOFCOL,HH1,HH2),
adjustwindow(ROW,COL,HH1,HH2,AROW,ACOL),
makewindow(81,WATTR,FATTR,HEADER,AROW,ACOL,HH1,HH2).

longmenu1(cont,ROW,COL,H,W,ATTR,STRINGLIST,NOOFROW,OLDBASE,BASE,OFFS,
BASE2,OFFS2) :-!,
wr_part_if_changed(OLDBASE,BASE,H,W,StringList),
reverseattr(ATTR,REV),
field_attr(OFFS,0,W,REV),
cursor(OFFS,0),
readkey(KEY),
longmenu2(STOP,H,NOOFROW,BASE,OFFS,BASE1,OFFS1,KEY),
field_attr(OFFS,0,W,ATTR),
longmenu1(STOP,ROW,COL,H,W,ATTR,STRINGLIST,NOOFROW,BASE,BASE1,OFFS1,
BASE2,OFFS2).

longmenu1(esc,_,_,_,_,_,OB,OF,OB,OF):-!.
longmenu1(_,_,_,W,ATTR,_,_,_,OB,OF,OB,OF):-
reverseattr(ATTR,REV),
field_attr(OF,0,W,REV).

longmenu2(esc,_,_,_,_,-1,esc) :-!.
longmenu2(stop,_,_,B,O,B,O,fkey(10)) :-!.
longmenu2(selection,_,_,B,O,B,O,cr) :-!.
longmenu2(cont,_,_,_,_,0,home) :-!.
longmenu2(cont,H,LEN,_,_,B1,O1,end) :-!, O1=H-1, B1 = LEN-H.
longmenu2(cont,H,LEN,B,O,B1,O1,up) :-!, OO=O-1,longmenu3(LEN,H,B,OO,B1,O1).
longmenu2(cont,H,LEN,B,O,B1,O1,down) :-!, OO=O+1,longmenu3(LEN,H,B,OO,B1,O1).
longmenu2(cont,H,LEN,B,O,B1,O1,pgup) :-!, OO=O-H+1,longmenu3(LEN,H,B,OO,B1,O1).
longmenu2(cont,H,LEN,B,O,B1,O1,pgdn) :-!, OO=O+H-1,longmenu3(LEN,H,B,OO,B1,O1).
longmenu2(cont,_,_,B,O,B,O,_).

longmenu3(_H,B,O,B,O) :-O>=0, O<H, !.
longmenu3(LEN,H,B1,O1,B2,O2) :-O1+B1>=LEN,! , O2=H-1, B2=LEN-H.
longmenu3(_,_,B1,O1,0,0) :-O1+B1<0,! .
longmenu3(_,_,B1,O1,B2,0) :-O1<0, !, B2=B1+O1.
longmenu3(_,H,B1,O1,B2,O2) :-O1>=H, O2=H-1, B2=B1+O1-O2.

wr_part_if_changed(B,B,_,_) :- !.
wr_part_if_changed(OLDB,B,H,W,CL) :-
SCROLL=B-OLDB, scroll(SCROLL,0),
write_part_list(0,B,0,H,W,CL).

write_part_list(_,_,H,H,_,_) :- !.
write_part_list(I,B,R,H,W,[_|T]) :- I<B,! , I1=I+1,write_part_list(I1,B,R,H,W,T).
```

Appendix H (cont'd)

```

write_part_list(I,B,R,H,W,[STR!T]) :- field_str(R,0,W,STR), R1=R+1,write_part_list(I,B,R1,H,W,T).
/*****
/* adjustwindow takes a windowstart and a window size and adjusts */
/* the windowstart so the window can be placed on the screen. */
/* adjframe looks at the frameattribute: if it is different from */
/* zero, two is added to the size of the window */
*****/
adjustwindow(LI,KOL,DLI,DKOL,ALI,AKOL):-
    LI<25-DLI,KOL<80-DKOL,!ALI=LI,AKOL=KOL.
adjustwindow(LI,_,DLI,DKOL,ALI,AKOL):-
    LI<25-DLI,!ALI=LI,AKOL=80-DKOL.
adjustwindow(_,KOL,DLI,DKOL,ALI,AKOL):-
    KOL<80-DKOL,!ALI=25-DLI, AKOL=KOL.
adjustwindow(_,_,DLI,DKOL,ALI,AKOL):-
    ALI=25-DLI, AKOL=80-DKOL.

adjframe(0,R,C,R,C):-!.
adjframe(_,R1,C1,R2,C2):-R2=R1+2, C2=C1+2.

/*****
/*                      Readkey                      */
/* Returns a symbolic key from the KEY domain */
*****/
readkey(KEY):-readchar(T),char_int(T,VAL),readkey1(KEY,T,VAL).

readkey1(KEY,_,0):-!,readchar(T),char_int(T,VAL),readkey2(KEY,VAL).
readkey1(cr,_,13):-!.
readkey1(esc,_,27):-!.
readkey1(break,_,3):-!.
readkey1(tab,_,9):-!.
readkey1(bdel,_,8):-!.
readkey1(ctrlbdel,_,127):-!.
readkey1(char(T),T,_) .

readkey2(btab,15):-!.
readkey2(del,83):-!.
readkey2(ins,82):-!.
readkey2(up,72):-!.
readkey2(down,80):-!.
readkey2(left,75):-!.
readkey2(right,77):-!.
readkey2(pgup,73):-!.
readkey2(pgdn,81):-!.
readkey2(end,79):-!.
readkey2(home,71):-!.
readkey2(ctrlleft,115):-!.
readkey2(ctrlright,116):-!.
readkey2(ctrlend,117):-!.
readkey2(ctrlpgdn,118):-!.
readkey2(ctrlhome,119):-!.
readkey2(ctrlpgup,132):-!.
readkey2(ques,63):-!.
readkey2(fkey(N),VAL):- VAL>58, VAL<70, N=VAL-58, !.

```

Appendix H (cont'd)

```

readkey2(fkey(N),VAL):- VAL>=84, VAL<104, N=11+VAL-84, !.
readkey2(otherspec,_).
maxlen([H|T],MAX,MAX1) :- str_len(H,LENGTH), LENGTH>MAX,!,
    maxlen(T,LENGTH,MAX1).
maxlen([_|T],MAX,MAX1) :- maxlen(T,MAX,MAX1).
maxlen([],LENGTH,LENGTH).
listlen([],0).
listlen([_|T],N):-
    listlen(T,X),
    N=X+1.

writelist(_,_,[ ]).
writelist(LI,ANTKOL,[H|T]):-
    field_str(LI,0,ANTKOL,H),
    LI1=LI+1,
    writelist(LI1,ANTKOL,T).

min(X,Y,X):-X<=Y,!.
min(_ ,X,X).

max(X,Y,X):-X>=Y,!.
max(_ ,X,X).

/*****
    Makes visible the bar of the menu
*****/
reverseattr(A1,A2):-
    bitand(A1,$07,H11),
    bitleft(H11,4,H12),
    bitand(A1,$70,H21),
    bitright(H21,4,H22),
    bitand(A1,$08,H31),
    A2=H12+H22+H31.

```

Appendix H (cont'd)

DEFINITIONS MODULE

```
project "drgcolor"  
include "lob_drg.pro"
```

PREDICATES

```
definition(integer)
```

CLAUSES

```
define:- repeat,  
    longmenu(16,29,6,111,110,  
    [ "      RWPS ",  
      "      CMI ",  
      "      RCMi",  
      "      DoD CMI",  
      "      IWU",  
      " Return To Menu "], "Define", 6, CHOICE),  
    definition(CHOICE), CHOICE=6,!.  
  
definition(1):-makewindow(90,111,110,"",16,0,8,80),  
    file_str("rwps.txt",Text),write(Text),pause,removewindow(90,1),!.  
definition(2):-makewindow(90,111,110,"",16,0,8,80),  
    file_str("cmi.txt",Text),write(Text),pause,removewindow(90,1),!.  
definition(3):-makewindow(90,111,110,"",16,0,8,80),  
    file_str("rcmi.txt",Text),write(Text),pause,removewindow(90,1),!.  
definition(4):-makewindow(90,111,110,"",16,0,8,80),  
    file_str("dod_cmi.txt",Text),write(Text),pause,removewindow(90,1),!.  
definition(5):-makewindow(90,111,110,"",16,0,8,80),  
    file_str("iwu.txt",Text),write(Text),pause,removewindow(90,1),!.  
definition(6):-!.
```

Appendix H (cont'd)

CMI MANIPULATION MODULE

```
code = 2500
project "drgcolor"
include "glob_drg.pro"
```

DOMAINS

```
RWPS, AGE, SERVICE, GeoMean, MTF_ALOS, DoD_ALOS, DRG_PAYMENT = real
OLD_DISP, New_ALOS, MTF_MCCU_PAYMENT_EACH, ALOS = real
DIAGNOSES, PROCEDURES, CHANGE_RWPS, RCMI2, RATE, NewRate= real
ScenarioDisp,CURRENT_DISP,DRG, ChangeInDisp = integer
ServiceName, MdcName = string
```

PREDICATES

```
delete(string,stringlist,stringlist)
more
background
update1(ChangeInDisp,PICK,MDC,ALOS)
update2(ChangeInDisp,PICK,MDC)
update3(ChangeInDisp,CHANGE_RWPS)
totalChange
processMore(SELECTION)
oldPlus
bonus(RCMI2,RATE,NewRate)
change_alos(SELECTION,ALOS,New_ALOS)
rwps(GeoMean,WT,ST,LT,integer,real,real)
ranges(real,real,real,real,real)
ask(SELECTION,PICK,MDC)
write_ask(PICK,MDC,ChangeInDisp,ALOS)
howmany(integer,real,MdcName,GeoMean,ST,LT,integer,real)
benefit(DRG_PAYMENT,MTF_MCCU_PAYMENT_EACH,OLD_DISP)
grammer(ChangeInDisp,STRING,COL)
noRCMAS
noRCMAS(SELECTION)
delete_any_blanks(stringlist,stringlist)
howmanymore(SELECTION,OLD_DISP,ChangeInDisp)
nowhowmanymore(SELECTION,ChangeInDisp)
heart
scenario(DRG,OLD_DISP,MTF_ALOS,DoD_ALOS)
changeDRGs(DRG,OLD_DISP,CURRENT_DISP,MTF_ALOS,DoD_ALOS)
plusMinus(integer,OLD_DISP,ChangeInDisp)
showScenarioChange(DRG)
removeScenarioWindow
service(integer,SERVICE)
age(SELECTION,AGE)
procedures(integer,PROCEDURES)
diagnoses(integer,DIAGNOSES)
```

Appendix H (cont'd)

```
again(integer)
serviceList(stringlist)
window34
extract(SELECTION,stringlist,ServiceName,stringlist)
```

CLAUSES

```
changeCaseMix:- shiftwindow(1),clearwindow, noRCMAS, background,repeat,
    shiftwindow(12),
    resizewindow(19,51,5,26),
    longmenu(19,3,4,111,110,
    ["    Mass Changes In Hospital Workload  ",
     "    Changes to Specific Diagnostic Groups ",
     "    Return To Main Menu                  "],
     " Make Changes To Facility CMI Through: ",2,PICK),
    shiftwindow(12), resizewindow(19,49,5,26),
    changeCaseMix(PICK),PICK = 3,removewindow(12,1),!.
```

```
/******
```

```
    Prior to entering this module, a check is made for a processed
    RCMAS output file. If none is present, the user is prompted to
    receive information on importing the RCMAS data.
```

```
*****/
```

```
noRCMAS:- not(existfile("rcmas.out")),file_str("change.txt",Text1),
    write(Text1), repeat,
    longmenu(17,20,2,111,110,
    [" Information On Importing RCMAS Data ",
     "    Continue Without RCMAS Data "],
     "",1,PICK),
    noRCMAS(PICK),!.
```

```
noRCMAS:-!.
```

```
noRCMAS(1):- rcmas_top,existfile("rcmas.out"),! % noRCMAS longmenu selections
noRCMAS(2):-!.
```

```
/******
```

```
    Writes the background to the screen and initial
    database information in the current window
```

```
*****/
```

```
background:-shiftwindow(1),clearwindow,
    attribute(27),
    file_str("backgrnd.txt",Text1),write(Text1),
    attribute(31),
    old(DISP,RWPS,CMI,RCMI,IWU,MONEY),
    cursor(1,14),write(DISP),
    cursor(2,14),writef("%0.2",RWPS),
    cursor(3,14),writef("%0.4",CMI),
    cursor(4,14),writef("%0.4",RCMI),
    cursor(5,14),writef("%0.2",IWU),
    cursor(6,14),writef("$%0.2",MONEY),
    ranges(,OldRate,,),
```

Appendix H (cont'd)

```
makewindow(12,110,110,"",19,49,5,26),
write(" Supply Allocation Rate"),nl,
write("      Per IWU      "),nl,
writef("      $%0.2",OldRate      ),!.
```

```
changeCaseMix(1):-%% Option Only Available For Fort Ord
current_hospital(15,_,_,_,_), % Fails If Not Fort Ord
repeat(serviceList(LIST),shiftwindow(12),
resizewindow(19,5,5,26),
longmenu(9,48,13,111,110,LIST,
" Select A Change To: ",12,PICK),service(PICK,SERVICE),
shiftwindow(12),resizewindow(19,49,5,26),
last(OLD_DISP,_,_,_,_),
howmanymore(2,OLD_DISP,ChangeInDisp),
extract(PICK,LIST,ServiceName,_),
window34,writef("%7.0    %30",ChangeInDisp,ServiceName),nl,
longmenu(20,5,2,111,110,
[" Using 1988 Mean of 27.24 Years ",
"      Using Another Mean      "],
" Select A Mean Age For Additions ",1,CHOICE),
age(CHOICE,AGE),
longmenu(20,5,2,111,110,
["      Using 1988 Mean of 1.27 ",
"      Using Another Mean      "],
" Select A Mean Number of Procedures ",1,SELECT),
procedures(SELECT,PROCEDURES),
longmenu(20,5,2,111,110,
["      Using 1988 Mean of 2.109 ",
"      Using Another Mean      "],
" Select A Mean Number of Diagnoses ",1,GOTIT),
diagnoses(GOTIT,DIAGNOSES),
makewindow(60,110,110,"1988 Average",19,27,5,52),
write("      Do You Wish To Accept 3.635 Days As"),nl,
write(" Representative of the Average Length of Stay?"),nl,
grammer(ChangeInDisp,STR,COL),cursor(2,COL),write(STR),
longmenu(19,1,3,111,110,
[ " NO: Select Another      ",
" NO: SAME DAY SURGERY ",
" YES: Accept As Is      " ],"",3,ALOS_CHOICE),
removewindow(60,1),
change_alos(ALOS_CHOICE,3.635,New_ALOS),
```

```
/****** Regression Formula *****/
CHANGE_RWPS = ChangeInDisp* % Total Change in RWPS
((New_ALOS*0.086186) +
(AGE*0.003110) +
SERVICE +
(DIAGNOSES*0.019917) +
(PROCEDURES*0.028702) -
0.0056191 + % Adjustment for Transferred In/Outs
0.224681), % Regression Equation Constant
/******
```

Appendix H (cont'd)

```

update3(ChangeInDisp,CHANGE_RWPS), shiftwindow(12),
resizewindow(19,51,5,26),
longmenu(19,2,3,111,110,
[" Clear All Entries and Make New Mass Change ",
"      Reselect Change Option      ",
"      Make Another Mass Change    "],
"",2,ANOTHER), shiftwindow(12),
resizewindow(19,49,5,26),
again(ANOTHER),ANOTHER = 2,!.

changeCaseMix(1):- %% Notice That Only Fort Ord Is Allowed This Option
makewindow(60,110,238,"NOTICE",10,24,8,32),
file_str("ord.txt",TEXT),write(TEXT),
pause,removewindow,fail,!.

changeCaseMix(2):-repeat,
longmenu(17,5,5,111,110,
[" From Those DRGs Seen By This MTF ",
"      From A List of MDCs          ",
"      By Typing a Known DRG Number ",
"      Import RCMAS Data            "],
" Select A DRG To View And/Or Change ",1,WHICH),
ask(WHICH,PICK,MDC), % Returns Pick & MDC which = a DRG

write_ask(PICK,MDC,ChangeInDisp,ALOS),
% Returns Disposition Change and either
% geometric mean (if never seen)
% or current Average Length of Stay (if seen)

update1(ChangeInDisp,PICK,MDC,ALOS),
% Allows change in Average Length of Stay
% Calculates relative weighted product change
% Calls Update3 predicate which
% delineates changes from update

removeScenarioWindow,removewindow(2,1),
update2(ChangeInDisp,PICK,MDC), more,!.

changeCaseMix(3):-!.

/*****
Provides a stringlist of all services
*****/
serviceList([" General Surgery ",
" General Medicine ",
" Pediatrics ",
" Obstetrics ",
" Newborn Nursery ",
" Orthopedics ",

```

Appendix H (cont'd)

" Podiatry ",
 " Oral Surgery",
 " Family Practice: Medicine ",
 " Family Practice: Obstetrics ",
 " Other Single Service ",
 " Hospital Globally "]).

```

/*****
      Blinking indication on window that DRG has been changed
      during the scenario
*****/
window34:-existwindow(34),shiftwindow(34),!.
window34:-makewindow(34,110,110," Mass Changes Made ",9,1,9,44),
      write("Dispositions          Service"),nl,!.

```

```

/*****
      Predicates For ChangeCaseMix(1)
      Service Choice
*****/
service(1,SERVICE):- SERVICE = 0.147481,!.    % BA General Surgery
service(2,SERVICE):- SERVICE = 0.071973,!.    % AA General Medicine
service(3,SERVICE):- SERVICE = 0.052674,!.    % DA Pediatrics
service(4,SERVICE):- SERVICE = -0.144304,!.    % CB Obstetrics
service(5,SERVICE):- SERVICE = -0.324636,!.    % DB Newborn Nursery
service(6,SERVICE):- SERVICE = 0.182685,!.    % FA Orthopedics
service(7,SERVICE):- SERVICE = 0.167405,!.    % FB Podiatry
service(8,SERVICE):- SERVICE = 0.08842,!.     % BE Oral Surgery
service(9,SERVICE):- SERVICE = 0.080819,!.    % EA Family Practice: Medicine
service(10,SERVICE):- SERVICE = -0.164539,!.  % EC Family Practice: Obstetrics
service(11,SERVICE):- SERVICE = 0,!.          % Other Single Service
service(12,SERVICE):- SERVICE = -0.0280458,!./* All Services Increased      *
                                           * VIA Multiplying Above by
                                           * service Contribution then
                                           * Summing Totals                      */
/*****

```

```

      Predicates For ChangeCaseMix(1)
      Age Choice
*****/
age(1,AGE):- AGE = 27.242,!.
age(2,AGE):- makewindow(61,110,110,"1988 Mean Was 27.242 Years ",20,0,3,48),
      write(" The New Mean Age In Years Is = "),repeat,
      readreal(AGE), removewindow,!.

```

```

/*****
      Predicates For ChangeCaseMix(1)
      Procedures Choice
*****/
procedures(1,PROCEDURES):- PROCEDURES = 1.266,!.

```

Appendix H (cont'd)

```

procedures(2,PROCEDURES):-
    makewindow(61,110,110,"1988 Mean Was 1.266 ",20,0,3,48),
    write(" The New Mean Number Of Procedures Is = "),repeat,
    readreal(PROCEDURES), removewindow,!.

/*****
    Predicates For ChangeCaseMix(1)
    Diagnoses Choice
*****/
diagnoses(1,DIAGNOSES):- DIAGNOSES = 2.109,!.
diagnoses(2,DIAGNOSES):-
    makewindow(61,110,110,"1988 Mean Was 2.109 ",20,0,3,48),
    write(" The New Mean Number Of Diagnoses Is = "),repeat,
    readreal(DIAGNOSES), removewindow,!.
again(3):-!.                               %% Make Another Mass Change
again(_):-removewindow(34,1),processMore(1),!. %% Clear Screen and do again
                                           %% Or return to main menu

/*****
    ask(1 is for selecting a DRG from the actual DRGs seen
    by the facility as found in the processed RCMAS file,
    RCMAS.OUT
*****/
/*****
    no RCMAS DRGs exist
*****/
ask(1,_,_):- not(existfile("rcmas.out")), /* Ensures That MTF DRG db */
                                           /* Database Is Not Present */
    makewindow(11,110,110,"",19,2,5,30),
    write(" MTF DRGs Have Not ",nl),
    write(" Been Processed"),nl,
    write(" STRIKE ANY KEY TO CONTINUE"),pause,
    removewindow(11,1),!,fail.
ask(1,PICK,MDC):-findall(Name,top_drgs(_,_,Name,_,_,_),TOPONES1),
    delete_any_blanks(TOPONES1,TOPONES),
    listlen(TOPONES,LENGTH),makewindow(10,110,110,"",16,1,8,34),
    file_str("drgbox.txt",Text1),write(Text1),cursor(3,24),
    writeff("%-4.0",LENGTH),
    longmenu(16,37,6,111,110,TOPONES,
    "MTF DRGs Dispositions",1,SELECTION),
    top_drgs(SELECTION,DRG,_,_,_),listem(DRG,PICK,MDC),
    removewindow(10,1),!.

```

Appendix H (cont'd)

```

/*****
    ask(2 is for selecting a DRG from first a Major Diagnostic
    Category (MDC) and then a listing of DRGs within the selected MDC.
*****/
ask(2,PICK,MDC):- patience,findall(Name,mdclist(_Name),L),removewindow(22,1),
    makewindow(10,110,110,"",14,3,10,34),
    file_str("mdcbox.txt",Text1),write(Text1), /* description MDCs */
    longmenu(14,38,8,111,110,L,"Major Diagnostic Categories",
    1,SELECTION),
    MDC=SELECTION,removewindow(10,1),
    mdclist(MDC,Name), mdc(MDC,List), /* returns DRGs for a MDC */
    concat("MDC",Name,HEADER),
    longmenu(14,0,8,111,110,List,HEADER,1,PICK1), PICK1 = PICK,
    removewindow(10,1),!.

/*****
    ask(3 is for selecting a DRG by typing the number of
    a known DRG.
*****/
ask(3,PICK,MDC):- makewindow(11,110,110,"",19,5,5,26),
    file_str("drgnumbr.txt",Text1),write(Text1),
    makewindow(15,110,110,"",20,36,3,8),    % Entry Window
    repeat,readint(Choice), Choice<474,Choice>0,
    listem(Choice,PICK,MDC),not(Choice = 500),
    removewindow(15,1),removewindow(11,1),!.

/*****
    ask(5 enters the RCMAS import module for processing
    RCMAS output.
*****/
ask(5,PICK,MDC):-rcmas_top, PICK = 0,MDC = 0,!.

/*****
    write_ask first determines the user has not requested
    information about Heart Transplants (DRG 103) or DRG 438
    which is not used. Thereafter the predicate coordinates
    the return of the change in dispositions for the scenario
    and what the average length of stay will be for the change.
    If there is no change in dispositions, then the "0" for
    change in dispositions causes all predicates to succeed
    without writing a change to the windows.
*****/
write_ask(PICK,MDC,ChangeInDisp,ALOS):-
    PICK = 6,MDC = 20,heart,ChangeInDisp=0,ALOS=0,!.
write_ask(PICK,MDC,ChangeInDisp,ALOS):-
    PICK = 1,MDC = 5,heart,ChangeInDisp=0,ALOS=0,!.

write_ask(PICK,MDC,ChangeInDisp,ALOS):-
    mdclist(MDC,MdcName),
    which(PICK,MDC,DRG,Name,WT,GeoMean,ST,LT),
    makewindow(2,111,111,Name,0,10,19,60),
    howmany(DRG,WT,MdcName,GeoMean,ST,LT,ChangeInDisp,ALOS),!.

```

Appendix H (cont'd)

```

heart:-makewindow(60,110,238,"ERROR",6,20,13,40),
      file_str("heart.txt",TEXT),write(TEXT),pause,removewindow(60,1),!.

/*****
  This predicate succeeds if the facility has treated
  patients with the called DRG
*****/
howmany(DRG,WT,MdcName,GeoMean,ST,LT,ChangeInDisp,MTF_ALOS):-

  scenario(DRG,OLD_DISP,MTF_ALOS,DoD_ALOS), not(OLD_DISP=0),
  cursor(0,26),write("DRG ",DRG),
  file_str("margin.txt",TEXT),write(TEXT),
  str_len(MdcName,MDC_Length),(58- (22 +MDC_Length))/2=MDC_COL1,
  MDC_COL = round(MDC_COL1),
  frontstr(2,MdcName,_,MdcNameShorter),
  cursor(1,MDC_COL),attribute(110),
  writef("Weight %0.4 MDC %0.40",WT,MdcNameShorter),
  attribute(111),
  cursor(2,35),writef("%3.1 Days",ST),
  cursor(3,35),writef("%3.1 Days",LT),
  current_hospital(_,NAME,_,_,_),
  str_len(NAME,NAME_LENGTH),
  str_int(Str_OLD_DISP,OLD_DISP), str_len(Str_OLD_DISP,Str_OLD_DISP_Len),
  str_int(Str_DRG,DRG), str_len(Str_DRG,Str_DRG_Len),
  COL1 = (50-NAME_LENGTH)/2, COL = round(COL1),
  cursor(13,COL), writef("In 1988 %0.56",NAME),
  31 + Str_OLD_DISP_Len+Str_DRG_Len=TOTAL,
  Space1=(58-TOTAL)/2, Space2 = round(Space1),
  cursor(14,Space2),
  write("Saw ",OLD_DISP," Patient(s) Coded With DRG ",DRG),
  cursor(4,35),writef("%3.1 Days",DoD_ALOS),
  cursor(5,35),writef("%3.1 Days",MTF_ALOS),
  pay_for_mccu(MCCU_RATE),

  /*****      Calculates DRG PAYMENTS      *****/
  rwps(GeoMean,WT,ST,LT,OLD_DISP,MTF_ALOS,RWPS), % Calculates RWPS

  money(RATE), CMI=RWPS/OLD_DISP, RCMI=CMI/0.8109,IWU=OLD_DISP*RCMI,

  /** Total **/
  DRG_PAYMENT = RATE*IWU,

  /** Each **/
  MarginDRGPay = RCMI*RATE,

  /*****      Calculates MCCU Payments      *****/

  /*** MTF ALOS ***/

  /** Total **/
  MTF_MCCUPayTotal = (( (10*OLD_DISP) + OLD_DISP*MTF_ALOS ) * MCCU_RATE),

```

Appendix H (cont'd)

```

        /** Each **/
MCCUPayForMTF = MTF_MCCUPayTotal/OLD_DISP,

        /*** DoD ALOS *****/

        /** Total **/
DoD_MCCUPayTotal = (( (10*OLD_DISP) + OLD_DISP*DoD_ALOS ) * MCCU_RATE),

        /** Each **/
DoD_MCCUPayEach = DoD_MCCUPayTotal/OLD_DISP,

benefit(MarginDRGPay,MCCUPayForMTF,OLD_DISP),
attribute(110),
cursor(9,40),writef("%7.2",DRG_PAYMENT),
cursor(9,26),writef("%6.2",MarginDRGPay),
cursor(10,40),writef("%7.2",DoD_MCCUPayTotal),
cursor(10,26),writef("%6.2",DoD_MCCUPayEach),
cursor(11,40),writef("%7.2",MTF_MCCUPayTotal),
cursor(11,26),writef("%6.2",MCCUPayForMTF),attribute(111),
showScenarioChange(DRG),
longmenu(19,5,3,111,110,
[" Eliminate This Category Of Care  ",
"      Add/Subtract Patients          ",
"   Continue Current Level of Care   "],
"",2,CHOICE),
howmanymore(CHOICE,OLD_DISP,ChangeInDisp),
changeDRGs(DRG,OLD_DISP,ChangeInDisp,MTF_ALOS,DoD_ALOS),!.
/*****
This second predicate succeeds if the facility has not
treated patients with the called DRG
*****/
howmany(DRG,_,MdcName,_,ST,LT,ChangeInDisp,ALOS):-listem(DRG,PICK,MDC),
cursor(0,26),write("DRG ",DRG),
which(PICK,MDC,_,_,WT,ALOS,_,_),
pay_for_mccu(MCCU_RATE),money(RATE),
file_str("margin2.txt",TEXT),write(TEXT),
str_len(MdcName,MDC_Length),(58- (22 +MDC_Length))/2=MDC_COL1,
MDC_COL = round(MDC_COL1),
frontstr(2,MdcName,_,MdcNameShorter),
cursor(1,MDC_COL),attribute(110),
writef("Weight %0.4 From MDC %0.40",WT,MdcNameShorter),
cursor(3,36),writef("%4.1 Days",ST),
cursor(4,36),writef("%4.1 Days",LT),
cursor(5,36),writef("%4.1 Days",ALOS),

MCCUPayForMTF
      = (10 + ALOS)*MCCU_RATE,

MarginDRGPay
      = (WT/0.8109) * RATE,

```

Appendix H (cont'd)

```

cursor(10,35),writef("%6.2",MarginDRGPay),
cursor(11,35),writef("%6.2",MCCUPayForMTF),attribute(111),
benefit(MarginDRGPay,MCCUPayForMTF,0),
showScenarioChange(DRG),
longmenu(20,5,2,111,110,
[" Add Patients In This Category ",
"      Make No Changes"],
"",1,CHOICE),
nowhowmanymore(CHOICE,ChangeInDisp),

changeDRGs(DRG,0,ChangeInDisp,ALOS,ALOS),!.
/*****
Calculates the difference in reimbursement between the
MCCU system and DRG system in this order:
1. If no patients were seen with this DRG and the marginal
   reimbursement under the DRG system is positive.
2. If patients were seen with this drg and the marginal
   reimbursement under the DRG system is positive
3. if no patients were seen with this DRG and the marginal
   reimbursement under the DRG system is negative
4. If patients were seen with this DRG and the marginal
   reimbursement under the DRG system is negative
*****/
benefit(MarginDRGPay,MCCUPayForMTF,OLD_DISP):-OLD_DISP = 0,

MarginDRGPay - MCCUPayForMTF = MARGIN, MARGIN >= 0, cursor(15,4),
writef("For A Marginal Gain Under the DRG System of $%0.2",MARGIN),!.

benefit(MarginDRGPay,MCCUPayForMTF,OLD_DISP):-
MarginDRGPay - MCCUPayForMTF = MARGIN, MARGIN >= 0,
cursor(15,4),TotalPay = MARGIN * OLD_DISP,
writef("For A Marginal Gain Under the DRG System of $%0.2",MARGIN),
str_real(StrTotalPay,TotalPay),str_len(StrTotalPay,LENGTH),
(58-(37+LENGTH))/2=COL1,round(COL1)=COL,cursor(16,COL),
writef("And A Total Gain With the DRG System of $%0.2",TotalPay),!.

benefit(MarginDRGPay,MCCUPayForMTF,OLD_DISP):-OLD_DISP = 0,
MarginDRGPay - MCCUPayForMTF = MARGIN1, MARGIN1 < 0,
MARGIN = MARGIN1*-1, cursor(15,4),
writef("For A Marginal Loss Under the DRG System of $%0.2",MARGIN),!.

benefit(MarginDRGPay,MCCUPayForMTF,OLD_DISP):-
MarginDRGPay - MCCUPayForMTF = MARGIN1, MARGIN1 < 0,
MARGIN =MARGIN1*-1, TotalPay = MARGIN * OLD_DISP, cursor(15,4),
writef("For A Marginal Loss Under the DRG System of $%0.2",MARGIN),
str_real(StrTotalPay,TotalPay),str_len(StrTotalPay,LENGTH),
(58-(37+LENGTH))/2=COL1,round(COL1)=COL,cursor(16,COL),
writef("And A Total Loss With the DRG System of $%0.2",TotalPay),!.

```

Appendix H (cont'd)

```

/*****
Returns the change in dispositions
to the howmany predicate used when
there are already dispositions
being seen
*****/
howmanymore(1,OLD_DISP,ChangeInDisp):- ChangeInDisp = OLD_DISP * -1 ,!.

howmanymore(2,OLD_DISP,ChangeInDisp):-

    longmenu(19,5,3,111,110,
    ["      Add Patients          ",
     "      Subtract Patients     ",
     "      Continue Current Level of Care  "],1,CHOICE),
    makewindow(15,110,110,"",20,36,3,8),
    makewindow(60,110,110,"",18,3,6,28),
    plusMinus(CHOICE,OLD_DISP,ChangeInDisp),
    removewindow(60,1),removewindow(15,1),!.

howmanymore(3,_,ChangeInDisp):- ChangeInDisp = 0,!.

/*****
Predicates For howmanymore(2) longmenu
*****/

plusMinus(0,_,ChangeInDisp):- %% escape pressed
    ChangeInDisp = 0,!.

plusMinus(1,OLD_DISP,ChangeInDisp):- %% Add Patients
    file_str("drgPlus.txt",TEXT),write(TEXT),
    shiftwindow(15),repeat, readint(ChangeInDisp),
    ChangeInDisp>=OLD_DISP*-1,!. % Can't take away more than you had!!!

plusMinus(2,OLD_DISP,ChangeInDisp):- %% Subtract Patients
    str_int(StrOLD_DISP,OLD_DISP),str_len(StrOLD_DISP,LENGTH),
    (26-(15+LENGTH))/2=COL1, round(COL1)=COL,
    file_str("drgMinus.txt",TEXT),write(TEXT), cursor(1,COL),
    writef("Up To %0.0 Patients.",OLD_DISP),
    shiftwindow(15),repeat, readint(Positive),
    ChangeInDisp = Positive * -1,
    ChangeInDisp < 9999,!. % Only because window won't hold more

plusMinus(3,_,ChangeInDisp):- %% Continue Current Level of Care
    ChangeInDisp = 0,!.

```

Appendix H (cont'd)

```

/*****
    Predicates for howmany predicate used when no patients
    have been seen with this DRG. Returns the change in dispositions.
*****/
nowhowmanymore(1,ChangeInDisp):- makewindow(11,110,110,"",19,5,5,26), clearwindow,
    file_str("drgamnt2.txt",TEXT),write(TEXT),
    makewindow(15,110,110,"",20,36,3,8),
    repeat, readint(ChangeInDisp), ChangeInDisp >= 0,
    removewindow(15,1),removewindow(11,1),!.

nowhowmanymore(2,ChangeInDisp):-ChangeInDisp = 0,!.

update1(ChangeInDisp,PICK,MDC,ALOS):-ChangeInDisp < 0,
    which(PICK,MDC,_,_,WT,GeoMean,ST,LT),
    rwps(GeoMean,WT,ST,LT,ChangeInDisp,ALOS,CHANGE_RWPS),
    update3(ChangeInDisp,CHANGE_RWPS),!.

/*****
*   If There Is No Change In Dispositions, No ALOS Determination Needs   *
*   To Be Made.                                                         *
*****/
update1(ChangeInDisp,_,_,_):-ChangeInDisp=0, update3(ChangeInDisp,0),!.

update1(ChangeInDisp,PICK,MDC,ALOS):- which(PICK,MDC,_,_,WT,GeoMean,ST,LT),
    makewindow(60,110,110,"",19,27,5,52),
    str_real(StrALOS,ALOS),str_len(StrALOS,LENGTH),
    (50-(LENGTH + 30))/2=Column1,round(Column1)=Column,
    cursor(0,Column),
    writeff("Do You Wish To Accept %0.1 Days As",ALOS),
    nl,cursor(1,3),write3("Representative Of The Average Length of Stay"),
    grammer(ChangeInDisp,STR,COL),cursor(2,COL),write(STR),
    delay(100),
    longmenu(19,1,3,111,110,
    [ " NO: Select Another  ",
      " NO: SAME DAY SURGERY ",
      " YES: Accept As Is   " ],"",3,ALOS_CHOICE),
    removewindow(60,1),
    change_alos(ALOS_CHOICE,ALOS,New_ALOS),
    rwps(GeoMean,WT,ST,LT,ChangeInDisp,New_ALOS,CHANGE_RWPS),
    update3(ChangeInDisp,CHANGE_RWPS),!.

/*****
*   If There Is No Change In Dispositions, This Predicate Call Allows   *
*   For The Predicate To Succeed Without Making Any Entries             *
*****/
update2(ChangeInDisp,_,_):-ChangeInDisp = 0,!.

```

Appendix H (cont'd)

```

/*****
*      If There Is A Decrease In Dispositions, No ALOS Determination Needs      *
*      To Be Made As The Lost Dispositions Will Use the Old ALOS.              *
*****/

update2(ChangeInDisp,PICK,MDC):-
    which(PICK,MDC,DRG,Name,WT,_,_,_),
    shiftwindow(31), writef("%3.0",DRG),nl,
    shiftwindow(32), writef("%0.4",WT),nl,
    shiftwindow(33), write(Name),nl,
    shiftwindow(30), writef("%5.0",ChangeInDisp),nl,!.

/*****
      This Section Allows Changes In Average Length Of Stay
*****/

change_alos(1,_,New_ALOS):-makewindow(61,110,110,"",20,0,3,48),
    write(" The New Average Length Of Stay in days = "),repeat,
    readreal(New_ALOS), removewindow,!.
change_alos(2,_,New_ALOS):-New_ALOS=1,!.
change_alos(3,ALOS,New_ALOS):-New_ALOS = ALOS,!.

/*****
*      If There Is No Change In Dispositions, This Predicate Call Allows      *
*      For The Predicate To Succeed Without Making Any Entries                *
*****/

update3(ChangeInDisp,_):- ChangeInDisp = 0,!.

update3(ChangeInDisp,_):- last(DISP,_,_,_,_), DISP+ChangeInDisp=0,
    makewindow(60,110,238,"WARNING",6,20,13,40),
    file_str("NoCensus.txt",TEXT),write(TEXT),pause,removewindow(60,1),!.

update3(ChangeInDisp,CHANGE_RWPS):- last(DISP,RWPS,_,_,_), money(RATE),
    DISP2=DISP+ChangeInDisp, RWPS2=RWPS+(CHANGE_RWPS), CMI2=RWPS2/DISP2,
    RCMI2=CMI2/0.8109,
    bonus(RCMI2,RATE,NewRate),shiftwindow(12),clearwindow,
    write(" Supply Allocation Rate"),nl,
    write("      Per IWU      "),nl,
    writef("      $%0.2",NewRate),
    IWU2=DISP2*RCMI2,
    MONEY2=NewRate*IWU2,

    retract(money(_)), assert(money(NewRate)),
    retract(new(_,_,_,_,_)),
    assert(new(DISP2,RWPS2,CMI2,RCMI2,IWU2,MONEY2)),

/* New Window */
shiftwindow(16),clearwindow,
write(DISP2),nl,
writef("%0.2",RWPS2),nl,

```

Appendix H (cont'd)

```

writef("%0.4",CMI2),nl,
writef("%0.4",RCMI2),nl,
writef("%0.2",IWU2),nl,
writef("$%0.2",MONEY2), oldPlus, totalChange,!.

grammer(ChangeInDisp,STRING,COL):-ChangeInDisp=1, str_int(Num,ChangeInDisp),
concat("For This ",Num,One),
concat(One," Patient?",STRING),str_len(STRING,LENGTH),
Space=(50-LENGTH)/2,COL = round(Space),!.

grammer(ChangeInDisp,STRING,COL):- str_int(Num,ChangeInDisp),
concat("For These ",Num,Many),
concat(Many," Patients?",STRING),str_len(STRING,LENGTH),
Space=(50-LENGTH)/2,COL = round(Space),!.

/** MTF ch6 is in the next lower peer group, and the RCMI has
not changed *****/

bonus(RCMI,RATE,NewRate):- current_hospital(_,_,PEER,_,_),PEER = "CH6",
ranges(_,LowerRCMI,OldRate,_,_),
RATE>OldRate, RCMI < LowerRCMI,RATE = NewRate,!.

/** MTF CH6 is in the next lower peer group, and the RCMI has
changed back to its normal level *****/
bonus(RCMI,RATE,NewRate):- current_hospital(_,_,PEER,_,_),
PEER = "CH6",
ranges(_,LowerRCMI,OldRate,_,ChangeDown),
RATE>OldRate, RCMI > LowerRCMI,NewRate = OldRate + ChangeDown,
makewindow(50,110,110,"",17,46,7,34),
file_str("ch56up.txt",Text),write(Text),
cursor(1,13),writef("%0.2",LowerRCMI),
cursor(4,13),writef("$%0.2",ChangeDown),
retract(money(_)),assert(money(NewRate)),
pause,removewindow(50,1),
shiftwindow(16),attribute(31),!.

/** MTF CH6 RCMI has dropped and the MTF is in the next lower
peer group, however, the rate increases for MTFs in peer group CH6 ***/

bonus(RCMI,RATE,NewRate):- current_hospital(_,_,PEER,_,_),
PEER = "CH6",
ranges(_,LowerRCMI,OldRate,_,ChangeDown),
RCMI<LowerRCMI,RATE=OldRate,
NewRate=OldRate - ChangeDown,
makewindow(50,110,110,"",17,46,7,34),
file_str("ch56down.txt",Text),write(Text),
cursor(1,13),writef("%0.2",LowerRCMI),
cursor(4,13),writef("$%0.2",ChangeDown),
retract(money(_)),
assert(money(NewRate)),
pause,removewindow(50,1),
shiftwindow(16),attribute(30),!.

```

Appendix H (cont'd)

/** RCMi has increased and the the MTF is in the next higher peer group,
however, the rate decreases for MTFs in peer group CH5 ***/

```
bonus(RCMI,RATE,NewRate):- current_hospital(____,PEER,____),
    PEER = "CH5",
    ranges(UpperRCMI,____,OldRate,ChangeUp,____),
    RCMI<UpperRCMI,RATE=OldRate,
    NewRate=OldRate + ChangeUp,
    makewindow(50,110,110,"",17,46,7,34),
    file_str("ch56up.txt",Text),write(Text),
    cursor(1,13),writef("%0.2",UpperRCMI),
    cursor(4,13),writef("$%0.2",ChangeUp),
    retract(money(____)),
    assert(money(NewRate)),
    pause,removewindow(50,1),
    shiftwindow(16),attribute(31),!.
```

**** MTF CH5 has increased to the next higher peer group, but there
has been no changes *****/

```
bonus(RCMI,RATE,NewRate):- current_hospital(____,PEER,____),
    PEER = "CH5",
    ranges(____,LowerRCMI,OldRate,____),
    RATE<OldRate, RCMI > LowerRCMI,RATE = NewRate,!.
```

***** MTF ch5 is in the next higher peer group and has now fallen
to its original position *****/

```
bonus(RCMI,RATE,NewRate):- current_hospital(____,PEER,____),
    PEER = "CH5",
    ranges(____,LowerRCMI,OldRate,ChangeUp,____),
    RATE<OldRate, RCMI > LowerRCMI,NewRate = OldRate - Changeup,
    file_str("ch56down.txt",Text),write(Text),
    retract(money(____)),assert(money(NewRate)),
    shiftwindow(16),attribute(31),!.
```

***** RCMi is within the range for the same peer group, no changes *****/

```
bonus(RCMI,RATE,NewRate):- ranges(UpperRCMI,LowerRCMI,OldRate,____),
    RCMI<UpperRCMI, RCMI>LowerRCMI,RATE=OldRate,NewRate=OldRate,!.
```

**** RCMi has just exceeded the Upper Limit, therefore the rate increases ***/

```
bonus(RCMI,RATE,NewRate):- ranges(UpperRCMI,____,OldRate,ChangeUp,____),
    RCMI>UpperRCMI,RATE=OldRate,NewRate=OldRate + ChangeUp,
    makewindow(50,110,110,"",17,46,7,34),
    file_str("above.txt",Text),write(Text),
    cursor(1,13),writef("%0.2",UpperRCMI),
    cursor(4,13),writef("$%0.2",ChangeUp),
    retract(money(____)),
    assert(money(NewRate)),
    pause,removewindow(50,1),shiftwindow(16),attribute(30),!.
```

Appendix H (cont'd)

```

/***** RCMi has exceeded the Upper Limit, but there is no change
        as the MTF has already increased to the next peer group *****/

```

```

bonus(RCMi,RATE,NewRate):- ranges(UpperRCMi,_,OldRate,ChangeUp,_),
    RCMi>UpperRCMi,RATE>OldRate,NewRate=OldRate + ChangeUp,
    shiftwindow(16),attribute(30),!.

```

```

/***** RCMi has dropped but the MTF cannot lower its peer group *****/

```

```

bonus(RCMi,RATE,NewRate):- ranges(UpperRCMi,LowerRCMi,OldRate,_,ChangeDown),
    RCMi<LowerRCMi,RCMi < UpperRCMi,RATE=OldRate, ChangeDown = 0,
    NewRate=OldRate,!.

```

```

/** RCMi has dropped and the MTF which had entered the next higher
    peer group has now returned to its original group ***/

```

```

bonus(RCMi,RATE,NewRate):- ranges(UpperRCMi,_,OldRate,ChangeUp,_),
    RCMi<UpperRCMi,RATE>OldRate,
    NewRate=OldRate,
    makewindow(50,110,110,"",17,46,7,34),
    file_str("below.txt",Text),write(Text),
    cursor(1,13),writeff("%0.2",UpperRCMi),
    cursor(4,13),writeff("$%0.2",ChangeUp),
    retract(money(_)),
    assert(money(NewRate)),
    pause,removewindow(50,1),
    shiftwindow(16),attribute(31),!.

```

```

bonus(RCMi,RATE,NewRate):- RCMi>0,RATE=NewRate,!.

```

```

/*****

```

Calculates the increase/decrease in RWPS depending upon:

1. Number of Dispositions (ChangeInDisp)
2. New Average Length of Stay (New_ALOS)
3. Weight (WT); Short (ST) and Long Term (LT) Cutoff Days

In order, these predicates are used for the following:

1. Average Length of Stay is Less than the Short term cutoff and the average rwps is less than the CHAMPUS weight. Calculation of weight is based on the average length of stay times twice the per diem weight.
2. As in 1 but the Calculation is based on the weight rather than twice per diem as the total weight cannot exceed the CHAMPUS Mean.
3. Average Length of stay falls within the ST and LT.
4. Average Length of Stay exceeds the LT.

```

*****/

```

```

rwps(GeoMean,WT,ST,_,ChangeInDisp,New_ALOS,CHANGE_RWPS):- New_ALOS<ST,
    PER_DIEM=WT/GeoMean, AMOUNT=PER_DIEM*2*New_ALOS, AMOUNT<=WT,
    CHANGE_RWPS=AMOUNT*ChangeInDisp,!.

```

Appendix H (cont'd)

```

rwps(GeoMean,WT,ST,_,ChangeInDisp,New_ALOS,CHANGE_RWPS):- New_ALOS<ST,
    PER_DIEM=WT/GeoMean, AMOUNT=PER_DIEM*2*New_ALOS, AMOUNT>WT,
    CHANGE_RWPS=WT*ChangeInDisp,!.

rwps(_,WT,ST,LT,ChangeInDisp,New_ALOS,CHANGE_RWPS):- New_ALOS>=ST, New_ALOS<LT,
    CHANGE_RWPS=WT*ChangeInDisp,!.

rwps(GeoMean,WT,ST,LT,ChangeInDisp,New_ALOS,CHANGE_RWPS):- New_ALOS>ST,
    PER_DIEM = WT / GeoMean,
    CHANGE_RWPS=((WT*ChangeInDisp)+(WT*0.6*PER_DIEM*((New_ALOS-LT)*ChangeInDisp))),!.

oldPlus:- shiftwindow(20),clearwindow,
    new(DISP,RWPS,CMI,RCMI,IWU,MONEY),
    last(DISP2,RWPS2,CMI2,RCMI2,IWU2,MONEY2),

    CHG_DISP=DISP-DISP2,
    CHG_RWPS=RWPS-RWPS2, CHG_CMI=CMI-CMI2,
    CHG_RCMI=RCMI-RCMI2, CHG_IWU=IWU-IWU2,
    CHG_MONEY=MONEY-MONEY2,

    write(CHG_DISP),nl,
    writeff("%0.2",CHG_RWPS),nl,
    writeff("%0.4",CHG_CMI),nl,
    writeff("%0.4",CHG_RCMI),nl,
    writeff("%0.2",CHG_IWU),nl,
    writeff("$%0.2",CHG_MONEY),

    retract(last(_,_,_,_,_,_)),
    assert(last(DISP,RWPS,CMI,RCMI,IWU,MONEY)),

    change(OLD_DISP,OLD_RWPS,OLD_CMI,OLD_RCMI,OLD_IWU,OLD_MONEY),

    TOT_CHG_DISP=CHG_DISP+OLD_DISP, TOT_CHG_RWPS=CHG_RWPS+OLD_RWPS,
    TOT_CHG_CMI=CHG_CMI+OLD_CMI, TOT_CHG_RCMI=CHG_RCMI+OLD_RCMI,
    TOT_CHG_IWU=CHG_IWU+OLD_IWU,
    TOT_CHG_MONEY=CHG_MONEY+OLD_MONEY,

    retract(change(_,_,_,_,_,_)),
    assert(change(TOT_CHG_DISP,TOT_CHG_RWPS,TOT_CHG_CMI,TOT_CHG_RCMI,
        TOT_CHG_IWU,TOT_CHG_MONEY)),!.

/*****
Writes entries to total change window
*****/
totalChange:- change(DISP,RWPS,CMI,RCMI,IWU,MONEY),
    shiftwindow(17), clearwindow,
    write(DISP),nl,
    writeff("%0.2",RWPS),nl,
    writeff("%0.4",CMI),nl,

```

```
writef("%0.4",RCMI),nl,
writef("%0.2",IWU),nl,
writef("$%0.2",MONEY),!.
```

```
more:- longmenu(19,5,3,111,110,  
[ "    Clear All Entries  ",  
  " Reselect Change Option ",  
  " Make Another DRG Change"],"",3,CHOICE),  
processMore(CHOICE),CHOICE=2,  
shiftwindow(30), clearwindow,  
shiftwindow(31), clearwindow,  
shiftwindow(32), clearwindow,  
shiftwindow(33), clearwindow,!.
```

```
processMore(3):-!.
processMore(_):- shiftwindow(30),clearwindow,shiftwindow(31),clearwindow,
    shiftwindow(32),clearwindow,shiftwindow(33),clearwindow,
    shiftwindow(20),clearwindow,shiftwindow(16),clearwindow,
    shiftwindow(17),clearwindow,
    ranges(_,_,OldRate,_,_),
    shiftwindow(12),clearwindow,
    write(" Supply Allocation Rate"),nl,
    write("          Per IWU           "),nl,
    writef("             $%0.2",OldRate),old(A,B,C,D,E,F),
    retract(last(_,_,_,_,_)),
    assert(last(A,B,C,D,E,F)),
    retract(change(_,_,_,_,_)),
    assert(change(0,0,0,0,0)),
    retractall(scenarioDb(_,_,_)),
    retractall(scenarioWindowDb(_,_)),
    current_hospital(_,_,OldRate,_),
    retract(money(_)),assert(money(OldRate)),
    shiftwindow(16),attribute(31),!.
```

```

/*****
Common predicate call for database information on the current hospital
*****/
ranges(UpperRCMI,LowerRCMI,OldRate,ChangeUp,ChangeDown):-
    current_hospital(_,_ ,PEER,OldRate,_ ,_),
    peer(PEER,ChangeUp,ChangeDown,_ ,_,LowerRCMI,UpperRCMI),!.

```

 This Section Eliminates any blanks in a list, blanks ruin
 a good longmenu!

```
delete(Element,[Element|Tail],Tail).
delete(Element,[Head|Tail],[Head|List]) :- !, delete(Element,Tail,List).
```

Appendix H (cont'd)

```

delete_any_blanks(TOPONES1,TOPONES):-delete("",TOPONES1,TOPONES),!.
delete_any_blanks(TOPONES1,TOPONES):-TOPONES1=TOPONES,!.
/*****
    If The DRG has been manipulated during this session, this predicate
    succeeds and the data used will be from the scenario database.
    Will succeed even if the DRG was not originally in the RCMAS Data
    *****/
scenario(DRG,OldDisp,MTF_ALOS,DoD_ALOS):-
    scenarioDb(DRG,OldDisp,MTF_ALOS,DoD_ALOS),!. % scenario database

/*****
    If The DRG has not been manipulated during this session, the current
    data used will be from the RCMAS database.
    Will succeed only if the DRG is in the original RCMAS Data. If both
    the above and this predicate fails, then the scenario will show that
    no patients have been treated at the facility.
    *****/
scenario(DRG,OldDisp,MTF_ALOS,DoD_ALOS):-
    top_drgs(_,DRG,_,OldDisp,MTF_ALOS,DoD_ALOS),!. % RCMAS database

/*****
    This section manages assertions to the internal database on the status
    of DRGs currently changed by the scenario
    *****/
/* No Changes */
changeDRGs(_,_,ChangeInDisp,_):-ChangeInDisp = 0,!.

changeDRGs(DRG,_,ChangeInDisp,MTF_ALOS,DoD_ALOS):- % Adding If Changed Before
    ChangeInDisp>0,
    scenarioDb(DRG,ScenarioDisp,MTF_ALOS,DoD_ALOS), % scenario database
    NewScenarioDisp=ScenarioDisp+ChangeInDisp,
    retractall(scenarioDb(DRG,_,_)),
    assert(scenarioDb(DRG,NewScenarioDisp,MTF_ALOS,DoD_ALOS)), !.

changeDRGs(DRG,_,ChangeInDisp,MTF_ALOS,DoD_ALOS):- % Subtract If Changed Before
    ChangeInDisp<0, % i.e. subtracting dispositions
    scenarioDb(DRG,ScenarioDisp,MTF_ALOS,DoD_ALOS), % scenario database
    NewScenarioDisp=ScenarioDisp + ChangeInDisp,
    retractall(scenarioDb(DRG,_,_)),
    assert(scenarioDb(DRG,NewScenarioDisp,MTF_ALOS,DoD_ALOS)),!.

changeDRGs(DRG,OldDisp,ChangeInDisp,MTF_ALOS,DoD_ALOS):- % First Change
    ScenarioDisp = OldDisp + ChangeInDisp, retractall(scenarioDb(DRG,_,_)),
    assert(scenarioDb(DRG,ScenarioDisp,MTF_ALOS,DoD_ALOS)),
    retractall(scenarioWindowDb(DRG,_)), % To Notify If DRG has Been Changed
    assert(scenarioWindowDb(DRG,OldDisp)),!. % By Scenario

```

Appendix H (cont'd)

```

/*****
    If the DRG has been changed by the scenario a blinking
    indication is given to the summary box for the DRG.
*****/
showScenarioChange(DRG):- scenarioWindowDb(DRG,_),
    makewindow(61,238,0,"",18,29,1,23),
    write(" Scenario Changes Made"),! .
showScenarioChange(_):-!.

removeScenarioWindow:-existwindow(61),removewindow(61,1),!.
removeScenarioWindow:-!.

/*****
    Allows one to extract the Nth element from a list
    and return that element
*****/
extract(1,[Head|T],Head,T):- !.
extract(PICK,[Head|Tail],ServiceName,[Head|Back]):-
    PICK1 = PICK-1, !, extract(PICK1,Tail,ServiceName,Back).

```

Appendix H (cont'd)

SELECTION MODULE

```
code=1500
```

```
project "drgcolor"
include "glob_drg.pro"
```

CLAUSES

```
/** mdc(MDC,LIST) (i,o) returns a list of all DRGs in the MDC asked for ***/
```

```
mdc(MDC,List):-MDC=1,findall(DRG,mdc1(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=2,findall(DRG,mdc2(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=3,findall(DRG,mdc3(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=4,findall(DRG,mdc4(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=5,findall(DRG,mdc5(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=6,findall(DRG,mdc6(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=7,findall(DRG,mdc7(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=8,findall(DRG,mdc8(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=9,findall(DRG,mdc9(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=10,findall(DRG,mdc10(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=11,findall(DRG,mdc11(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=12,findall(DRG,mdc12(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=13,findall(DRG,mdc13(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=14,findall(DRG,mdc14(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=15,findall(DRG,mdc15(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=16,findall(DRG,mdc16(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=17,findall(DRG,mdc17(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=18,findall(DRG,mdc18(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=19,findall(DRG,mdc19(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=20,findall(DRG,mdc20(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=21,findall(DRG,mdc21(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=22,findall(DRG,mdc22(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=23,findall(DRG,mdc23(_,_ ,DRG,_ ,_ ,_ ),List),!.
mdc(MDC,List):-MDC=24,findall(DRG,mdc24(_,_ ,DRG,_ ,_ ,_ ),List),!.
```

```
/******
```

Given an MDC and the PICK, or order for a DRG within the
MDC, this predicate returns essential information
concerning the DRG.

```
******/
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
```

```
    MDC = 1,PICK = DRG,
    mdc1(_ ,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
```

```
    MDC = 2,PICK + 35 = DRG,
    mdc2(_ ,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
```

```
    MDC = 3,PICK <27,PICK + 48 = DRG,mdc3(_ ,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

Appendix H (cont'd)

```

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 3,PICK <29,PICK + 141 = DRG,
    mdc3(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
/*****
    If DRG 186 "Dental and Oral Disorders Except Extractions"
    or or DRG 187 "Dental Extractions and Restoration" is
    selected a window pops up to notify that:
    these drgs can be coded under two separate major
    Diagnostic Categories: MDC 3: Ear, Nose and Throat, or
    MDC 6: Digestive system
*****/
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 3,PICK <31,PICK + 157 = DRG,
    mdc3(_,DRG,Name,WT,ALOS,SSCut,LSCut),
    makewindow(60,110,238,"NOTICE",6,20,16,40),
    file_str("drg186-7.txt",TEXT),write(TEXT),pause,removewindow(60,1),!.

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 4,PICK + 74 = DRG,
    mdc4(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 5,PICK + 102 = DRG,
    mdc5(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 6,PICK + 145 = DRG,
    mdc6(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 7,PICK + 190 = DRG,
    mdc7(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 8,PICK < 49,PICK + 208 = DRG,
    mdc8(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 8,PICK = 49,PICK + 422 = DRG,
    mdc8(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 9,PICK + 256 = DRG,
    mdc9(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 10,PICK + 284 = DRG,
    mdc10(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 11,PICK + 301 = DRG,
    mdc11(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.

```

Appendix H (cont'd)

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 12,PICK + 333 = DRG,
    mdc12(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 13,PICK + 352 = DRG,
    mdc13(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 14,PICK + 369 = DRG,
    mdc14(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 15,PICK + 384 = DRG,
    mdc15(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 16,PICK + 391 = DRG,
    mdc16(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 17,PICK < 16,PICK + 399 = DRG,
    mdc17(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 17,PICK = 16,PICK + 457 = DRG,
    mdc17(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 18,PICK + 414 = DRG,
    mdc18(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 19,PICK + 423 = DRG,
    mdc19(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 20,PICK + 432 = DRG,
    mdc20(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 21,PICK + 438 = DRG,
    mdc21(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 22,PICK < 6,PICK + 455 = DRG,
    mdc22(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

```
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
    MDC = 22,PICK = 6,PICK + 466 = DRG,
    mdc22(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
```

Appendix H (cont'd)

```

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
  MDC = 23,PICK + 460 = DRG,
  mdc23(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.
/*****
  If DRG 472 "Extensive Burns With OR Procedure" is selected
  a window pops up stating: This DRG Can Be Coded Under Two
  Separate Major Diagnostic Categories: MDC 22 "Burns" or
  MDC 24 "DRGs Associated With All MDCs".
*****/
which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
  MDC = 24,PICK = 5,PICK + 467 = DRG,
  mdc22(_,DRG,Name,WT,ALOS,SSCut,LSCut),
  makewindow(60,110,238,"NOTICE",6,20,12,40),
  file_str("drg472.txt",TEXT),write(TEXT),pause,removewindow(60,1),!.

which(PICK,MDC,DRG,Name,WT,ALOS,SSCut,LSCut):-
  MDC = 24,PICK < 7,PICK + 467 = DRG,
  mdc24(_,DRG,Name,WT,ALOS,SSCut,LSCut),!.

/*****
  Provides essential information for CMI module scenario
  for determining when a hospital has changed peer groups
  and what the effect on RAG reimbursement will be
*****/



| Peer,       | RAG Change |        | BedSize |       | RCMI  |        | */ |
|-------------|------------|--------|---------|-------|-------|--------|----|
|             | Up         | Down   | Lower   | upper | lower | upper  |    |
| peer("CH1", | 61.06,     | 0,     | 1,      | 29,   | 0,    | 0.7499 | ). |
| peer("CH2", | 0,         | 61.06, | 1,      | 29,   | 0.75, | 10     | ). |
| peer("CH3", | 30.35,     | 0,     | 30,     | 49,   | 0,    | 0.7999 | ). |
| peer("CH4", | 0,         | 30.35, | 30,     | 49,   | 0.8,  | 10     | ). |
| peer("CH5", | -13.95,    | 0,     | 50,     | 99,   | 0,    | 0.8499 | ). |
| peer("CH6", | 0,         | 13.95, | 50,     | 99,   | 0.85, | 10     | ). |
| peer("CH7", | 43.64,     | 0,     | 100,    | 1000, | 0,    | 0.8999 | ). |
| peer("CH8", | 0,         | 43.64, | 100,    | 1000, | 0.9,  | 10     | ). |
| peer("MC1", | 28.17,     | 0,     | 0,      | 1000, | 0,    | 1.1999 | ). |
| peer("MC2", | 23.73,     | 28.17, | 0,      | 1000, | 1.2,  | 1.4999 | ). |
| peer("MC3", | 0,         | 23.73, | 0,      | 1000, | 1.5,  | 10     | ). |



/*****
  Given a DRG, this predicate returns the MDC and order of
  the DRG or "PICK" within the MDC.
*****/
listem(Choice,PICK,MDC):- Choice > 473, %% LARGEST DRG IS 473
  makewindow(33,110,110,"Notice",15,24,5,31),nl,
  write(" DRGs are Numbered 1 - 473"),
  pause,
  removewindow(33,1),removewindow(23,1),PICK=500,MDC=0,!.

listem(Choice,PICK,MDC):- Choice < 36,PICK=Choice,MDC=1,!.

```

Appendix H (cont'd)

listem(Choice,PICK,MDC):- Choice < 49,PICK=Choice-35,MDC=2,!.
listem(Choice,PICK,MDC):- Choice < 75,PICK=Choice-48,MDC=3,!.
listem(Choice,PICK,MDC):- Choice = 168,PICK=Choice-141,MDC =3,!.
listem(Choice,PICK,MDC):- Choice = 169,PICK=Choice-141,MDC =3,!.
listem(Choice,PICK,MDC):- Choice = 186,PICK=Choice-157,MDC =3,!.
listem(Choice,PICK,MDC):- Choice = 187,PICK=Choice-157,MDC =3,!.
listem(Choice,PICK,MDC):- Choice < 103,PICK=Choice-74,MDC=4,!.
listem(Choice,PICK,MDC):- Choice < 146,PICK=Choice-102,MDC=5,!.
listem(Choice,PICK,MDC):- Choice < 191,PICK=Choice-145,MDC=6,!.
listem(Choice,PICK,MDC):- Choice < 209,PICK=Choice-190,MDC=7,!.
listem(Choice,PICK,MDC):- Choice < 257,PICK=Choice-208,MDC=8,!.
listem(Choice,PICK,MDC):- Choice = 471,PICK=Choice-422,MDC=8,!.
listem(Choice,PICK,MDC):- Choice < 285,PICK=Choice-256,MDC=9,!.
listem(Choice,PICK,MDC):- Choice < 302,PICK=Choice-284,MDC=10,!.
listem(Choice,PICK,MDC):- Choice < 334,PICK=Choice-301,MDC=11,!.
listem(Choice,PICK,MDC):- Choice < 353,PICK=Choice-333,MDC=12,!.
listem(Choice,PICK,MDC):- Choice < 370,PICK=Choice-352,MDC=13,!.
listem(Choice,PICK,MDC):- Choice < 385,PICK=Choice-369,MDC=14,!.
listem(Choice,PICK,MDC):- Choice < 392,PICK=Choice-384,MDC=15,!.
listem(Choice,PICK,MDC):- Choice < 400,PICK=Choice-391,MDC=16,!.
listem(Choice,PICK,MDC):- Choice < 415,PICK=Choice-399,MDC=17,!.
listem(Choice,PICK,MDC):- Choice = 473,PICK=Choice-457,MDC=17,!.
listem(Choice,PICK,MDC):- Choice < 424,PICK=Choice-414,MDC=18,!.
listem(Choice,PICK,MDC):- Choice < 433,PICK=Choice-423,MDC=19,!.
listem(Choice,PICK,MDC):- Choice < 439,PICK=Choice-432,MDC=20,!.
listem(Choice,PICK,MDC):- Choice < 456,PICK=Choice-438,MDC=21,!.
listem(Choice,PICK,MDC):- Choice < 461,PICK=Choice-455,MDC=22,!.
listem(Choice,PICK,MDC):- Choice = 472,PICK=Choice-466,MDC=22,!.
listem(Choice,PICK,MDC):- Choice < 468,PICK=Choice-460,MDC=23,!.
listem(Choice,PICK,MDC):- Choice < 474,PICK=Choice-467,MDC=24,!.

Appendix H (cont'd)

RCMAS IMPORTING MODULE

```
project "drgcolor"
include "glob_drg.pro"
```

DOMAINS

```
TEXT,REST1,REST2,REST4,Input = string
TOTAL,DRG,DISP,Count = integer
MTF_ALOS,DOD_ALOS = real
Select = char
```

PREDICATES

```
rcmas(integer)
rcmas_one
readtext(Count,TEXT)
readtexttop
readfile
writefile
exist(Select)
del_comma(Input,DISP)
strip_drg(TEXT,DRG,REST1)
strip_name(REST1,DRG_NAME,REST2)
strip_disp(REST2,DISP,REST4)
strip_alos(REST4,MTF_ALOS,DOD_ALOS)
change_disp(DISP,TOTAL)
del_rcmas
printer(SELECTION)
rcmasHelp(SELECTION)
```

CLAUSES

```
rcmas_top:- repeat,arrowkey_statusline,
    longmenu(11,21,4,111,110,
        [ "      Import all Facility DRGs      ",
          "      Cancel Request                  ",
          " Information On Importing RCMAS DATA ",
          "      View RCMAS File of DRGs  "],
        "RCMAS Import Module",1,CHOICE), rcmas(CHOICE),
    clearwindow,removewindow(21,1),
    removewindow(60,1),!.
rcmas(1):- %% NO FILE EXISTS TO IMPORT
    not(existfile("rmcas.out")),not(existfile("drg.tab")),
    makewindow(63,110,110,"",10,26,5,28),
    write("\nNo file exists to import"),
    makewindow(77,31,0,"",24,0,1,30),
    write("                                Press Any Key To Continue  "),
    readchar(_),removewindow(63,1),removewindow(77,1),!.
```

Appendix H (cont'd)

```

rcmas(1):- %% IMORT ALL FACILITY DRGs AGAIN
    existfile("rcmas.out"),
    clearwindow,
    makewindow(21,113,0,"",24,0,1,80),
write("    Press 'Y' for Yes or 'N' For No You Do Not Wish To Delete The file"),
    makewindow(61,110,110,"",10,15,7,50),
    write("    You have already processed your data\n\n"),
    write("    Do you wish to delete the file and reprocess?\n\n"),
    write("    (Y/N)",repeat,readchar(Select),
    exist(Select),!.

rcmas(1):- %% IMPORT ALL FACILITY DRGs
    rcmas_one,!.
rcmas(2):-!. %% CANCEL REQUEST

/*****
                RCMAS Instruction Section,
                one can view and/or print the instructions
*****/
rcmas(3):-makewindow(22,113,0,"",24,0,1,80),
    write("    Use Arrowkeys, PgUp, or PgDn    Press <Esc> When Done"),
    makewindow(12,110,110," RCMAS Help File ",2,5,18,70),
    file_str("rcmas.txt",Text),display(Text),
    longmenu(9,25,2,112,112,
    [" Print These Instruction ",
    "    Return To Main Menu    "],"",2,CHOICE),
    rcmasHelp(CHOICE),removewindow(12,1),removewindow(22,1),!.

rcmas(4):- existfile("drg.tab"),makewindow(22,113,0,"",24,0,1,80),
    write("    Use Arrowkeys, PgUp, or PgDn    Press <Esc> When Done"),
    makewindow(2,31,145,"",0,0,24,80),file_str("drg.tab",Text),display(Text),
    removewindow(2,1),removewindow(22,1),!.

rcmas(4):-existfile("\\rcmas\\drg.tab"),makewindow(22,113,0,"",24,0,1,80),
    write("    Use Arrowkeys, PgUp, or PgDn    Press <Esc> When Done"),
    makewindow(2,31,145,"",0,0,24,80),file_str("drg.tab",Text),display(Text),
    removewindow(2,1),removewindow(22,1),!.

rcmas(4):- makewindow(60,111,238,"NOTICE",10,13,4,54),
    write("    No DRG.TAB file was found "),nl,
    write(" Strike Any Key and Reselect Importing Information "),pause,!.

rcmasHelp(1):- makewindow(23,110,110,"",6,22,9,35),
    file_str("printer.txt",TEXT),write(TEXT),
    longmenu(16,27,2,111,110,
    ["    Continue    ",
    " Cancel Print Request "],"",1,CHOICE), printer(CHOICE),
    removewindow(23,1),!.
rcmasHelp(2):-!.

printer(1):- trap(system("rcmas.bat"),_,true),!.
printer(2):-!.

```

Appendix H (cont'd)

```

/*****
    ReadKey section for reading keyboard input on
    whether to reprocess RCMAS files
*****/

exist(Select):-Select='Y',removewindow,
    closefile(rcmas_input),retractall(top_drgs(_,_,_,_)),
    rcmas_one, removewindow(22,1),!.
exist(Select):-Select='y',removewindow,
    closefile(rcmas_input),retractall(top_drgs(_,_,_,_)),
    rcmas_one, removewindow(22,1),!.
exist(Select):-Select='N',removewindow,!.
exist(Select):-Select='n',removewindow,!.
exist(_):- beep,fail,!.

/*****
    Controls import of RCMAS Data
*****/
rcmas_one:- makewindow(2,31,145,"",0,0,24,80),
    patience,
    retract(total_disp(_)),
    assert(total_disp(0)),
    shiftwindow(2),cursor(8,65),attribute(30),
    write("Total"),
    cursor(13,65),write("Total"),attribute(31),
    makewindow(60,110,110,"",1,14,3,34),
    write(" Importing The Following DRGs: "),
    makewindow(61,110,110,"DRGs          Dispositions",5,5,19,50),
    makewindow(62,110,110,"Number of DRGs",10,60,3,18),
    makewindow(63,110,110," Dispositions ",15,60,3,18),
    readfile,
    writefile,
    readtexttop,retractall(top_drgs(_,_,_,_)),
    readtext(0,"DUMMY"),
    closefile(rcmas_input),
    closefile(output),
    retract(top_drgs(_,_,_,_)),
    shiftwindow(60),nl,nl,attribute(238),
    write("      Writing DRGs to Disk "),
    del_rcmas,
    save("rcmas.out",top_drgs),
    removewindow(22,1),
    removewindow(63,1),
    removewindow(62,1),
    removewindow(61,1),
    removewindow(60,1),
    removewindow(2,1),!.

del_rcmas:- existfile("rcmas.out"),deletefile("rcmas.out"),!.
del_rcmas:-!.

readfile:- openread(rcmas_input,"drg.tab"),readdevice(rcmas_input),!.

```

Appendix H (cont'd)

writefile:- openwrite(output,"rcmas.out"), writedevise(output),!.

Strips off the top of the RCMAS output file up to the first"="

*****/

readtexttop:-repeat,readln(Text), frontchar(Text,Char,_),Char = "=",!.

Recursion loop for reading each line of text and
asserting to the internal database the appropriate
information. Also writes the information to the
screen for viewing.

*****/

readtext(_,TEXT):-str_len(TEXT,LENGTH),LENGTH<1.

readtext(Count,_):- readln(TEXT),Count1=Count+1,

strip_drg(TEXT,DRG,REST1),

strip_name(REST1,DRG_NAME,REST3),

strip_disp(REST3,DISP,REST4),

strip_alos(REST4,MTF_ALOS,DOD_ALOS),

change_disp(DISP,TOTAL),

writedevise(screen),

gotowindow(61),nl,write(" ",DRG_NAME),

gotowindow(62),nl,write(" ",Count),

gotowindow(63),nl,write(" ",TOTAL),

writedevise(output),

assertz(top_drgs(Count1,DRG,DRG_NAME,DISP,MTF_ALOS,DOD_ALOS)),

readtext(Count1,TEXT).

Strips off the DRG from the line of text

*****/

strip_drg(TEXT,DRG,REST1):- frontstr(3,TEXT,STR_DRG,REST1),

str_int(STR_DRG,DRG),!.

strip_drg(_,DRG,REST1):-DRG=0,REST1="",!.

Strips off the name of the DRG from the line of text

*****/

strip_name(REST1,DRG_NAME,REST2):-frontstr(25,REST1,NAME1,REST2),

frontstr(10,REST2,REST3,_),

concat(NAME1,REST3,NAME2), concat(NAME2," ",DRG_NAME),!.

strip_name(_,DRG_NAME,REST2):- DRG_NAME="",REST2="",!.

Strips off the number of dispositions from the line of text

*****/

strip_disp(REST2,DISP,DISP4):- frontstr(10,REST2,INPUT,DISP4),

del_comma(INPUT,DISP),!.

strip_disp(_,DISP,DISP4):-DISP=0,DISP4="",!.

Appendix H (cont'd)

```

/*****
    Strips off the average length of stay from the line of text
*****/
strip_alos(REST4,MTF_ALOS,DOD_ALOS):-

    /**** strip off unneeded spaces *****/
    frontstr(16,REST4,_,REST5),

    /**** strip off LOS Actual *****/
    frontstr(5,REST5,STR_MTF_ALOS,REST6),str_real(STR_MTF_ALOS,MTF_ALOS),

    /**** strip off LOS Expected, i.e. DoD LOS *****/
    frontstr(10,REST6,STR_DOD_ALOS,_,str_real(STR_DOD_ALOS,DOD_ALOS),!.

strip_alos(_,MTF_ALOS,DOD_ALOS):- MTF_ALOS=0,DOD_ALOS=0,!.
/*****
    Asserts to an internal database the total dispositions
*****/
change_disp(DISP,TOTAL):-total_disp(OLD),TOTAL = OLD + DISP,
    retract(total_disp(_)),assert(total_disp(TOTAL)),!.

/*****
    Unfortunately, RCMAS output places commas within integers, this section
    strips the comma out and returns an integer as Output from String Input
*****/
DOMAINS

    charlist = char*

PREDICATES

    string_chlist(string, charlist)
    delete(char,charlist,charlist)
    group(charlist,string,string)

CLAUSES

string_chlist("", []).
string_chlist(S, [H|T]) :- frontchar(S, H, S1), string_chlist(S1, T).

delete(Element,[Element|Tail],Tail).
delete(Element,[Head|Tail],[Head|List]) if!,
    delete(Element,Tail,List).

group([],New,New) if!.
group([H|T],String,New) if str_char(HS,H),
    concat(String,HS,Temp),
    concat(Temp,"",Str),!,
    group(T,Str,New).

del_comma(Input,DISP):-str_int(Input,DISP),!.

```

Appendix H (cont'd)

```
del_comma(Input,DISP):- string_chlist(Input,X),delete(',',X,Y),  
                        group(Y,"",Z), str_int(Z,DISP),!.  
del_comma(_,DISP):- DISP = 0,!.  

```

Appendix H (cont'd)

GLOBAL DEFINITIONS MODULE

GLOBAL DATABASE - current_hospital
current_hospital(integer,string,symbol,real,integer,real)

GLOBAL DATABASE - mdclist
mdclist(integer,string)

GLOBAL DATABASE - mdc1
mdc1(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc2
mdc2(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc3
mdc3(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc4
mdc4(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc5
mdc5(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc6
mdc6(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc7
mdc7(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc8
mdc8(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc9
mdc9(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc10
mdc10(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc11
mdc11(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc12
mdc12(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc13
mdc13(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc14
mdc14(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc15
mdc15(integer,integer,string,real,real,real,real)

Appendix H (cont'd)

GLOBAL DATABASE - mdc16

mdc16(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc17

mdc17(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc18

mdc18(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc19

mdc19(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc20

mdc20(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc21

mdc21(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc22

mdc22(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc23

mdc23(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - mdc24

mdc24(integer,integer,string,real,real,real,real)

GLOBAL DATABASE - top_drgs

top_drgs(integer,integer,string,integer,real,real)

GLOBAL DATABASE - all_hospitals

mtf(integer,string,symbol,real,integer,real)

GLOBAL DATABASE

old(integer,real,real,real,real,real)

new(integer,real,real,real,real,real)

last(integer,real,real,real,real,real)

change(integer,real,real,real,real,real)

money(real)

originalMoney(real)

total_disp(integer)

pay_for_mccu(real)

scenarioDb(integer,integer,real,real)

scenarioWindowDb(integer,integer)

GLOBAL DOMAINS

WATTR,FATTR,ATTR,LOS,SSCut,LSCut,Num,ROW,COL,LEN,SCR,FR = INTEGER

MDC,PICK,STARTCHOICE,SELECTION,POPF,POPW,MAINF,MAINW = integer

MAXH,INTEGERLIST = INTEGER*

Name,LIST,STRINGLIST = STRING*

ST,LT,WT = REAL

file=input;output;rcmas_input;this_hospital

Appendix H (cont'd)

```
Hosp,DRG_NAME,HEADER = string
KEY    = cr; esc; break; tab; btab; del; bdel; ctrlbdel; ins;
        end ; home ; fkey(INTEGER) ; up ; down ; left ; right ;
        ctrlleft; ctrlright; ctrlend; ctrlhome; pgup; pgdn;
        ctrlpgup; ctrlpgdn; ques; char(Char) ; otherspec
```

GLOBAL PREDICATES

```
display_logo
changeCaseMix
changeCaseMix(integer)-(i)
delay(real)-(i),(o)
nondeterm repeat          /* Provides a repeat loop for main menu */
arrowkey_statusline
exp_window(integer)-(i),(o)
data_read(real)-(i),(o)
ask_cmi(MDC,PICK)-(i,i)
define
patience                  /* Provides status window for loading data*/
```

```
longmenu(ROW,COL,integer,WATTR,FATTR,STRINGLIST,HEADER,STARTCHOICE,SELECTION)
-(i,i,i,i,i,i,i,o)
which(integer,integer,integer,string,real,real,real,real)-
(i,i,o,o,o,o,o,o),
nondeterm rcmass_top
readkey(KEY) - (o)
readkey1(KEY,CHAR,INTEGER) - (o,i,i)
listem(integer,integer,integer) - (i,o,o)
calculate(real,real,real,real) - (o,o,o,o)
data(integer)-(i)
utilities_module
current
mdc(integer,stringlist)-(i,o)
peer(symbol,real,real,integer,integer,real,real)-(i,o,o,o,o,o,o)
length(real,real)-(i,o)
iwu_length(real,real)-(i,o)
money_length(real,real)-(i,o)
maxlen(STRINGLIST,COL,COL)-(i,i,o) /* The length of the longest string */
pause
data_1_status
data_2_status
listlen(stringlist,integer) - (i,o)
```

Appendix I

Prolog Software Program (Color)

A Complete Program Can Be Obtained
By Sending Your Name, Address and
A 5 1/4" Diskette To:

Commander
U.S. Army MEDDAC
HSXT-AR (Attn: MAJ Howard C. May)
Fort Ord, CA, 93941-5800

Appendix J

Prolog Software Program (Laptop)

A Complete Program Can Be Obtained
By Sending Your Name, Address and
A 3 1/2" Diskette To:

Commander
U.S. Army MEDDAC
HSXT-AR (Attn: MAJ Howard C. May)
Fort Ord, CA, 93941-5800

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Unannounced	☐
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