SERVICE LIMITATION OPTIONS FOR LIMITED SERVICE RURAL HOSPITALS

Ira Moscovice, Ph.D.
Anthony Wellever, M.P.A.
Anne Sales, M.S.N.
Mei-Mei Chen, M.H.A.
Jon Christianson, Ph.D.

Rural Health Research Center
Institute for Health Services Research
School of Public Health
University of Minnesota

Working Paper #1

March, 1993

This paper was prepared under HCFA Cooperative Agreement No. 99-C-99169/5. Dissemination of the paper is supported by the Office of Rural Health Policy, Health Resources and Services Administration, PHS Grant No. CSR 000003-01-0.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The purpose of this report is to present an alternative to a length of stay limit for defining service limitations for limited service rural hospitals, such as the rural primary care hospital (RPCH). The alternative proposal is based on the results of an analysis of FY 1991 Medicare discharges from rural hospitals likely to be interested in becoming a limited services facility (i.e. those with average daily census less than ten) and the judgements of a technical advisory panel of rural clinicians.

The analysis indicates that:

- Small rural hospitals admit patients in a limited number of DRG categories, which typically represent low-intensity medical admissions.

- Small rural hospitals transfer relatively few cases to other hospitals.

- Lengths of stay in small rural hospitals frequently exceed three or four days. Using length of stay limits to define service limitations would discourage many potential candidates for limited service facility status because they would lose a substantial portion of their existing inpatient business.

The proposed service limitation for alternative models, such as RPCHs, builds upon existing features of the Essential Access Community Hospital Program and the Prospective Payment System. Specifically, it features the 72-hour length of stay limit proposed for RPCHs, uses DRGs as the method for describing patients, and uses peer review organizations as a quality assurance regulator. These features are used collaboratively in the proposal. Because the proposal "reuses" existing features of the Medicare program, it minimizes the need for elaborate new policies.

Unlike the static length-of-stay limitation for RPCHs as currently envisioned, the proposed method features a clinical basis for approving care. It recognizes the variation that will exist among facilities participating as RPCHs, and attempts to accommodate it. Because the system is clinically-based and flexible, it is likely to be more palatable to providers than the system currently proposed for limiting services.

INTRODUCTION

Our previous work reviewed the current state of development of limited service rural hospitals and discussed alternative mechanisms for defining the limitations placed on services in these facilities (Moscovice, Sales, Christianson and Wellever, 1992). We found that the most common service limitation that has been used in defining alternative models is a length of stay limit, that is, a limit placed on the number of days or hours that a patient may remain in a limited service facility. However, there was little empirical or conceptual support for this type of limit and a number of alternative approaches have been suggested. We concluded that the most useful approach would feature a limit on the types of patients that can be admitted based on their admitting diagnosis (classified by DRG), together with concurrent utilization review monitoring and surveillance by the state Peer Review Organization (PRO).

Since the publication of our previous report, the issue of defining service limitations for alternative models to the traditional rural hospital has become a source of controversy in the discussions surrounding the implementation of the federal EACH/RPCH program. In response to the proposed rules for the program (published by HCFA on October 25, 1991; see Federal Register, Vol. 56, No. 207, pp. 55382-55414), the seven states that received EACH/RPCH grants participated in a series of implementation meetings. At these meetings, the states reiterated the need for programmatic flexibility to implement the EACH/RPCH concept in a variety of different hospital, network, and state settings (EACH Grant States, 1992). Although they agreed with the legislative intent to limit inpatient services, they expressed serious concerns about the strict interpretation of both the six-

bed and 72-hour length of stay limit in HCFA regulations and the requirement that RPCH physicians would have to certify inpatient services as "required to be furnished on a temporary inpatient basis." The states supported a policy that would limit the bed size and range of services provided in RPCH's, but were concerned that an inflexible policy could lead to increased costs and considerable disruption for Medicare patients treated in RPCH's.

The purpose of this report is to present an alternative proposal for defining service limitations for limited service rural hospitals based on the results of an analysis of relevant existing secondary data sources and the judgements of a technical advisory panel of rural clinicians.

ANALYSIS OF HCFA MEDPAR DATA

Service limitation is the most important characteristic in defining alternatives to the traditional acute care rural hospital (Christianson, Moscovice, Wellever, and Wingert, 1990). It drives the size, composition, and staffing requirements of the facility, along with decisions about basic equipment and core diagnostic and therapeutic modalities. It also drives the rules and regulations intended to assure the safety and welfare of patients cared for in these facilities. Despite its importance, service limitation is the least developed aspect of alternative model experimentation.

The Montana state law that establishes Medical Assistance Facilities (MAFs) and the Federal statute that establishes RPCHs define the service limitations for these facilities by a maximum length of stay (72 hours for RPCHs and 96 hours for MAFs) (AHCPR, 1991). These length of stay limitations have no clinical basis and are one of the most

controversial aspects of MAFs and RPCHs. Their strict enforcement would result in transfers of patients who may require only one or two additional inpatient treatment days and inhibit transfers of patients from full-service hospitals for convalescence.

To assess alternative proposals for defining service limitations, we examined information on the services provided in small rural hospitals likely to be interested in becoming a limited service facility. Based on our previous research, we defined this group as non-Metropolitan Statistical Area hospitals with an average acute patient daily census of less than ten. Our goal was to answer the following questions:

- What types of patients should we expect to see treated in a limited service rural hospital?

- What types of patients should we expect to see transferred from a limited service rural hospital?

To address these questions, we used HCFA's Expanded Modified MEDPAR Hospital file, which contains detailed information (e.g. DRG, length of stay, discharge status, and charges) for all hospital discharges for Medicare beneficiaries. Despite the completeness and richness of this data base, and the relative importance of Medicare clients to rural hospitals (i.e. nationally, Medicare represented 40% of net patient revenues at rural community hospitals in 1991) (American Hospital Association, 1992), the use of MEDPAR data precludes analysis of obstetric, pediatric, and adolescent health discharges. These areas are addressed to some degree in a recent AHCPR report, which summarizes the 50 most frequent DRG's and procedures in small rural hospitals based on 1986 data from the Hospital Cost and Utilization Project (Lemrow, Adams, Coffey and Farley, 1990).

Based on data from the 1989 American Hospital Association Masterfile and 1989 Prospective Payment System Files, we identified 784 rural (i.e. non-MSA) hospitals with average daily census less than ten. For each hospital on the list, we requested FY 1991 data from HCFA on the total number of discharges, length of stay (mean, standard deviation), discharge status (transfers by destination, discharge to home, deaths), total charges, and total Medicare reimbursement for each DRG. In April, 1992, we received the above information from HCFA for 690 rural hospitals on our original list that were still operational as inpatient facilities in 1991 (i.e. had not closed, converted or merged).

Appendix 1 describes the characteristics of FY 1991 Medicare discharges from these 690 hospitals. For instance, the first line of information indicates that DRG 89, simple pneumonia and pleurisy age >17 with CC, is the most frequent DRG seen by small rural hospitals. Across our population of 690 rural hospitals, there were 12,242 cases in DRG 89 which represented 8.5% of the total number of cases (144,661) seen in all of the hospitals. The average length of stay for DRG 89 was 6.2 days with a standard deviation of 4.4 days. Of all cases in DRG 89, 79.4% had lengths of stay greater than three days and 64.5% had lengths of stay greater than four days. The relative weight for DRG 89 is 1.1658. Of the total of 12,242 cases in DRG 89, 4.5% were discharged to another hospital, 13.5% to a SNF, and 7.8% died. Finally, 98.3% of all of the hospitals in the sample had at least one case in this DRG. The remainder of the Appendix presents comparable information for each DRG, with the list presented in descending order of the total number of discharges in each DRG.

Most of the information presented in Appendix 1 can be calculated directly from the MEDPAR data we received from HCFA. Due to the large size of the data file, we requested aggregate data (e.g. total number of cases, mean and standard deviation of length of stay, percent cases transferred) by DRG for each rural hospital in the sample rather than requesting data on individual discharges from these hospitals. As a result, several assumptions had to be made before we could calculate the standard deviation of length of stay and the percent of cases with lengths of stay greater than three days or four days. We assumed that individual patients' lengths of stay are independent from each other, both within and across hospitals, and that the distribution of length of stay in each DRG is log normal. The log normal assumption is appropriate for a variable such as length of stay which has no upper limit, can never have values below zero, and has a small number of outlier cases. This assumption has been empirically validated in previous research on length of stay (Secretary, USDHHS, 1982). Details of the calculations discussed above are presented in Appendix 2.

Since Appendix 1 contains a substantial amount of information, several key points are highlighted:[1]

---

[1] We conservatively assumed that rural hospitals interested in becoming a limited service facility included those with average daily census less than ten. To better understand the sensitivity of our results to this assumption, we also computed Appendix 1 for the 467 rural hospitals in the sample with average daily census less than 8 and again for the 299 with average daily census less than six. After ordering these lists by descending order of discharges in a DRG, we calculated Spearman Rank Order Correlation Coefficients of .99 between the average daily census less than ten list and average daily census less than eight lists and .98 between the average daily census less than ten list and average daily census less than six lists. The ordering of the DRG lists does not appear to be sensitive to the average daily census limit used to define the sample.

- **Small rural hospitals admit patients in a limited number of DRG categories, which typically represent low-intensity, medical admissions**

  In FY 1991, the ten most frequent DRG's accounted for 41% of the total caseload of rural hospitals with average daily census less than ten; the top 20 DRG's accounted for 57% of the caseload. In addition, 71 DRGs were not seen in any of the 690 hospitals and 170 DRGs had less than ten total cases across all of the hospitals in the sample. These data suggest that there is a small group of DRGs that all small rural hospitals may be expected to admit; it is unlikely that a particular small rural hospital will admit patients in a broad range of DRGs.

  The most frequent DRGs seen in small rural hospitals can generally be characterized as low-intensity (as measured by DRG relative weights) medical (i.e. non-surgical) admissions such as pneumonia, angina pectoris, esophagitis, bronchitis and asthma, urinary tract infections, and chronic obstructive pulmonary disease. Comparing Appendix 1 with the list of most frequent DRG's discharged from all hospitals in 1986 (see Lemrow, Adams, Coffee, and Farley, 1990), one observes a similarity in the most frequent DRGs on both lists. Five of the ten most frequent DRGs in small rural hospitals are also in the top ten DRGs discharged from all hospitals. Of the remaining five of the top ten in the all-hospital list, three DRGs are associated with deliveries and one is associated with hysterectomies for women under age 70. These DRGs, of course, are not represented in our sample. A similar pattern exists for the next ten most frequent DRGs on the list in Appendix 1.

- **Small rural hospitals transfer relatively few cases to other hospitals**

  Overall, of the 144,661 total number of cases discharged from the sample of rural hospitals in FY 1991, 7.2% were transferred to another hospital. Of the 155 DRGs that had at least 100 discharges, only seven had a transfer rate of at least 20% and 40 had a transfer rate of at least 10%.[2] Table 1 presents a list of the DRGs that were transferred most frequently to other hospitals. The list includes diseases and disorders of the circulatory system, the digestive system, the biliary system, and the respiratory system. These data suggest that hospitals that may be interested in converting to limited service status are likely to have low transfer rates to larger institutions. This is consistent with their propensity to admit low-intensity non-surgical patients.

- **Lengths of stay in small rural hospitals frequently exceed three or four days. Using length of stay limits to define service limitations would discourage many potential candidates for limited service facility status because they would lose a substantial portion of their existing inpatient business.**

  None of the 20 most frequent DRGs in Appendix 1 have an average length of stay less than three days, and only four are less than four days. Moreover, 62.4% of all of the cases in the top 20 DRGs had lengths of stay greater than three days and 47.8% greater than four days. Comparable figures for all 492 DRGs are 61.6% of admissions with lengths of stay longer than three days and 47.1% longer than four days.

---

[2]Table 1 does not include DRGs that had less than 100 discharges because we assumed we could not make reasonable inferences about the transfer rate for those DRGs.

TABLE 1

DRGS MOST FREQUENTLY TRANSFERRED FROM SMALL RURAL HOSPITALS TO OTHER HOSPITALS (AT LEAST 100 DISCHARGES IN FY 1991)

DRG	Description	Transfer Rate to Other Hospitals	# Discharges for DRG
122	Circulatory Disorders with AMI and without Comp.	32.6%	2058
121	Circulatory Disorders with AMI and Comp.	26.1%	2078
475	Respiratory System Diagnosis with Ventilator Support	24.1%	191
189	Other Digestive System Diagnoses without Comp.	23.7%	135
207	Disorder of Biliary Tract with Comp.	22.3%	1024
133	Atherosclerosis without Comp.	21.9%	320
181	G.I. Obstruction without Comp.	21.1%	606

In estimating the number of inpatient days lost due to length of stay cutoffs (such as those used in the EACH/RPCH program and the Montana MAF program), we assumed that hospitals would admit these cases and transfer them after the length of stay cutoff was reached. With this assumption, we estimate that small rural hospitals would lose a substantial portion of their inpatient days (51.1% with a three-day LOS limit, 40.7% with a four-day LOS limit) if LOS limits are imposed as a service limitation criteria.[3] This clearly will be a disincentive against conversion for small rural hospitals and could be an important issue if federal and state policymakers want programs such as EACH/RPCH and MAF to receive serious consideration by rural hospitals that are not already closed or on the brink of closure.

WHY PREVIOUS SERVICE LIMITATION PROPOSALS DON'T WORK

In the interim report for the project, we discussed four mechanisms for defining service limitations in alternative models to the traditional rural hospital. These included:

- Length of stay limits that restrict the amount of time a patient can remain in a facility following admission.
- DRG-based limits that place restrictions on the types of patients that can be admitted to a limited service facility.
- A laissez-faire approach that voluntarily limits admissions and services relative to the professional staff and other resources available in a facility.
- A modular approach that certifies facilities to provide a group of core services, which may be augmented by the addition of various service

[3] The estimates of lost inpatient days increase dramatically (86.5% with a three-day LOS limit, 76.8% with a four-day LOS limit) if we assume hospitals wouldn't admit cases that were expected to have lengths of stay longer than the cutoff point.

modules depending on the needs of the community and capabilities of the facility and staff.

Although the length-of-stay service limitation is, perhaps, the weakest of the methods proposed to circumscribe the types of patients to be treated and the range of services they are to receive at limited service rural hospitals, the other methods, by themselves, are also unsuitable for limiting services (Moscovice, Sales, Christianson, and Wellever, 1992). None of the existing service limitations, if applied without a clinically-based exceptions process, achieves a reasonable set of objectives for a well-defined limit on the scope of inpatient services. Those objectives are:

1. To consider and, where possible, to accommodate local ability to care for patients as measured by the training of the facility's professional and allied staff and the availability of medical equipment;

2. To consider and, where possible, to accommodate the professional judgement of practitioners treating patients at the facilities;

3. To protect the health and safety of patients treated at the facilities;

4. To deter fraud and abuse by restricting opportunities to "game," or circumvent, the service limitation rules;

5. To provide the maximum opportunity for patients to receive care in settings as close to their homes as is appropriate; and

6. To state clearly and unambiguously the rules and procedures necessary to implement the method.

The four primary proposals for limiting services defined above fail to satisfy these goals. As mentioned previously, length-of-stay limits, while unambiguous and resistant to abuse, do not provide opportunities for local decision-making and professional judgement. Length-of-stay limits address only the length of time that a patient may be treated at the facility, not the appropriateness of the care setting, and thus this type of

service limitation does not adequately assure the health and safety of patients admitted to the facility. Also, length-of-stay service limitations require that a patient be transferred at the conclusion of a time-limited stay, regardless of the patient's condition, prognosis or wishes, or the facility's ability to adequately provide the further care required.

Unlike length-of-stay limitations, DRG-based limitations restrict admissions to a subset of all patient conditions. However, if strictly applied, DRG-based limitations are no more successful at achieving the other goals than are length-of-stay limitations. Like length-of stay limits, DRG-based limitations do not accommodate local circumstances. Because they do not, they may force transfers of patients that could safely be cared for in local facilities. If DRG assignments are not validated by an external agency such as a peer review organization or a fiscal intermediary, the limitation can be manipulated by erroneously assigning a DRG that has been approved for admission. Finally, systems based on relative weights or approved lists of DRGs may produce inconsistencies in the care provided in limited service facilities. Lower intensity cases may be transferred and higher intensity cases may be authorized for admission. Some type of exceptions process would be necessary to address this problem.

The laissez-faire approach to limiting services allows local decision-making and the exercise of professional judgement and permits patients to stay in the community, but its lack of specificity jeopardizes health and safety, opens the system to inappropriate admissions, and is extremely ambiguous. The modular approach to limiting services recognizes that local facilities have different levels of capability to provide services. However, under this approach, the exercise of provider judgement exists only within the

confines of the modules selected. Patient health and safety are addressed by the attempt to match facility resources with the needs of patients. Because the services offered fall either within approved modules or outside of approved modules, the system is unambiguous. Patients who require services that are not available at the facility must leave the community to receive services. "Gaming" the system - by reclassifying patients with conditions that should not be treated at the facility to conditions that are acceptable - would be less likely under this method than it would be under a DRG-based method, but the potential for inappropriate admissions is still high. Table 2 lists the reasonable objectives of a service limitation and assesses the potential success of the various methods at achieving them.

To achieve all of these objectives, it is necessary to introduce an exceptions process that permits relaxation of the limitation on a patient-by-patient basis, or to combine several approaches to service limitation. We have developed an alternative service limitation that builds upon the existing length-of-stay limitation by combining it with a modular, DRG-based approach, subject to concurrent utilization review.

Just as traditionally licensed hospitals exhibit significant variation in the scope of services they provide, limited service rural hospitals are likely to vary widely in their institutional capability. Some will be staffed by multiple physicians, while others will be staffed with a single physician or mid-level practitioner. Some will have diagnostic and therapeutic medical equipment available that is absent in others. The nursing and ancillary staffs in some will have greater training and skills than in others. There is also likely to be considerable variation among patients with the same diagnosis admitted to

TABLE 2

CHARACTERISTICS OF SERVICE LIMITATION PROPOSALS

Objectives	LOS	DRG	Laissez-Faire	Modular
Accommodate local circumstances	no	no	yes	yes
Accommodate professional judgement	no	no	yes	no
Protect health and safety	no	yes	no	yes
Deter fraud and abuse	yes	no	no	no
Stay close to home	no	no	yes	no
Be clear and unambiguous	yes	no	no	yes

limited service rural hospitals. Diagnosis, severity of illness, stage of illness, and the psycho-social needs of the patient all play a role in the determination of the appropriate treatment site. The service limitation that we propose explicitly recognizes institutional variation within the limited service rural hospital licensure category and the unique needs of each patient.

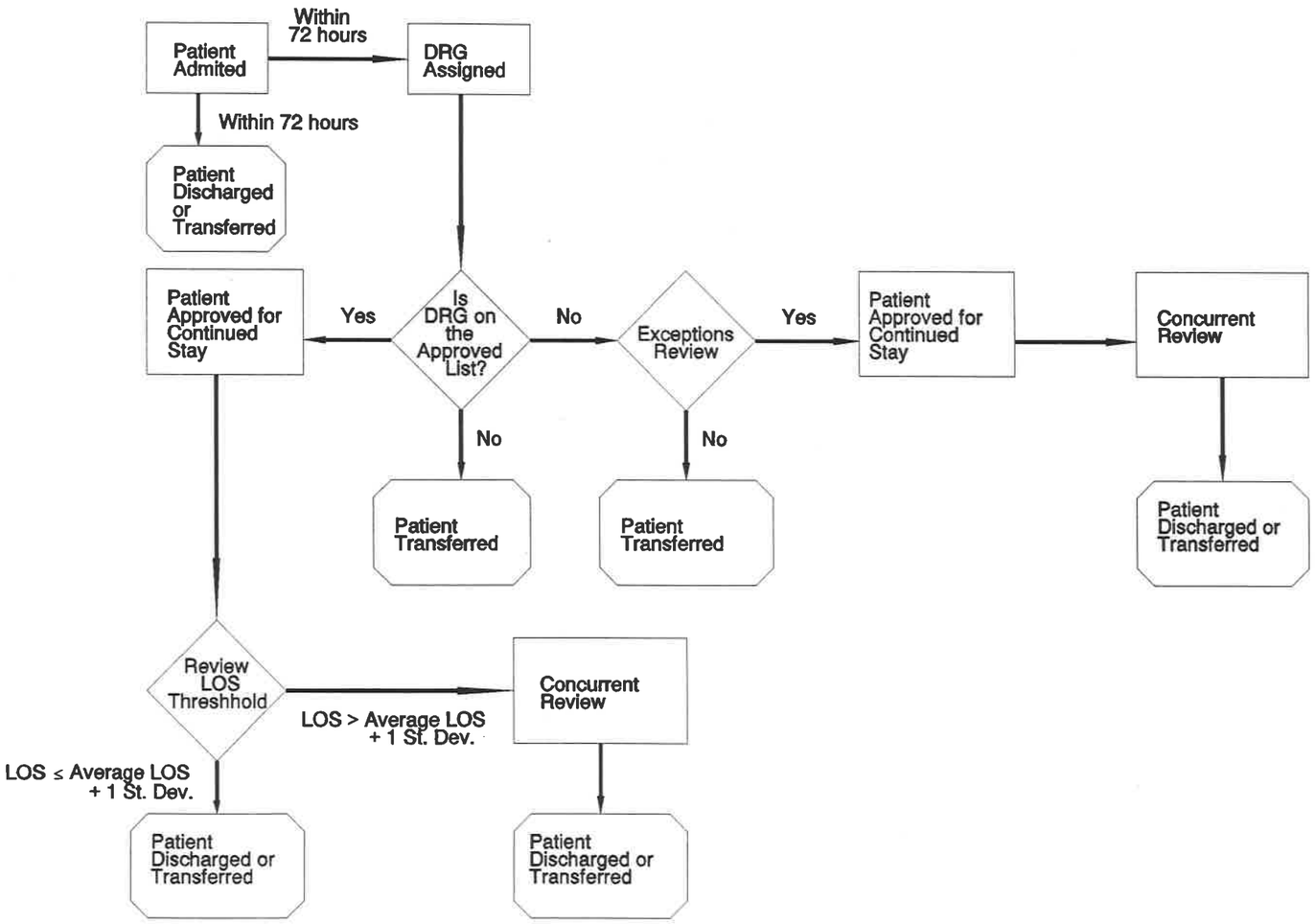
AN ALTERNATIVE PROPOSAL FOR DEFINING SERVICE LIMITATION

The proposed method for limiting services in alternative models to the traditional rural hospital combines several of the approaches that have already been used or suggested (see Figure 1). Under the proposed method, the patient's stay begins with an evaluation that cannot extend past 72 hours. At any time during the evaluation, a patient may be discharged or transferred as the condition of the patient warrants. At the end of the evaluation, the patient is assigned a DRG. The administrators of the program will have divided the 492 DRGs into two groups: (1) conditions that <u>are not</u> appropriate to treat at limited service rural hospitals, and (2) conditions that <u>are</u> appropriate to treat at limited service rural hospitals.

The DRG assigned to the patient is compared to the list of approved DRGs. If the patient's DRG is on the list of conditions not appropriate for treatment in a limited service rural hospital, the patient is transferred immediately or an exceptions review is requested. If the patient's DRG is among those on the list approved for treatment, the patient is automatically certified for a continued stay at the facility. However, even if the patient's DRG is among those on the list of approved DRGs, the facility may choose to transfer the

FIGURE 1

A NEW PROPOSAL FOR DEFINING SERVICE LIMITATION



patient. That is, the facility is not required to treat patients with diagnoses that appear on the approved DRG list.

If the patient's DRG is not on the list of conditions that are approved for treatment at a limited service rural hospital, the facility may request a review of the appropriateness of admission to the facility for this particular case. As part of this "exceptions review," the Peer Review Organization (PRO) assesses the capability of the facility to care for the patient and the condition and prognosis of the patient and renders a decision either to transfer the patient to a full-service hospital or to certify the patient for a continuation of their stay at the limited service facility. The decision of the PRO reviewer may be appealed to a physician reviewer, but the decision of the physician reviewer is final. Violations of PRO directives will result in denial of payment for Medicare patients.

If the 72-hour evaluation period expires during a weekend or on a holiday, and a limited service hospital intends to request an exceptions review to extend the treatment of a patient under its care, the facility must contact the PRO and leave a message describing the condition and prognosis of the patient, identifying the patient's preliminary DRG, and announcing its intention to request a review. The message will be evaluated by PRO staff at the earliest available time and a decision will be made to concur with the continuation of the stay or to deny it. Providers who call and leave an appropriate message will be presumed to be acting in good faith and will not be denied payment for services rendered between their first attempt to contact the PRO and the PRO's decision to deny an exception.

When a patient is certified for a continuation of their stay, a process of mandatory concurrent review is triggered. The PRO will monitor the care of the patient for appropriateness of care, and, if warranted, may require the patient to be transferred. On its own initiative, as indicated by the condition of the patient and the capability of the facility, the facility may also choose to transfer the patient. If the patient is not transferred, he/she will be discharged from the limited service rural hospital.

If the patient's DRG is not on the list of conditions that is approved for treatment at a limited service rural hospital and the facility does not request an exceptions review, the patient must be transferred immediately to a full-service hospital.

Mandatory concurrent utilization review is also required of patients who are automatically certified for continuation of their stay (by virtue of their DRG appearing on the list of approved DRGs) when their length of stay exceeds the mean length of stay plus one standard deviation for similar DRGs treated at rural hospitals whose average daily census is ten or fewer. The procedure for review by the PRO and the transfer/discharge options in these cases are identical to those described above relating to the exceptions process.

In summary, the proposed system for limiting services begins with an evaluation period based upon a length-of-stay limitation. Following the evaluation, patients are assigned to one of two modules that are determined by DRGs. Patients whose DRGs are on the approved list are allowed to continue to receive care in the facility. Facilities must justify that an exception is warranted for patients whose DRGs are not on the approved list. Otherwise, patients whose DRGs are not on the approved list must be transferred

immediately. Patients whose care is extended beyond the 72-hour evaluation period may be subject to concurrent utilization review by the PRO.

KEY ASPECTS OF ALTERNATIVE PROPOSAL

72-Hour Evaluation Period

The method proposed for limiting services builds upon existing features of the Essential Access Community Hospital (EACH) Program and the Prospective Payment System (PPS). The EACH legislation and the proposed rules for the program limit patient stays in RPCHs to a maximum of 72 hours. Implicitly, there are no limitations placed upon the types of patients that can be admitted to the facility. The presumption is made that it is appropriate to admit any patient for observation and stabilization prior to discharge or transfer. Furthermore, there is no prohibition against admitting a patient with the intention of a transfer at some future time within the 72-hour limit. The service limitation described above suggests that the outcome of the process of observation and stabilization can, and should be, more than a mandatory transfer. It is possible during the 72-hour evaluation of the patient to determine whether the RPCH is the appropriate site for continued treatment. For example, consider a patient admitted for evaluation of a gastrointestinal obstruction with complications (DRG 198). During the first 72 hours, the patient has been on nasogastric suction and IV fluids and has been responding well to treatment. The physician feels the patient needs two more days of hospitalization for electrolyte adjustment and to see how well oral feeding is tolerated. If the determination has been made that the RPCH is an appropriate treatment site, the threshhold of the 72-hour limitation could be extended.

DRG-Based Exceptions Process

DRGs are used as the initial criteria for evaluating the extension of care in alternative models such as rural primary care hospitals. DRGs are also employed by Medicare as the basis for making payments for inpatient care to PPS hospitals. A technical advisory panel of three clinicians was asked to review the 492 DRGs and to assign each DRG to one of two groups: (1) conditions that <u>are not</u> appropriate to treat at rural primary care hospitals, and (2) conditions that <u>are</u> appropriate to treat at rural primary care hospitals. In making the assignment of DRGs to one of the two groups, the advisory panel assumed the following:

- No surgical cases would be treated at RPCHs.
- No obstetrical cases would be treated at RPCHs.
- Only primary care providers (general practice or family practice physicians or mid-level practitioners) would provide medical services at RPCHs.
- Only basic laboratory services (as defined in the Notice of Proposed Rule Making for the RPCH Conditions of Participation, October 25, 1991) would be available at RPCHs.
- No blood banking services would be available at RPCHs.
- Only basic radiology services would be available at RPCHs (i.e., ability to perform studies of chests, abdomens, and extremities, but no requirement to provide fluoroscopy).

The three clinicians on the advisory panel were:

Raymond Christensen, MD

Dr. Christensen is a family practice physician in Moose Lake, Minnesota and serves as a medical advisor on rural health and other issues to the Minnesota Department of Health.

James Reid, PA-C

Mr. Reid is a physician's assistant currently working as a consultant on clinical outreach services for the Deaconess Medical Center of Billings, Montana. He has been involved in the development of Medical Assistance Facilities in Montana.

Thomas Simpson, MD

Dr. Simpson is a family practice physician in Sterling, Kansas. He has been involved in the implementation of the EACH-RPCH program in Kansas.

Each of the panelists has had considerable experience delivering primary care in rural areas, and in managing patients in rural hospitals. They all had the opportunity to review the information in Appendix 1 prior to making decisions on which DRGs are appropriate to treat at RPCHs.

The DRGs (492 total) were divided into surgical and medical DRGs. An initial assumption was made that no surgical cases would be treated at RPCHs. This left 279 medical DRGs; of these, another eight were "DRGs no longer in use", leaving a total of 271 medical DRGs that were considered for inclusion in the group of DRGs appropriate for admission to an RPCH. Each of the clinicians was asked to decide independently whether each of the medical DRGs was appropriate for inclusion, based on clinical judgement. When there was no consensus on a given DRG, the judgement of two out of the three clinicians was used to determine whether that DRG should be included on the list of DRGs appropriate to treat in a limited service facility.

Of the 271 medical DRGs, 162 were considered inappropriate for admission and treatment in an RPCH (following the evaluation period necessary to assign a correct DRG, not to exceed 72 hours). This left 109 DRGs that were considered appropriate to admit and treat in a limited service rural facility (Table 3). These DRGs were divided by Major

TABLE 3

109 MEDICAL DRGS APPROPRIATE TO ADMIT AND TREAT IN AN RPCH

MDC 01 DISEASES AND DISORDERS OF THE NERVOUS SYSTEM

DRG 13 MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA
DRG 14 SPECIFIC CEREBROVASCULAR DISORDERS EXCEPT TIA
DRG 25 SEIZURE & HEADACHE AGE > 17 W/0 CC
DRG 30 TRAUMATIC STUPOR & COMA, COMA < 1 HR AGE 0-17
DRG 32 CONCUSSION AGE > 17 W/O CC
DRG 33 CONCUSSION AGE 0-17

MDC 02 DISEASES AND DISORDERS OF THE EYE

DRG 43 HYPHEMA

MDC 03 DISEASES AND DISORDERS OF THE EAR, NOSE AND THROAT

DRG 66 EPISTAXIS
DRG 68 OTITIS MEDIA & URI AGE > 17 WITH CC
DRG 69 OTITIS MEDIA & URI AGE > 17 W/O CC
DRG 70 OTITIS MEDIA & URI AGE 0-17
DRG 71 LARYNGOTRACHEITIS
DRG 73 OTHER ENMT DIAGNOSES AGE > 17
DRG 74 OTHER ENMT DIAGNOSES AGE 0-17

MDC 04 DISEASES AND DISORDERS OF THE RESPIRATORY SYSTEM

DRG 80 RESPIRATORY INFEC & INFLAMMAT AGE>17 W/O CC
DRG 81 RESPIRATORY INFEC & INFLAMMATIONS AGE 0-17
DRG 86 PLEURAL EFFUSION W/O CC
DRG 88 CHRONIC OBSTRUCTIVE PULMONARY DISEASE
DRG 89 SIMPLE PNEUMONIA & PLEURISY AGE > 17 WITH CC
DRG 90 SIMPLE PNEUMONIA & PLEURISY AGE > 17 W/O CC
DRG 91 SIMPLE PNEUMONIA & PLEURISY AGE 0-17
DRG 93 INTERSTITIAL LUNG DISEASE W/O CC
DRG 96 BRONCHITIS & ASTHMA AGE > 17 WITH CC
DRG 97 BRONCHITIS & ASTHMA AGE > 17 W/O CC
DRG 98 BRONCHITIS & ASTHMA AGE 0-17
DRG 99 RESPIRATORY SIGNS & SYMPTOMS WITH CC
DRG 100 RESPIRATORY SIGNS & SYMPTOMS W/O CC
DRG 101 OTHER RESPIRATORY SYSTEM DIAGNOSES WITH CC
DRG 102 OTHER RESPIRATORY SYSTEM DIAGNOSIS W/O CC

TABLE 3 (continued)

MDC 05 DISEASES AND DISORDERS OF THE CIRCULATORY SYSTEM

DRG 127 HEART FAILURE & SHOCK
DRG 128 DEEP VEIN THROMBOPHLEBITIS
DRG 131 PERIPHERAL VASCULAR DISORDERS W/O CC
DRG 133 ATHEROSCLEROSIS W/O CC
DRG 134 HYPERTENSION
DRG 140 ANGINA PECTORIS
DRG 142 SYNCOPE & COLLAPSE W/O CC
DRG 143 CHEST PAIN
DRG 145 OTHER CIRCULATORY SYSTEM DIAGNOSES W/O CC

MDC 06 DISEASES OF THE DIGESTIVE SYSTEM

DRG 178 UNCOMPLICATED PEPTIC ULCER W/O CC
DRG 179 INFLAMMATORY BOWEL DISEASE
DRG 183 ESOPHAG.,GASTRO & MISC DIG DISORD AGE>17 W/O CC
DRG 184 ESOPHAG., GASTRO & MISC DIGEST DISORD AGE 0-17
DRG 187 DENTAL EXTRACTIONS & RESTORATIONS
DRG 189 OTHER DIGESTIVE SYSTEM DXS AGE > 17 W/O CC
DRG 190 OTHER DIGESTIVE SYSTEM DIAGNOSES AGE 0-17

MDC 07 DISEASES AND DISORDERS OF THE HEPATOBILIARY SYSTEM AND PANCREAS

DRG 208 DISORDERS OF THE BILIARY TRACT W/O CC

MDC 08 DISEASES AND DISORDERS OF THE MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE

DRG 241 CONNECTIVE TISSUE DISORDERS W/O CC
DRG 243 MEDICAL BACK PROBLEMS
DRG 246 NON-SPECIFIC ARTHROPATHIES
DRG 247 SIGN & SXS OF MUSCULOSKEL SYSTEM & CONN TISSUE
DRG 248 TENDONITIS, MYOSITIS & BURSITIS
DRG 249 AFTERCARE, MUSCULOSKELETAL SYSTEM & CONN TISSUE
DRG 251 FX,SPRN,STR&DISL OF F/A,HAND,FOOT AGE>17 W/O CC
DRG 252 FX,SPRN,STRN&DISL OF F/A, HAND, FOOT AGE 0-17
DRG 254 FX,SPRN,STR&DIS OF U/A,LOWLEG EX FT AGE>17 W/O CC
DRG 255 FX,SPRN,STRN&DISL OF U/A, LOWLEG EX FOOT AGE 0-17
DRG 256 OTHER MUSCULOSKELETAL SYS & CONN TISSUE DIAG

TABLE 3 (continued)

MDC 09 DISEASES AND DISORDERS OF THE SKIN, SUBCUTANEOUS TISSUE AND BREAST

DRG 271 SKIN ULCERS
DRG 276 NON-MALIGNANT BREAST DISORDERS
DRG 278 CELLULITIS AGE > 17 W/O CC
DRG 279 CELLULITIS AGE 0-17
DRG 280 TRAUMA TO SKIN,SQ TISS & BREAST AGE > 17 W CC
DRG 281 TRAUMA TO SKIN,SQ TISS & BREAST AGE>17 W/O CC
DRG 282 TRAUMA TO THE SKIN,SQ TISS & BREAST AGE 0-17
DRG 283 MINOR SKIN DISORDERS WITH CC
DRG 284 MINOR SKIN DISORDERS W/O CC

MDC 10 ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES AND DISORDERS

DRG 294 DIABETES AGE >35
DRG 295 DIABETES AGE 0-35
DRG 296 NUTR & MISC METABOLIC DISORD AGE > 17 W CC
DRG 297 NUTR & MISC METABOLIC DISORD AGE>17 W/O CC
DRG 298 NUTR & MISC METABOLIC DISORDERS AGE 0-17
DRG 301 ENDOCRINE DISORDERS W/O CC

MDC 11 DISEASES AND DISORDERS OF THE KIDNEY AND URINARY TRACT

DRG 320 KIDNEY & URINARY TRACT INF AGE > 17 WITH CC
DRG 321 KIDNEY & URINARY TRACT INF AGE > 17 W/O CC
DRG 322 KIDNEY & URINARY TRACT INFECTIONS AGE 0-17
DRG 324 URINARY STONES W/O CC
DRG 326 KIDNEY&UR TRACT SIGNS & SYMPT AGE > 17 W/O CC
DRG 327 KIDNEY & UR TRACT SIGNS & SYMPTOMS AGE 0-17
DRG 332 OTHER KIDNEY & UR TRACT DIAG AGE > 17 W/O CC
DRG 333 OTHER KIDNEY & URINARY TRACT DIAGNOSES AGE 0-17

MDC 12 DISEASES AND DISORDERS OF THE MALE REPRODUCTIVE SYSTEM

DRG 348 BENIGN PROSTATIC HYPERTROPHY WITH CC
DRG 349 BENIGN PROSTATIC HYPERTROPHY W/O CC
DRG 350 INFLAMMATION OF THE MALE REPRODUCTIVE SYSTEM

TABLE 3 (continued)

MDC 13 DISEASES AND DISORDERS OF THE FEMALE REPRODUCTIVE SYSTEM

DRG 368 INFECTIONS, FEMALE REPRODUCTIVE SYSTEM
DRG 369 MENSTRUAL & OTHER FEMALE REPRODUCTIVE SYS DISORDERS

MDC 14 PREGNANCY, CHILDBIRTH AND THE PUERPERIUM

DRG 382 FALSE LABOR

MDC 17 MYELOPROLIFERATIVE DISORDERS

DRG 410 CHEMOTHERAPY WITHOUT ACUTE LEUKEMIA AS SEC DIAG

MDC 18 INFECTIOUS AND PARASITIC DISEASES

DRG 417 SEPTICEMIA AGE 0-17
DRG 418 POSTOPERATIVE & POST-TRAUMATIC INFECTIONS
DRG 421 VIRAL ILLNESS AGE > 17
DRG 422 VIRAL ILLNESS & FEVER OF UNKNOWN ORIGIN AGE 0-17
DRG 423 OTHER INFECTIOUS & PARASITIC DISEASES OR DXS

MDC 19 MENTAL DISEASES AND DISORDERS

DRG 428 DISORDERS OF PERSONALITY & IMPULSE CONTROL

MDC 20 ALCOHOL AND SUBSTANCE ABUSE

DRG 435 ALC/DRUG ABUSE OR DEP,DETOX OR OTH SYM TRT W/O CC

MDC 21 INJURIES, POISONINGS AND TOXIC EFFECTS OF DRUGS

DRG 445 TRAUMATIC INJURY AGE > 17 W/O CC
DRG 446 TRAUMATIC INJURY AGE 0-17
DRG 447 ALLERGIC REACTIONS AGE > 17
DRG 448 ALLERGIC REACTIONS AGE 0-17
DRG 450 POISONING & TOXIC EFFECTS OF DRUGS AGE>17 W/O CC
DRG 451 POISONING & TOXIC EFFECTS OF DRUGS AGE 0-17
DRG 455 OTHER INJURY, POISONING & TOXIC EFF DIAG W/O CC

TABLE 3 (continued)

MDC 22 BURNS

DRG 460 NON-EXTENSIVE BURNS W/O O.R. PROCEDURE

MDC 23 FACTORS INFLUENCING HEALTH STATUS AND OTHER CONTACTS WITH HEALTH SERVICES

DRG 462 REHABILITATION
DRG 464 SIGNS & SYMPTOMS W/O CC
DRG 465 AFTERCARE W HISTORY OF MALIG AS SECONDARY DIAG
DRG 466 AFTERCARE W/O HISTORY OF MALIG AS SECONDARY DIAG
DRG 467 OTHER FACTORS INFLUENCING HEALTH STATUS

OTHER

DRG 490 HIV W OR W/O OTHER RELATED CONDITION
DRG 492 CHEMOTHERAPY WITH ACUTE LEUKEMIA AS SECOND DIAG

Diagnostic Category (MDC), which categorizes DRGs by physiological system. The DRGs that are included on the "appropriate to admit" list are either short-term acute care DRGs, or are chronic DRGs without complications. These patients generally require low-intensity medical intervention for diagnosis or treatment and can be treated by primary care providers in an institutional setting without the immediate availability of secondary or tertiary level diagnostic and therapeutic back-up services.[4]

Approximately one-half of the DRGs on the list are drawn from five MDCs. Diseases and disorders of the respiratory system are the most common DRGs on the list with 15 entries, followed by non-surgical orthopedic DRGs with 11 entries. Diseases and disorders of the circulatory system and diseases and disorders of the skin, subcutaneous system and connective tissue both have nine entries and non-surgical diseases and disorders of the kidney and urinary tract have eight entries. Of the 109 DRGs, 23 are exclusively pediatric diagnoses, and are generally double counts of similar conditions for patients 17 years of age or older.

Many DRGs are paired as DRG sets with or without complications; for example, DRG 16 (nonspecific cerebrovascular disorders with complications) and DRG 17 (nonspecific cerebrovascular disorders without complications). In many of these pairs, the DRG without complications was included in the list of DRGs approved for treatment in a limited service facility, while the DRG with complications was not included. Of 61

---

[4]DRG relative weights may be used as a proxy for intensity of service as measured by normative resource consumption and length of stay. The DRG relative weights have been normalized so that the average case has a relative weight of 1.0. If the DRG relative weights are weighted by the number of cases discharged in FY 1991, we find that the weighted average DRG relative weight for DRGs on the approved list for RPCHs is .8881 as compared to 1.1455 for those DRGs not on the approved list. This supports o ur belief that the proposed service limitation focuses on admissions that require less intensive treatment.

pairs of DRGs (with or without complications), 51 of those with complications (84%) were excluded from the list of DRGs appropriate to treat. Of those without complications, 36 (59%) were included in the list of DRGs appropriate to treat. The existence of complications in a diagnosis was considered a significant factor in deciding to exclude that DRG from the list of those appropriate to treat. However, it does not appear to be the only factor considered by the panel.

In addition to deciding which DRGs should be included in a list of those appropriate to treat in a limited service facility, panel members were asked to consider clinical scenarios in which a patient with a DRG not on the approved list might be considered through the exceptions process as appropriate for treatment in a limited service facility.

A few examples of these are described below:

DRG 316: Renal failure

A patient with end-stage renal disease who is not felt to be a candidate for either renal transplant or dialysis; admitted in uremic coma; family and patient have stated their desire to avoid heroic measures. Patient is to be made comfortable until death, which is expected in 5-7 days.

DRG 180: G.I. Obstruction with complications

Patient was admitted about 72 hours ago for evaluation; has been on nasogastric suction and IV fluids since then; is responding well to treatment, but provider feels the patient needs 2-3 more days of hospitalization for electrolyte adjustment and to see how well oral feeding is tolerated.

DRG 430: Psychoses

Known schizophrenic was brought to the limited service facility on Friday evening; had not been taking prescribed psychotropic medication. Patient had been acting in a bizarre manner and is felt to be a possible danger to himself or to others in the family. The regional mental health center knows the patient, and says that the patient must

be admitted to an inpatient psychiatric facility; the state psychiatric facility is not able to take the patient until Wednesday, but will give recommendations for sedating the patient at the limited service facility.

DRG 253: Fracture, sprain, strain and dislocation of upper arm, lower leg except foot, age > 17 with complications

An elderly long-term care patient fell during an assisted transfer and sustained a mid-shaft humerus fracture. The patient is restricted to bed and requires assistance with feeding due to other conditions (arthritis of lower extremities and dementia). The patient is not considered a candidate for primary reduction and fixation of the fracture; requires immobilization, monitoring for possible infection, and hospitalization for pain control and monitoring possible pulmonary complications.

If DRGs are an adequate tool for defining appropriateness of care at RPCHs, why not simply divide potential RPCH patients at admission into those with DRGs that should be treated at RPCHs and those that should not be and admit or transfer them accordingly? There are two reasons. First, DRGs, as the name implies, represent groups of diagnoses. The diagnoses exhibit variation in severity and staging of illness within groupings. Therefore, while DRGs might suggest the type of patient, they are not able to predict the complete needs of the particular patient who has been assigned the DRG. Second, it is not possible to assign a DRG on admission. By definition, a DRG is based on "the diagnosis established after study to be chiefly responsible for causing the patient's admission to the hospital" (See 42 Code of Federal Regulations 412.60(c)(1)). Although 72 hours may not be adequate in all cases to render a definitive diagnosis, it is a period of study sufficiently long enough for a practitioner to provide a diagnosis for the purpose of determining the appropriateness of the treatment site. Although the process allows a maximum length of 72 hours for evaluation, a DRG should be assigned and discussed with the PRO as early as is reasonable.

The exceptions review process also permits the development of another program feature. Frequently, rural Medicare patients receive tertiary care services at urban hospitals or rural referral centers. As the intensity of their care diminishes in the final days of their convalescence, these patients could be transferred to settings closer to their homes where they could be more easily supported by family and friends. Existing hospital payment rules discourage this kind of transfer, because the facility that discharges the patient receives the full DRG payment.

The difficulty of transferring a rural patient back to the local community -- even when it is medically appropriate to do so --is continued under the EACH Program's currently proposed rules. Care at RPCHs is limited to 72 hours. There is no way to assure that a patient convalescing from a serious illness and/or procedure will be able to be discharged within that period of time. If the patient is not able to be discharged at the end of 72 hours, the currently proposed rules offer the facility only two choices: transfer the patient to a lower level of care in the community (which may be inappropriate) or transfer the patient back to the full service hospital.

The service limitation proposed in this paper would permit patients to be transferred from EACHs to RPCHs. Patients whose care needs are less intense may be transferred from an EACH to an RPCH after the PRO has reviewed the patient's status and an exception granted for the admission. The care of all patients transferred from EACHs to RPCHs would be subject to mandatory concurrent utilization review. The entry point in the process for patients transferred to the RPCH would be an exceptions review.

The distribution of the financial payment between the EACH and RPCH under the above arrangement remains to be addressed.

The service limitation proposed in this paper may also discourage inappropriate admissions to co-located skilled nursing facilities or swing beds. To retain low intensity acute care patients in facilities beyond 72 hours under the current service limitation, limited service hospitals are likely to discharge some patients to co-located skilled nursing facilities or swing beds. These patients might receive acute care services in these beds despite the fact that the beds are licensed for skilled nursing care. The admissions to co-located skilled nursing facilities or swing beds may not only be inappropriate for the level of care required and for their attempt to sidestep the rules of the program, but they potentially place the facility in financial jeopardy by providing acute care services for skilled nursing services reimbursement rates. Under the proposed method of limiting services, many low intensity patients whose care extends beyond 72 hours would be able to be treated in the acute care portion of the facility and reimbursed accordingly.

Role of the PRO

The system for limiting services proposed in this paper extends the existing hospital functions of PROs to alternative models such as RPCHs. The scope of PRO review for hospitals includes the determination of (1) Whether services are or were reasonable and medically necessary...; (2) Whether the quality of services meets professionally recognized standards of care, (3) Whether services furnished or proposed to be furnished on an inpatient basis could, consistent with the provisions of appropriate medical care, be effectively furnished more economically on an outpatient basis or in an

inpatient health care facility of a different type; (4) The validity of diagnostic and procedural information supplied by the hospital (DRG validation); (5) The completeness, adequacy and quality of hospital care provided; (6) The medical necessity, reasonableness and appropriateness of hospital admissions and discharges; (7) The appropriateness of outlier patients; and (8) Whether a hospital has misrepresented admission or discharge information to "game" the system (See 42 Code of Federal Regulations 466.71(a)).

The proposed Conditions of Participation for RPCHs, however, envision a much narrower role for PROs. According to the Notice of Proposed Rule Making, "The quality and appropriateness of the diagnosis and treatment furnished by doctors of medicine or osteopathy at the RPCH are evaluated by the PRO for the State in which the RPCH is located....The RPCH staff considers the findings of the evaluations, including any findings or recommendations of the PRO, and takes corrective action if necessary" (Federal Register, October 25, 1991, 55407).

Under the system for limiting services proposed in this paper, the PRO would perform four primary functions: (1) determination of the medical necessity for admission, (2) DRG validation, (3) determination of the appropriate site for care, and (4) concurrent review of services provided. The first two of these functions will be performed following discharge. If the care delivered by the RPCH to Medicare patients is deemed to be not medically necessary, payment for the services should be denied. It is anticipated that a large proportion of RPCH inpatient utilization will be attributable to Medicare patients. It is assumed that confining the denial of payment for services delivered unnecessarily to

Medicare patients is sufficient sanction due to the proportionately large volume of Medicare patients.

RPCHs will be required to report DRG assignments on all patients to the PRO. Retrospective validation of DRGs will help assure that RPCHs are not abusing the feature of the system that provides automatic certification for DRGs approved in advance for a continuation of stay. Repeated violations in DRG coding will be reported to the State licensing agency by the PRO.

The final two functions proposed for the PRO will coincide with the patient's stay. If a patient's DRG is not on the list of DRGs approved for treatment at an RPCH, the RPCH may request an exceptions review by the PRO. According to authority that is already granted to PROs, the evaluation of the proper site for care is determined by two criteria: appropriateness of care and economy of cost. The appropriateness of care determination would be made by matching the resources of the RPCH with the services that are necessary to treat a patient with a particular condition. RPCHs would be required to file with the PRO, and periodically update, a report of their institutional capacity to treat patients. The report would include information about the number, training, and delineated privileges of medical staff; the number, training and capacity of nursing and support staff; and an inventory of the availability of medical equipment and the frequency of its use. If the medical staff of the RPCH is properly trained and is supported by a nursing and allied health professional staff that is also adequately trained to meet the needs of the patient, and if the RPCH is adequately equipped to provide the diagnostic and therapeutic services required by the patient, the PRO may find that the RPCH is an appropriate site

for care to be delivered. This determination would be made not simply on the basis of the DRG, nor by consulting a list of the RPCH's resources, but would be made in consultation with the RPCH to gather specific information about the condition, prognosis, and wishes of the patient in question.

Information on the cost of RPCHs is not available for comparison with EACHs. However, one might speculate that the costs of providing services in an RPCH for the entire length of stay for conditions for which it is appropriate to do so is less expensive than admitting patients to the RPCH and transferring to an EACH after 72 hours for the two reasons. First, the transfer of the patient will require an ambulance charge that would not be necessary if the transfer were not made. Second, the proposed payment rules for the EACH Program would reimburse the RPCH on a cost-based per diem rate for the number of days of care (up to three) it provided, but would also pay the EACH the full DRG payment for transfers received from RPCHs.

The proposed service limitation also might reduce RPCH per diem costs. A relaxation of the 72-hour maximum length-of-stay rule would result in an increase in RPCH utilization measured in days of care. As the number of days of care increases, the proportion of fixed costs per day decreases, and, assuming variable costs remain constant, the average cost per day also decreases. This could further tip a cost comparison between RPCHs and EACHs in favor of RPCHs.

The PROs also would perform concurrent utilization review for patients whose care has been extended following an exceptions review and for patients whose stay has been automatically extended but whose length of stay has exceeded the average length of stay

plus one standard deviation for similar DRGs in rural hospitals whose average daily census is ten or fewer. PROs are independent physician-sponsored or physician-access organizations that contract with HCFA to perform PRO reviews. Most of the organizations also provide review services (quality assurance/utilization review) for other third-party insurers. They generally are staffed and equipped to perform the kind of concurrent review of care that is required of the service limitation suggested here. Those that are not staffed and equipped to perform this review, would be permitted to sub-contract with organizations that possess this capability.

DRG validation, exceptions reviews, and concurrent utilization review would be performed on all patients regardless of whether they are Medicare patients or not. The PROs could receive payment for these services from two sources: HCFA, by amending the current PRO scope of work to pay for the review of Medicare patients treated at RPCHs; and the States participating in the EACH Program, by contracting with the PROs to provide this set of services for non-Medicare patients treated at RPCHs. The States could reduce their expense of contracting with the PRO for these services by levying a small user fee on RPCHs.

Ability to Satisfy Service Limitation Objectives

The method proposed in this paper achieves all of the objectives of a well-defined limit on inpatient services. The service limitation accommodates local variation in capability. The exceptions process allows flexibility in the application of an upper limit on services. RPCHs are allowed to offer services to patients according to their ability to provide services. There is a lower limit (no cases other than DRGs that are on the

approved list may be treated automatically) and there is an upper limit (no cases with DRGs that are on the unapproved list may be admitted without permission received through a formal exception review process, other than for the 72-hour observation and stabilization period). A facility must first request a waiver of the limit each time it seeks to exceed the lower limit, and, second, it must prove it is worthy of the waiver. Similarly, the ability to administer the service limitation flexibly accommodates practitioner decision-making. The expert panel of clinicians convened for the project were critical of both the length-of-stay limitation and the DRG approach, because of their reliance on rigid, arbitrary decision rules. Patients are transferred under both methods without regard to their condition or prognosis, but on some predetermined criteria that may or may not relate to the case at hand. The proposed system does not allow practitioners to make all of the treatment decisions in RPCHs, but allows the practitioner to participate in deciding where a patient will be treated.

The list of DRGs that are appropriate to be treated in RPCHs was created with the assumption that RPCHs would be minimally staffed and equipped (as defined by the proposed rules for RPCHs). In the professional judgement of the advisory panel, the conditions on this list can be safely treated in RPCHs. The remaining DRGs were judged, a priori, to be inappropriate for treatment in an RPCH unless the facility could provide explicit proof of its ability to provide care and an adequate rationale for doing so. A PRO-sponsored process of concurrent review is triggered to monitor the care of the patient if an exception is granted. Concurrent review is also triggered for those cases whose stays are automatically extended by virtue of their being on the approved DRG list when they

pass a DRG-specific length-of-stay threshhold. These concurrent reviews are in addition to retrospective PRO reviews of care, State licensure examination, joint EACH/RPCH credentialling, and internal facility-wide quality assurance programming.

Two features of the proposal help to deter "gaming." The first is the DRG validation performed retrospectively by PROs. The PRO will validate each DRG assigned. Explanations will be sought to reconcile differences between the DRG assignment made following the 72-hour evaluation and the discharge DRG, and differences between the DRG assigned by the RPCH and the one assigned by the PRO. Repeated discrepancies will be reported to the State licensing agency. It is likely that DRG validation (and consultation) will have a sentinel effect on RPCH DRG assignment. The second feature that helps limit "gaming" is the requirement to consult with the PRO to obtain an exceptions review and authority to extend the care of a patient. The burden is placed on the RPCH to justify the appropriateness of the site of care. Even the set of approved DRGs is subject to outside, concurrent scrutiny when the length-of-stay passes an established norm.

The flexibility of this method allows RPCHs to retain patients in the community when appropriate, and allows a procedure through which convalescing patients can be reintroduced into the community. Thus, this method of limiting services is very successful at maximizing opportunities for patients to receive care in settings as close to their homes as is appropriate. Maintaining patients in the community, where and when appropriate, makes both clinical and economic good sense.

Finally, the proposed method is reasonably unambiguous. The PRO becomes the arbiter of cases whose DRGs fall on the list of those that may be treated at RPCHs. The decision of the PRO is final and unequivocal. The patient is either certified for an extension of care at the facility or the facility is ordered to transfer the patient. Although the facility has the ability to appeal the first level of review, there is no appeal above the second level of review, that is, the decision of a physician reviewer. Furthermore, to avoid uncertainty, PRO reviewers would be available to consult with RPCH staff on any interpretation of the service limitation.

CONCLUSION

The service limitation for alternative models, such as rural primary care hospitals, proposed in this paper builds upon existing features of the EACH Program and PPS. Specifically, it features the 72-hour length-of-stay limit proposed for RPCHs, uses DRGs as the method for describing patients, and uses the PRO as a quality assurance regulator. These features are used collaboratively in this proposal. Because the proposal "reuses" existing features of the Medicare program, it minimizes the need for elaborate new policies.

Unlike the static length-of-stay limitation for RPCHs as currently envisioned, the proposed method features a clinical basis for approving care. It recognizes the variation that will exist among facilities participating as RPCHs, and attempts to accommodate it. Because the system is clinically-based and flexible, it is likely to be more palatable to providers than the system currently proposed for limiting services.

REFERENCES

AHCPR, Delivering Essential Health Services in Rural Areas: An Analysis of Alternative Models, USDHHS, Rockville, MD. 1991

American Hospital Association, Environmental Assessment for Rural Hospitals: 1992, Chicago, IL. 1992

Christianson, J., Moscovice, I., Wellever, A., and Wingert, T., "Institutional Alternatives to the Rural Hospital," Health Care Financing Review 11:87-97, 1990

EACH Grant States, Federal Issues Related to the EACH/PCH Program, Internal Memo, April, 1992

Federal Register, Notice of Proposed Rule Making: Essential Access Community Hospitals (EACHs) and Rural Primary Care Hospitals (RPCHs), Vol. 56, No. 207, pp. 55832-55414, October 25, 1991

Lemrow, N., Adams, D., Coffey, R., and Farley, D., The 50 Most Frequent DRGs, Diagnoses, and Procedures: Statistics by Hospital Size and Location, Agency for Health Care Policy and Research, Rockville, MD. 1990

Moscovice, I., Sales, A., Christianson, J., and Wellever, A., Service Limitation Options for Limited Service Rural Hospitals - Interim Report, University of Minnesota, Minneapolis, MN. January, 1992

Secretary, USDHHS, Report to Congress: Hospital Prospective Payment for Medicare, Rockville, MD. 1991

APPENDIX 1

Characteristics of FY 1991 Medicare Discharges
from Rural Hospitals with Average Daily Census Less than Ten

FY1991 DISCHARGES FROM RURAL HOSPITALS WITH AVERAGE DAILY CENSUS LESS THAN 10

DRG		NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS > 3.0	% OF CASES WITH LOS > 4.0	RELATIVE WEIGHT	% OF CASES DISCH. TO HOSP	% OF CASES DISCH. TO SNF	% DIED	% OF HOSP HAVING CASES (N=690)
DRG 89	SIMPLE PNEUMONIA & PLEURISY AGE > 17 WITH CC	12,242	6.2 (4.4)	79.4	64.5	1.1658	4.5	13.7	7.8	98.3
DRG 127	HEART FAILURE & SHOCK	11,500	5.3 (5.7)	57.9	44.9	1.0070	5.6	9.3	6.9	97.5
DRG 140	ANGINA PECTORIS	6,027	3.1 (2.5)	37.6	23.7	.6226	11.0	3.1	.3	90.6
DRG 14	SPECIFIC CEREBROVASCULAR DISORDERS EXCEPT TIA	5,581	6.2 (8.5)	57.3	46.3	1.2173	10.0	24.3	12.6	94.3
DRG 182	ESOPHAGITIS, GASTRO & MISC DIG DISORD AGE > 17 W CC	5,332	4.2 (3.1)	57.3	40.1	.7599	5.5	5.7	1.4	94.2
DRG 96	BRONCHITIS & ASTHMA AGE > 17 WITH CC	4,088	5.0 (6.3)	51.5	39.9	.9457	2.4	7.2	.7	86.1
DRG 296	NUTRITIONAL & MISC METABOLIC DISORD AGE > 17 W CC	4,084	5.4 (5.5)	61.1	47.6	.9378	4.2	16.1	6.6	90.1
DRG 320	KIDNEY & URINARY TRACT INFECTIONS AGE > 17 WITH CC	3,590	5.6 (3.7)	76.7	59.9	1.0002	3.8	15.6	2.8	86.2
DRG 79	RESPIRATORY INFECTIONS & INFLAMMAT AGE > 17 WITH CC	3,511	7.8 (6.7)	81.7	69.7	1.7813	4.6	18.6	14.5	79.4
DRG 88	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	3,307	5.0 (4.8)	58.9	44.8	.9942	4.2	5.9	3.0	80.9
DRG 138	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS WITH CC	3,075	3.8 (2.8)	51.0	34.1	.8211	10.2	5.3	2.7	85.8
DRG 174	G.I. HEMORRHAGE WITH CC	2,929	4.7 (3.2)	67.1	48.9	.9735	11.3	11.2	5.3	88.1
DRG 90	SIMPLE PNEUMONIA & PLEURISY AGE > 17 W/O CC	2,487	5.1 (3.8)	67.2	50.7	.7282	2.7	9.0	2.6	82.3
DRG 243	MEDICAL BACK PROBLEMS	2,276	4.9 (3.1)	71.2	52.5	.6672	4.0	13.6	.2	81.2
DRG 183	ESOPHAGITIS,GASTRO & MISC DIG DISORD AGE >17 W/O CC	2,176	3.3 (2.3)	43.8	27.0	.5198	4.6	3.1	.3	78.8
DRG 294	DIABETES AGE >35	2,123	5.2 (4.7)	62.6	48.0	.7516	3.5	8.5	2.6	81.0
DRG 416	SEPTICEMIA AGE > 17	2,102	6.7 (9.3)	60.5	49.5	1.5308	8.4	17.7	16.2	75.5
DRG 121	CIRCULATORY DISORD WI AMI & C.V. COMP DISCH ALIVE	2,078	6.2 (4.0)	82.7	67.5	1.6210	26.1	10.8	.0	72.2
DRG 15	TRANSIENT ISCHEMIC ATTACK & PRECEREBRAL OCCLUSIONS	2,058	3.5 (2.4)	47.9	30.3	.6524	4.6	9.1	.4	76.4
DRG 122	CIRCULATORY DISORD W AMI W/O C.V. COMP DISCH ALIVE	1,932	4.7 (2.9)	69.0	49.8	1.1667	32.6	5.3	.0	78.6
DRG 143	CHEST PAIN	1,648	2.5 (2.0)	27.5	15.5	.5118	6.8	3.5	.1	62.8
DRG 139	CARDIAC ARRHYTHMIA & CONDUCTION DISORDERS W/O CC	1,535	2.8 (2.1)	32.3	18.8	.5149	9.0	2.0	.3	74.5
DRG 297	NUTRITIONAL & MISC METABOLIC DISORD AGE >17 W/O CC	1,451	4.1 (4.0)	48.7	35.0	.5303	3.0	8.9	1.4	71.0
DRG 180	G.I. OBSTRUCTION WITH CC	1,423	5.0 (3.9)	64.6	48.5	.9216	18.8	10.2	5.6	74.2
DRG 277	CELLULITIS AGE > 17 WITH CC	1,323	5.9 (3.3)	84.0	67.5	.9198	4.5	15.6	1.0	71.4
DRG 395	RED BLOOD CELL DISORDERS AGE > 17	1,271	4.2 (3.7)	52.1	37.4	.7679	6.1	9.4	1.8	66.7
DRG 87	PULMONARY EDEMA & RESPIRATORY FAILURE	1,178	4.9 (4.0)	64.0	48.0	1.3851	10.7	8.8	21.4	60.4
DRG 321	KIDNEY & URINARY TRACT INFECTIONS AGE > 17 W/O CC	1,073	4.6 (3.3)	63.2	45.6	.6346	2.4	9.7	1.1	60.1
DRG 97	BRONCHITIS & ASTHMA AGE > 17 W/O CC	1,045	4.0 (2.1)	62.3	39.9	.6450	1.3	5.2	.0	59.4
DRG 207	DISORDERS OF THE BILIARY TRACT WITH CC	1,024	4.6 (3.3)	63.7	46.2	.9732	22.3	5.4	2.2	61.7
DRG 141	SYNCOPE & COLLAPSE WITH CC	995	3.5 (2.9)	44.4	29.4	.6950	5.0	8.0	.3	58.4
DRG 130	PERIPHERAL VASCULAR DISORDERS WITH CC	981	5.9 (4.0)	78.4	62.6	.9118	8.9	12.4	5.7	62.8
DRG 316	RENAL FAILURE	905	6.2 (7.8)	60.9	49.1	1.2814	16.2	14.1	24.9	60.3
DRG 148	MAJOR SMALL & LARGE BOWEL PROCEDURES WITH CC	893	11.2 (6.3)	98.7	95.5	3.1804	2.9	16.2	7.1	42.3
DRG 123	CIRCULATORY DISORDERS W AMI. EXPIRED	881	3.0 (3.3)	33.6	22.6	1.3920	.0	.0	100.0	55.7
DRG 236	FRACTURES OF HIP & PELVIS	857	5.9 (5.9)	66.1	52.6	.8428	18.4	29.3	2.8	59.7
DRG 134	HYPERTENSION	855	3.6 (2.5)	48.0	30.9	.5663	4.4	3.6	.2	51.7
DRG 82	RESPIRATORY NEOPLASMS	768	5.7 (5.8)	64.2	50.7	1.2453	10.7	15.5	28.3	53.6
DRG 65	DYSEQUILIBRIUM	765	3.0 (2.1)	38.4	22.3	.4727	1.7	2.2	.1	52.2
DRG 175	G.I. HEMORRHAGE W/O CC	739	3.4 (2.4)	46.5	29.1	.5723	15.7	6.4	2.0	52.3
DRG 132	ATHEROSCLEROSIS WITH CC	736	4.6 (6.3)	46.6	35.7	.7312	10.7	6.3		44.1
DRG 128	DEEP VEIN THROMBOPHLEBITIS	735	7.6 (36.8)	35.6	29.8	.7906	1.8	10.6		48.0
DRG 430	PSYCHOSES	699	8.4 (7.8)	82.1	71.0	.9074	6.9	7.6	.3	52.4
DRG 449	POISONING & TOXIC EFFECTS OF DRUGS AGE > 17 W CC	694	4.1 (2.9)	57.0	39.2	.7867	3.5	8.5		52.0
DRG 278	CELLULITIS AGE > 17 W/O CC	686	4.7 (2.5)	73.8	52.7	.6129	3.9	7.6		50.7

FY1991 DISCHARGES FROM RURAL HOSPITALS WITH AVERAGE DAILY CENSUS LESS THAN 10

DRG		NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS > 3.0	% OF CASES WITH LOS > 4.0	RELATIVE WEIGHT	% OF CASES DISCH. TO HOSP	% OF CASES DISCH. TO SNF	DIED (%)	% OF HOSP HAVING CASES (N=690)
DRG 24	SEIZURE & HEADACHE AGE > 17 WITH CC	655	4.1 (3.3)	53.0	37.1	.9792	6.4	13.0	3.1	49.1
DRG 209	MAJOR JOINT & LIMB REATTACH PROC - LOWER EXTREMITY	621	7.8 (6.9)	81.0	69.2	2.3795	2.1	47.3	2.9	15.1
DRG 99	RESPIRATORY SIGNS & SYMPTOMS WITH CC	619	3.9 (3.3)	50.1	34.8	.7962	10.7	5.7	5.5	45.5
DRG 197	CHOLECYSTECTOMY W/O C.D.E WITH CC	619	7.1 (4.3)	89.7	77.2	1.6872	3.1	6.9	2.4	39.1
DRG 239	PATHOLOGICAL FRACT & MUSCULOSKEL & CONN TISS MALIG	617	5.8 (3.4)	82.1	65.4	1.0269	4.5	24.1	2.8	42.2
DRG 142	SYNCOPE & COLLAPSE W/O CC	616	2.8 (4.0)	27.1	18.9	.5006	2.3	4.7	.0	44.6
DRG 204	DISORDERS OF PANCREAS EXCEPT MALIGNANCY	614	5.2 (3.9)	69.0	52.5	1.0870	12.5	3.4	2.9	45.7
DRG 181	G.I. OBSTRUCTION W/O CC	606	3.3 (2.3)	45.0	27.6	.4988	21.1	4.0	1.8	48.7
DRG 337	TRANSURETHRAL PROSTATECTOMY W/O CC	583	4.2 (15.1)	27.0	21.5	.6163	.3	.7	.0	22.0
DRG 336	TRANSURETHRAL PROSTATECTOMY WITH CC	577	4.7 (3.2)	65.8	47.9	.9005	1.9	5.4	.7	22.8
DRG 144	OTHER CIRCULATORY SYSTEM DIAGNOSES W CC	547	5.0 (4.0)	64.5	48.5	1.0888	8.2	11.0	11.9	42.6
DRG 208	DISORDERS OF THE BILIARY TRACT W/O CC	514	3.5 (2.3)	48.3	30.1	.5532	19.8	2.5	.0	43.5
DRG 101	OTHER RESPIRATORY SYSTEM DIAGNOSES WITH CC	505	4.5 (2.9)	66.4	47.0	.9232	5.3	7.7	10.1	38.7
DRG 131	PERIPHERAL VASCULAR DISORDERS W/O CC	494	5.5 (2.9)	83.5	65.1	.5882	5.9	6.9	2.0	43.0
DRG 188	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE > 17 WITH CC	488	4.6 (3.5)	61.4	44.8	.9846	17.8	10.9	9.6	42.0
DRG 80	RESPIRATORY INFECTIONS & INFLAMMAT AGE > 17 W/O CC	470	6.2 (3.9)	83.6	68.4	1.0066	1.3	15.7	7.4	36.7
DRG 210	HIP & FEMUR PROC EXC MAJOR JOINT AGE > 17 WITH CC	450	8.5 (4.5)	96.9	90.0	1.9386	1.8	54.4	4.4	17.7
DRG 22	HYPERTENSIVE ENCEPHALOPATHY	446	3.8 (2.7)	51.6	34.2	.7190	6.1	5.4	.7	33.9
DRG 68	OTITIS MEDIA & URI AGE > 17 WITH CC	441	4.2 (2.2)	66.9	44.1	.7277	1.8	5.4	.7	37.5
DRG 271	SKIN ULCERS	438	7.3 (6.3)	79.7	67.2	1.2480	6.2	30.1	1.6	38.3
DRG 198	CHOLECYSTECTOMY W/O C.D.E. W/O CC	435	4.4 (2.6)	67.5	46.8	.9076	.7	1.8	.0	31.4
DRG 172	DIGESTIVE MALIGNANCY WITH CC	422	6.3 (5.9)	70.3	56.8	1.2549	12.1	15.4	25.6	37.5
DRG 25	SEIZURE & HEADACHE AGE > 17 W/O CC	386	2.7 (2.1)	31.5	18.2	.5252	5.4	6.7	.3	37.1
DRG 78	PULMONARY EMBOLISM	364	6.9 (4.8)	84.4	71.0	1.4273	12.1	11.5	11.0	33.8
DRG 425	ACUTE ADJUST REACT & DISTURB OF PSYCHOSOCIAL DYS	364	3.7 (3.1)	47.5	32.2	.7113	5.8	9.1	.3	34.5
DRG 162	INGUINAL & FEMORAL HERNIA PROCEDURES AGE > 17	362	2.2 (1.6)	21.4	10.8	.4476	.6	1.4	.0	28.6
DRG 429	ORGANIC DISTURBANCES & MENTAL RETARDATION	362	9.2 (53.1)	36.4	30.8	.9342	2.2	22.7	1.4	32.2
DRG 85	PLEURAL EFFUSION WITH CC	359	5.9 (5.6)	67.4	53.6	1.1643	12.8	14.2	7.5	32.3
DRG 177	UNCOMPLICATED PEPTIC ULCER WITH CC	347	4.4 (2.6)	67.3	46.6	.7840	2.9	5.2	.9	32.5
DRG 356	FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROC	322	4.1 (2.3)	62.5	40.9	.7076	.9	3.4	.0	27.2
DRG 133	ATHEROSCLEROSIS W/O CC	320	3.5 (3.3)	41.5	28.3	.5342	21.9	2.8	5.6	26.8
DRG 161	INGUINAL & FEMORAL HERNIA PROC AGE > 17 W CC	317	3.2 (2.3)	41.2	25.1	.7382	1.3	6.3	.3	28.8
DRG 203	MALIGNANCY OF HEPATOBILIARY SYSTEM OR PANCREAS	315	6.3 (6.4)	68.5	55.4	1.1784	10.8	18.4	32.7	31.9
DRG 323	URINARY STONES WITH CC, &/OR ESW LITHOTRIPSY	306	2.8 (1.8)	33.0	17.8	.7422	18.6	1.6	.3	31.3
DRG 324	URINARY STONES W/O CC	295	2.3 (1.5)	23.4	11.4	.3898	12.5	.0	.0	30.7
DRG 280	TRAUMA TO SKIN, SUBCUT TISS & BREAST AGE > 17 W CC	293	4.4 (3.4)	58.6	41.9	.6639	4.4	15.4	1.0	31.3
DRG 419	FEVER OF UNKNOWN ORIGIN AGE > 17 WITH CC	292	5.6 (4.0)	74.0	57.8	.9548	13.0	16.4	2.4	27.4
DRG 205	DISORDERS OF LIVER EXC MALIG, CIRR, ALC HEPA W CC	287	5.9 (4.6)	74.2	59.2	1.2402	15.0	11.1	20.9	29.6
DRG 12	DEGENERATIVE NERVOUS SYSTEM DISORDERS	286	6.0 (11.6)	47.6	38.5	.9372	8.0	19.9	4.9	29.6
DRG 113	AMPUTATION FOR CIRC SYS DISORD EXC UPPER LIMB & TOE	285	9.5 (7.0)	91.9	83.3	2.6925	1.4	37.5	8.8	24.5
DRG 403	LYMPHOMA & NON-ACUTE LEUKEMIA W CC	282	6.0 (5.1)	71.5	57.1	1.6125	9.6	16.3	[illegible]	27.0
DRG 331	OTHER KIDNEY & URINARY TRACT DIAG AGE > 17 W CC	280	4.9 (3.6)	66.8	49.8	.9566	16.8	10.0	[illegible]	[illegible].0
DRG 423	OTHER INFECTIOUS & PARASITIC DISEASES OF DIAGNOSES	275	6.6 (4.0)	87.5	73.6	1.6240	5.8	16.[illegible]	[illegible]	4
DRG 421	VIRAL ILLNESS AGE > 17	268	3.7 (2.6)	51.4	33.7	.6667	1.1	[illegible]	.4	[illegible]
DRG 462	REHABILITATION	266	19.6 (12.5)	99.8	99.3	1.8346	4.1	10.2	[illegible]	3.5

DRG		NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS > 3.0	% OF CASES WITH LOS > 4.0	RELATIVE WEIGHT	% OF CASES DISCH. TO HOSP	% OF CASES DISCH. TO SNF	DIED (%)	% OF HOSP HAVING CASES (N=690)
DRG 434	ALC/DRUG ABUSE OR DEP, DETOX OR OTH SYMPT TRT W CC	256	6.0 (6.2)	65.8	52.6	.7689	5.9	4.3	2.0	23.5
DRG 463	SIGNS & SYMPTOMS W CC	246	5.9 (11.1)	47.2	38.1	.7297	3.7	14.6	3.7	26.4
DRG 254	FX,SPRN,STR&DIS OF UPARM,LOWLEG EX FT AGE>17 W/O CC	241	4.6 (6.1)	46.4	35.5	.4238	5.4	19.1	.4	26.5
DRG 468	EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAG	232	9.2 (6.9)	91.2	82.2	3.4238	5.2	18.5	9.5	23.0
DRG 258	TOTAL MASTECTOMY FOR MALIGNANCY W/O CC	230	3.7 (1.6)	61.3	34.2	.7057	.4	1.7	.0	22.6
DRG 359	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY W/O CC	226	4.5 (1.5)	85.1	57.2	.7823	.0	2.2	.0	21.4
DRG 281	TRAUMA TO SKIN, SUBCUT TISS & BREAST AGE >17 W/O CC	219	3.4 (2.6)	43.1	27.5	.4167	3.2	11.4	.0	23.0
DRG 435	ALC/DRUG ABUSE OR DEP, DETOX OR OTH SYM TRT W/O CC	217	7.9 (8.3)	75.8	64.3	.5141	3.2	1.8	.5	14.9
DRG 263	SKIN GRAFT &/OR DEBRID FOR SKN ULCER OR CELLU W CC	216	10.3 (8.1)	92.5	84.7	2.6866	4.2	35.6	7.9	19.3
DRG 450	POISONING & TOXIC EFFECTS OF DRUGS AGE > 17 W/O CC	216	3.1 (2.3)	39.6	24.1	.4428	6.0	3.7	.0	24.6
DRG 247	SIGN & SYMPTOMS OF MUSCULOSKEL SYSTEM & CONN TISSUE	215	3.7 (2.7)	48.6	32.0	.5445	5.6	11.2	.5	22.2
DRG 253	FX,SPRN,STRN&DIS OF UPARM,LOWLEG EX FT AGE >17 W CC	214	4.7 (3.4)	64.5	47.1	.7885	8.9	25.2	.5	23.6
DRG 100	RESPIRATORY SIGNS & SYMPTOMS W/O CC	205	2.6 (1.8)	29.3	16.0	.4983	6.8	1.5	1.0	20.7
DRG 195	CHOLECYSTECTOMY W C.D.E. WITH CC	203	9.0 (3.9)	99.2	95.7	2.2099	3.4	13.3	3.4	18.8
DRG 178	UNCOMPLICATED PEPTIC ULCER W/O CC	201	3.6 (3.7)	41.8	29.3	.5656	1.5	3.0	.5	22.5
DRG 257	TOTAL MASTECTOMY FOR MALIGNANCY WITH CC	200	4.6 (2.5)	72.6	51.2	.9024	.5	9.0	1.0	20.7
DRG 477	NON-EXTENSIVE O.R. PROC UNRELATED TO PRINCIPAL DIAG	200	5.9 (8.2)	55.6	44.5	1.4338	5.0	8.5	4.5	21.6
DRG 154	STOMACH, ESOPHAGEAL & DUODENAL PROC AGE > 17 W CC	198	11.6 (6.6)	99.0	96.2	4.1746	5.1	18.7	11.1	17.0
DRG 325	KIDNEY&URINARY TRACT SIGNS & SYMPTOMS AGE >17 W CC	198	4.3 (2.9)	59.9	41.6	.6673	14.1	11.6	1.0	22.0
DRG 346	MALIGNANCY, MALE REPRODUCTIVE SYSTEM, WITH CC	197	5.4 (3.8)	73.3	56.6	.9609	7.1	15.7	22.8	21.6
DRG 176	COMPLICATED PEPTIC ULCER	196	5.4 (4.0)	70.9	54.7	1.0235	18.4	7.7	3.6	22.0
DRG 69	OTITIS MEDIA & URI AGE > 17 W/O CC	195	3.8 (1.9)	59.4	36.0	.5156	2.1	2.6	.5	20.3
DRG 244	BONE DISEASES & SPECIFIC ARTHROPATHIES WITH CC	193	5.1 (3.7)	67.9	51.2	.7665	2.1	13.0	1.6	20.7
DRG 475	RESPIRATORY SYSTEM DIAG WITH VENTILATOR SUPPORT	191	6.7 (5.4)	78.4	64.8	3.6094	24.1	7.9	30.4	12.6
DRG 92	INTERSTITIAL LUNG DISEASE WITH CC	186	5.9 (3.2)	85.2	68.6	1.1997	7.5	8.6	8.1	18.3
DRG 16	NONSPECIFIC CEREBROVASCULAR DISORDERS W CC	185	5.8 (5.1)	69.2	54.8	1.0824	6.5	11.9	5.9	15.7
DRG 358	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY WITH CC	182	5.9 (2.8)	90.3	74.5	1.1104	1.6	2.7	1.1	19.1
DRG 467	OTHER FACTORS INFLUENCING HEALTH STATUS	178	20.2 (66.8)	66.4	59.5	.4303	9.6	10.1	7.3	7.8
DRG 350	INFLAMMATION OF THE MALE REPRODUCTIVE SYSTEM	177	4.7 (2.7)	70.8	50.7	.6731	5.6	6.8	.0	19.3
DRG 418	POSTOPERATIVE & POST-TRAUMATIC INFECTIONS	165	6.3 (4.3)	81.1	66.3	.9585	10.3	13.9	3.0	19.0
DRG 149	MAJOR SMALL & LARGE BOWEL PROCEDURES W/O CC	163	8.3 (3.8)	98.3	92.9	1.5443	.0	9.8	1.2	15.9
DRG 202	CIRRHOSIS & ALCOHOLIC HEPATITIS	158	6.1 (4.9)	74.9	60.3	1.2231	9.5	8.9	13.9	16.1
DRG 150	PERITONEAL ADHESIOLYSIS WITH CC	157	10.9 (9.4)	91.4	83.7	2.5069	3.8	14.0	1.3	16.2
DRG 300	ENDOCRINE DISORDERS WITH CC	156	5.8 (4.0)	78.3	62.3	1.1191	5.8	13.5	3.8	17.8
DRG 398	RETICULOENDOTHELIAL & IMMUNITY DISORDERS WITH CC	156	5.7 (5.7)	64.5	51.0	1.2080	10.9	7.1	5.1	18.3
DRG 426	DEPRESSIVE NEUROSES	155	4.4 (3.7)	56.7	41.1	.6241	5.2	4.5	.6	17.7
DRG 211	HIP & FEMUR PROC EXC MAJOR JOINT AGE > 17 W/O CC	154	7.4 (3.2)	97.6	90.1	1.3747	1.9	60.4	.0	10.4
DRG 256	OTHER MUSCULOSKELETAL SYS & CONNECTIVE TISSUE DIAG	150	3.6 (4.0)	40.8	28.9	.6409	4.7	7.3	.7	16.7
DRG 159	HERNIA PROC EXC INGUINAL & FEMORAL AGE > 17 W CC	149	4.6 (3.5)	61.8	44.9	1.0701	.0	6.7	2.0	15.5
DRG 160	HERNIA PROC EXC INGUINAL & FEMORAL AGE > 17 W/O CC	149	3.0 (1.9)	37.5	21.1	.6156	.0	2.0	.0	17.7
DRG 245	BONE DISEASES & SPECIFIC ARTHROPATHIES W/O CC	149	7.5 (21.2)	45.5	38.0	.5434	2.0	10.1	.0	17.0
DRG 94	PNEUMOTHORAX WITH CC	141	6.6 (4.3)	84.9	70.8	1.2472	18.4	5.7	5.7	16.2
DRG 413	OTHER MYELOPROL DIS OR POOR DIFF NEOPL DIAG W CC	141	6.9 (7.9)	67.1	55.2	1.3299	7.1	15.6	40.4	17.0
DRG 240	CONNECTIVE TISSUE DISORDERS WITH CC	139	5.4 (4.6)	66.2	51.1	1.1486	4.3	9.4	2.9	15.5
DRG 129	CARDIAC ARREST, UNEXPLAINED	137	4.0 (5.6)	40.7	30.5	1.2551	9.5	1.5	68.6	14.5

FY1991 DISCHARGES FROM RURAL HOSPITALS WITH AVERAGE DAILY CENSUS LESS THAN 10

DRG		NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS > 3.0	% OF CASES WITH LOS > 4.0	RELATIVE WEIGHT	% OF CASES DISCH. TO HOSP	% OF CASES DISCH. TO SNF	% DIED	% OF HOSP HAVING CASES (N=690)
DRG 189	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE > 17 W/O CC	135	3.0 (2.7)	36.1	23.0	.4697	23.7	2.2	5.2	16.1
DRG 397	COAGULATION DISORDERS	129	4.9 (4.3)	61.2	46.0	1.2128	7.8	18.6	9.3	14.5
DRG 83	MAJOR CHEST TRAUMA WITH CC	128	6.3 (6.3)	67.9	54.8	.9606	7.0	14.8	2.3	15.9
DRG 437	ALC/DRUG DEPENDENCE, COMBINED REHAB & DETOX THERAPY	127	17.8 (8.0)	100.0	99.9	1.1775	1.6	.8	.0	1.9
DRG 272	MAJOR SKIN DISORDERS WITH CC	126	5.6 (4.8)	67.5	52.8	1.0789	3.2	11.1	3.2	15.2
DRG 464	SIGNS & SYMPTOMS W/O CC	125	3.5 (2.7)	46.4	30.4	.4495	7.2	12.8	.8	14.8
DRG 66	EPISTAXIS	124	2.8 (2.5)	32.7	20.4	.4608	10.5	3.2	.0	14.9
DRG 415	O.R. PROCEDURE FOR INFECTIOUS & PARASITIC DISEASES	124	11.6 (11.1)	89.8	81.9	3.6042	5.6	28.2	6.5	13.0
DRG 248	TENDONITIS, MYOSITIS & BURSITIS	117	4.6 (2.9)	67.7	48.3	.6673	5.1	12.0	.0	14.1
DRG 34	OTHER DISORDERS OF NERVOUS SYSTEM WITH CC	115	4.5 (3.0)	64.3	45.8	1.1524	14.8	15.7	4.3	14.1
DRG 157	ANAL & STOMAL PROCEDURES WITH CC	112	4.6 (3.5)	61.3	44.6	.9372	2.7	6.3	.0	13.0
DRG 158	ANAL & STOMAL PROCEDURES W/O CC	111	3.1 (2.2)	39.2	23.4	.4909	.0	2.7	.0	12.5
DRG 452	COMPLICATIONS OF TREATMENT WITH CC	110	4.1 (3.1)	55.5	38.5	.8184	10.9	9.1	.9	13.2
DRG 454	OTHER INJURY, POISONING & TOXIC EFF DIAG WITH CC	109	3.5 (2.4)	48.0	30.2	.9096	4.6	7.3	4.6	14.2
DRG 102	OTHER RESPIRATORY SYSTEM DIAGNOSIS W/O CC	106	3.9 (2.8)	52.4	35.2	.5272	6.6	6.6	2.8	11.6
DRG 145	OTHER CIRCULATORY SYSTEM DIAGNOSES W/O CC	105	2.9 (2.4)	35.0	21.7	.6454	10.5	3.8	4.8	13.2
DRG 283	MINOR SKIN DISORDERS WITH CC	105	5.0 (3.1)	73.3	54.7	.7350	4.8	5.7	1.9	13.2
DRG 18	CRANIAL & PERIPHERAL NERVE DISORDERS WITH CC	103	4.5 (2.3)	72.8	50.0	.8971	8.7	14.6	1.0	12.5
DRG 73	OTHER EAR, NOSE, MOUTH & THROAT DIAGNOSES AGE > 17	102	4.1 (2.7)	58.3	39.4	.7500	2.0	17.6	1.0	11.9
DRG 310	TRANSURETHRAL PROCEDURES WITH CC	102	3.4 (2.8)	43.7	28.7	.8792	2.0	2.9	2.0	9.6
DRG 193	BILIARY TRACT PROC W CC EXCEPT ONLY CHOLECYST	99	10.5 (5.3)	99.1	96.3	3.0275	7.1	17.2	4.0	11.6
DRG 179	INFLAMMATORY BOWEL DISEASE	98	6.1 (4.9)	74.3	59.8	1.1141	6.1	3.1	2.0	10.6
DRG 238	OSTEOMYELITIS	98	8.8 (6.6)	90.1	80.5	1.5884	10.2	23.5	.0	11.7
DRG 420	FEVER OF UNKNOWN ORIGIN AGE > 17 W/O CC	98	3.9 (2.0)	61.1	38.1	.6484	8.2	5.1	.0	12.0
DRG 10	NERVOUS SYSTEM NEOPLASMS WITH CC	97	6.0 (8.5)	55.5	44.6	1.2834	15.5	19.6	14.4	12.6
DRG 269	OTHER SKIN, SUBCUT TISS & BREAST PROCEDURE W/O CC	96	7.9 (7.0)	81.8	70.1	1.6600	2.1	27.1	2.1	12.8
DRG 23	NONTRAUMATIC STUPOR & COMA	92	4.8 (4.8)	56.1	42.4	.8715	8.7	21.7	8.7	11.3
DRG 28	TRAUMA STUPOR & COMA, COMA < 1 HR AGE >17 WITH CC	92	5.1 (6.5)	52.0	40.4	1.2371	25.0	12.0	5.4	11.9
DRG 444	TRAUMATIC INJURY AGE > 17 W CC	91	4.6 (4.3)	56.2	41.8	.7566	7.7	13.2	2.2	12.3
DRG 318	KIDNEY & URINARY TRACT NEOPLASMS WITH CC	88	5.8 (5.5)	66.0	52.3	1.0908	12.5	13.6	20.5	11.3
DRG 274	MALIGNANT BREAST DISORDERS WITH CC	87	10.4 (23.6)	60.0	51.7	1.1312	8.0	16.1	32.2	10.3
DRG 326	KIDNEY&URINARY TRACT SINGS & SYMPT AGE > 17 W/O CC	87	2.9 (1.9)	36.6	20.2	.4219	23.0	5.7	.0	10.1
DRG 332	OTHER KIDNEY & URINARY TRACT DIAG AGE > 17 W/O CC	85	4.4 (7.2)	40.7	31.4	.5340	18.8	3.5	1.2	10.6
DRG 170	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES WITH CC	81	9.8 (7.5)	91.9	83.5	2.7582	3.7	18.5	21.0	9.1
DRG 311	TRANSURETHRAL PROCEDURES W/O CC	80	2.4 (1.6)	25.9	13.1	.5182	2.5	2.5	.0	6.4
DRG 120	OTHER CIRCULATORY SYSTEM O.R. PROCEDURES	79	8.4 (7.5)	82.9	71.8	2.0736	8.9	21.5	6.3	7.7
DRG 306	PROSTATECTOMY WITH CC	79	5.6 (4.4)	71.6	56.1	1.2922	1.3	10.1	.0	7.4
DRG 219	LOWER EXT&HUMER PROC EXC HIP,FOOT,FEMUR >17 W/O CC	78	3.8 (2.8)	52.5	35.2	.8977	2.6	12.8	1.3	5.7
DRG 473	ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE AGE > 17	78	4.5 (4.9)	51.4	38.6	3.3381	21.8	11.5	35.9	8.7
DRG 19	CRANIAL & PERIPHERAL NERVE DISORDERS W/O CC	77	8.9 (41.6)	39.6	33.5	.5735	3.9	9.1	1.3	9.9
DRG 135	CARDIAC CONGEN & VALV DISORDERS AGE > 17 WITH CC	74	4.4 (3.8)	56.6	41.2	.8770	20.3	10.8	4.1	9.0
DRG 241	CONNECTIVE TISSUE DISORDERS W/O CC	74	4.2 (2.7)	60.7	41.3	.5704	2.7	9.5	.0	8.4
DRG 307	PROSTATECTOMY W/O CC	74	3.2 (1.3)	48.1	21.3	.7100	.0	4.1	.0	5.7
DRG 410	CHEMOTHERAPY WITHOUT ACUTE LEUKEMIA AS SEC DIAG	74	3.0 (1.2)	42.3	17.9	.5540	1.4	.0	1.4	2.9
DRG 17	NONSPECIFIC CEREBROVASCULAR DISORDERS W/O CC	72	4.3 (2.3)	67.5	45.4	.6331	6.9	16.7	.0	7.2

DRG		NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS > 3.0	% OF CASES WITH LOS > 4.0	RELATIVE WEIGHT	% OF CASES DISCH. TO HOSP	% OF CASES DISCH. TO SNF	DIED (%)	% OF HOSP HAVING CASES (N=690)
DRG 31	CONCUSSION AGE > 17 WITH CC	71	5.0 (9.2)	42.3	33.4	.7139	2.8	12.7	.0	8.7
DRG 366	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM WITH CC	71	7.1 (8.2)	68.5	56.7	1.1681	16.9	26.8	23.9	9.1
DRG 173	DIGESTIVE MALIGNANCY WITH W/O CC	70	3.9 (2.6)	55.0	36.6	.6218	17.1	14.3	17.1	9.6
DRG 32	CONCUSSION AGE > 17 W/O CC	69	2.7 (1.5)	33.3	16.3	.4145	4.3	4.3	.0	8.8
DRG 348	BENIGN PROSTATIC HYPERTROPHY WITH CC	68	4.0 (3.0)	55.0	37.7	.6709	20.6	11.8	.0	9.0
DRG 251	FX,SPRN,STR&DISL OF FOREARM,HAND,FOOT AGE>17 W/O CC	67	2.7 (1.7)	31.7	16.6	.4291	4.5	9.0	.0	9.0
DRG 273	MAJOR SKIN DISORDERS W/O CC	67	3.9 (2.3)	58.7	37.7	.6575	1.5	4.5	3.0	7.5
DRG 308	MINOR BLADDER PROCEDURES WITH CC	66	5.8 (4.2)	75.1	59.4	1.4341	3.0	16.7	4.5	6.5
DRG 460	NON-EXTENSIVE BURNS W/O O.R. PROCEDURE	66	6.8 (4.5)	85.8	72.3	1.0435	.0	18.2	1.5	8.1
DRG 76	OTHER RESP SYSTEM O.R. PROCEDURES W CC	65	11.2 (10.4)	90.3	82.4	2.3804	7.7	21.5	4.6	7.5
DRG 116	PERM CARD PACE IMPLANT W/O AMI, HEART FAIL OR SHOCK	65	5.5 (2.7)	85.8	67.3	2.4973	1.5	9.2	1.5	4.5
DRG 447	ALLERGIC REACTIONS AGE > 17	63	2.1 (1.5)	18.6	9.2	.4776	3.2	1.6	.0	8.3
DRG 185	DENTAL & ORAL DIS EXC EXTRACTIONS & RESTOR, AGE >17	62	4.0 (2.4)	59.5	39.2	.7766	6.5	8.1	3.2	8.3
DRG 20	NERVOUS SYSTEM INFECTION EXCEPT VIRAL MENINGITIS	60	5.9 (4.6)	74.1	59.1	1.9348	18.3	8.3	10.0	7.7
DRG 433	ALCOHOL/DRUG ABUSE OF DEPENDENCE, LEFT AMA	60	4.6 (4.6)	54.8	41.0	.3754	.0	.0	.0	3.8
DRG 242	SEPTIC ARTHRITIS	59	7.0 (5.0)	84.0	70.8	1.2558	5.1	13.6	.0	7.8
DRG 445	TRAUMATIC INJURY AGE > 17 W/O CC	59	3.9 (2.6)	55.2	36.6	.4911	3.4	13.6	.0	7.4
DRG 206	DISORDERS OF LIVER EXC MALIG,CIRR, ALC HEPA W/O CC	57	3.9 (2.1)	61.3	38.6	.6029	15.8	3.5	5.3	8.3
DRG 246	NON-SPECIFIC ARTHROPATHIES	57	4.6 (6.4)	46.4	35.6	.5872	7.0	7.0	.0	7.4
DRG 404	LYMPHOMA & NON-ACUTE LEUKEMIA W/O CC	57	4.6 (4.4)	55.2	41.2	.7282	12.3	3.5	12.3	7.0
DRG 114	UPPER LIMB & TOE AMPUTATION FOR CIRC SYS DISORDERS	56	8.1 (6.3)	86.1	74.9	1.5499	3.6	21.4	3.6	7.5
DRG 29	TRAUMA STUPOR & COMA, COMA < 1 HR AGE >17 W/O CC	55	3.2 (3.0)	36.9	24.6	.5525	23.6	12.7	.0	7.7
DRG 235	FRACTURES OF FEMUR	55	6.5 (8.5)	61.6	50.2	1.0974	21.8	23.6	1.8	7.0
DRG 164	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG WITH CC	53	8.5 (3.3)	99.5	96.7	2.1733	5.7	7.5	5.7	6.8
DRG 341	PENIS PROCEDURES	53	4.4 (2.1)	74.7	50.8	.9615	1.9	.0	.0	3.5
DRG 354	UTERINE, ADNEXA PROC FOR NON-OVARIAN/ADNEX MAL W CC	53	6.6 (3.1)	93.8	81.6	1.3909	.0	9.4	.0	6.5
DRG 436	ALC/DRUG DEPENDENCE W REHABILITATION THERAPY	52	16.3 (7.9)	100.0	99.8	1.0782	3.8	.0	.0	2.0
DRG 290	THYROID PROCEDURES	51	3.2 (2.0)	42.4	24.4	.7491	.0	.0	.0	6.1
DRG 250	FX, SPRN & DISL OF FOREARM, HAND, FOOT AGE >17 W CC	50	4.6 (5.0)	52.5	39.6	.7021	4.0	12.0	2.0	6.4
DRG 225	FOOT PROCEDURES	48	3.7 (4.6)	39.2	28.5	.7825	.0	12.5	2.1	4.9
DRG 287	SKIN GRAFTS & WOUND DEB FOR ENDOC,NUTRIT&METAB DIS	48	12.7 (18.1)	80.1	71.7	2.2533	4.2	43.8	4.2	5.4
DRG 35	OTHER DISORDERS OF NERVOUS SYSTEM W/O CC	46	2.8 (2.1)	33.0	19.2	.5648	4.3	6.5	4.3	6.1
DRG 166	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W CC	46	5.7 (2.8)	87.5	70.2	1.2931	.0	4.3	.0	6.1
DRG 338	TESTES PROCEDURES, FOR MALIGNANCY	46	2.5 (2.5)	26.9	16.9	.7776	.0	2.2	.0	5.4
DRG 151	PERITONEAL ADHESIOLYSIS W/O CC	45	6.1 (4.2)	79.6	64.4	1.2042	.0	2.2	.0	5.8
DRG 249	AFTERCARE, MUSCULOSKELETAL SYSTEM & CONNECT TISSUE	45	9.1 (23.2)	53.2	45.2	.7156	15.6	13.3	.0	5.4
DRG 284	MINOR SKIN DISORDERS W/O CC	45	3.6 (2.8)	47.9	31.6	.4410	6.7	8.9	.0	5.9
DRG 301	ENDOCRINE DISORDERS W/O CC	45	5.1 (3.8)	68.2	51.6	.5923	6.7	13.3	.0	6.1
DRG 126	ACUTE & SUBACUTE ENDOCARDITIS	44	8.8 (4.6)	97.2	90.9	2.8874	25.0	29.5	4.5	4.9
DRG 218	LOWER EXT&HUMER PROC EXC HIP,FOOT,FEMUR AGE>17 W CC	44	6.0 (3.4)	85.6	69.8	1.4112	.0	27.3	2.3	4.6
DRG 355	UTERINE, ADNEXA PROC FOR NON-OVAR/ADNEX MAL W/O CC	44	5.3 (3.0)	79.7	61.0	.8562	.0	.0	.0	6.2
DRG 369	MENSTRUAL & OTHER FEMALE REPRODUCTIVE SYS DISORD	44	3.7 (2.8)	48.8	32.5	.5274	11.4	13.6	2.3	5.7
DRG 167	APPENDECTOMY W/O COMPLICATED PRINCIPAL DIAG W/O CC	42	3.6 (1.7)	58.0	32.9	.7597	.0	.0	.0	5.2
DRG 455	OTHER INJURY, POISONING & TOXIC EFF DIAG W/O CC	42	2.7 (2.7)	30.0	19.1	.4187	7.1	4.8	[illegible]	5.7
DRG 64	EAR, NOSE, MOTH & THROAT MALIGNANCY	41	5.2 (4.6)	64.5	49.7	1.1190	7.3	14.[illegible]		5

DRG		NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS > 3.0	% OF CASES WITH LOS > 4.0	RELATIVE WEIGHT	% OF CASES DISCH. TO HOSP	% OF CASES DISCH. TO SNF	DIED (%)	% OF HOSP HAVING CASES (N=690)
DRG 442	OTHER O.R. PROCEDURES FOR INJURIES WITH CC	41	6.5 (5.2)	77.8	63.9	1.9377	4.9	19.5	2.4	5.7
DRG 483	TRACHEOSTOMY EXC FOR MOUTH, LARYNX OR PHARYNX DIS	41	20.9 (18.2)	98.6	96.6	14.1506	12.2	29.3	34.1	3.0
DRG 93	INTERSTITIAL LUNG DISEASE W/O CC	40	4.7 (2.7)	72.1	51.9	.8028	5.0	2.5	7.5	5.2
DRG 11	NERVOUS SYSTEM NEOPLASMS W/O CC	39	5.1 (7.9)	47.0	36.9	.7545	46.2	7.7	7.7	5.2
DRG 414	OTHER MYELO DIS OR POOR DIFF NEOPL DIAG W/O CC	39	6.1 (7.1)	62.4	50.2	.7231	10.3	15.4	38.5	5.2
DRG 466	AFTERCARE W/O HISTORY OF MALIG AS SECONDARY DIA	38	20.5 (42.0)	80.3	73.6	.5693	7.9	10.5	2.6	3.0
DRG 478	OTHER VASCULAR PROCEDURES W CC	38	7.8 (5.0)	90.5	79.6	2.2177	2.6	21.1	.0	3.8
DRG 191	PANCREAS, LIVER & SHUNT PROCEDURES WITH CC	37	9.1 (5.3)	96.4	89.7	4.4412	.0	32.4	2.7	4.6
DRG 217	WND DEBRID & SKN GRFT EXC HAND,FOR MUSC &CONN TISS	37	9.7 (7.2)	92.8	84.7	3.1641	5.4	35.1	2.7	4.5
DRG 264	SKIN GRAFT &/OR DEBRID FOR SKN ULC OR CELLU W/O CC	37	8.5 (7.3)	84.9	74.1	1.2982	.0	21.6	.0	4.6
DRG 75	MAJOR CHEST PROCEDURES	35	11.6 (12.0)	87.6	79.3	3.0063	2.9	14.3	11.4	2.6
DRG 119	VEIN LIGATION & STRIPPING	35	3.4 (3.7)	39.0	27.3	.9379	.0	2.9	.0	4.1
DRG 223	MAJOR SHOULD/ELBOW PROC,OR OTH UPPER EXTR PROC W CC	34	2.6 (1.6)	29.7	15.1	.8044	.0	11.8	.0	2.5
DRG 237	SPRAINS, STRAINS, & DISLOCAT OF HIP, PELVIS & THIGH	34	3.6 (2.3)	49.9	31.4	.5583	.0	20.6	.0	4.9
DRG 295	DIABETES AGE 0-35	34	3.7 (2.1)	54.5	33.8	.7400	5.9	2.9	.0	4.1
DRG 357	UTERINE & ADNEXA PROC FOR OVARIAN OR ADNEXAL MALIG	34	8.4 (5.5)	92.4	82.9	2.2167	5.9	5.9	8.8	4.5
DRG 360	VAGINA, CERVIX & VULVA PROCEDURES	34	4.1 (2.0)	68.2	43.7	.7757	.0	8.8	.0	4.3
DRG 86	PLEURAL EFFUSION W/O CC	33	4.4 (3.1)	61.1	43.4	.6834	15.2	3.0	3.0	4.2
DRG 270	OTHER SKIN, SUBCUT TISS & BREAST PROCEDURE W/O CC	33	3.8 (4.0)	43.6	31.1	.6551	3.0	6.1	.0	4.1
DRG 399	RETICULOENDOTHELIAL & IMMUNITY DISORDERS W/O CC	33	5.2 (3.9)	68.0	51.8	.6661	15.2	18.2	.0	4.5
DRG 9	SPINAL DISORDERS & INJURIES	32	5.1 (3.3)	71.7	53.9	1.2933	15.6	12.5	3.1	4.3
DRG 339	TESTES PROCEDURES, NON-MALIGNANCY AGE > 17	32	3.4 (2.9)	42.5	28.2	.6382	.0	9.4	.0	4.3
DRG 487	OTHER MULTIPLE SIGNIFICANT TRAUMA	32	7.7 (11.0)	64.7	54.2	1.8218	15.6	9.4	6.3	4.3
DRG 13	MULTIPLE SCLEROSIS & CEREBELLAR ATAXIA	31	4.3 (2.4)	67.1	45.5	.8524	3.2	3.2	.0	3.8
DRG 110	MAJOR CARDIOVASCULAR PROCEDURES WITH CC	31	9.5 (6.9)	92.4	84.0	4.2703	6.5	25.8	12.9	1.6
DRG 196	CHOLECYSTECTOMY W C.D.E. W/O CC	31	7.7 (3.5)	97.4	90.1	1.3547	.0	3.2	.0	4.2
DRG 315	OTHER KIDNEY & URINARY TRACT O.R. PROCEDURES	31	8.8 (7.7)	85.3	74.8	2.1027	.0	22.6	12.9	3.8
DRG 427	NEUROSES EXCEPT DEPRESSIVE	31	6.8 (6.2)	75.1	62.2	.6028	3.2	6.5	.0	2.9
DRG 5	EXTRACRANIAL VASCULAR PROCEDURES	30	3.9 (3.5)	48.7	34.3	1.5241	3.3	3.3	.0	1.6
DRG 47	OTHER DISORDERS OF THE EYE AGE > 17 W/O CC	30	5.0 (3.3)	70.7	52.9	.3923	3.3	6.7	.0	3.8
DRG 146	RECTAL RESECTION WITH CC	30	9.0 (4.4)	98.5	93.9	2.5777	3.3	16.7	.0	3.5
DRG 155	STOMACH, ESOPHAGEAL & DUODENAL PROC AGE > 17 W/O CC	30	7.6 (4.3)	93.5	83.4	1.5472	.0	6.7	.0	3.8
DRG 165	APPENDECTOMY W COMPLICATED PRINCIPAL DIAG W/O CC	30	6.8 (2.6)	97.9	89.5	1.2562	.0	6.7	.0	3.9
DRG 364	D&C, CONIZATION EXCEPT FOR MALIGNANCY	30	2.5 (1.8)	26.9	14.5	.5295	.0	.0	.0	3.9
DRG 365	OTHER FEMALE REPRODUCTIVE SYSTEM O.R. PROCEDURES	30	8.1 (6.0)	88.1	77.2	1.6878	.0	20.0	10.0	3.3
DRG 46	OTHER DISORDERS OF THE EYE AGE > 17 W CC	29	4.5 (2.7)	67.6	47.5	.6709	6.9	10.3	6.9	4.1
DRG 152	MINOR SMALL & LARGE BOWEL PROCEDURES WITH CC	28	7.5 (4.8)	89.4	77.8	1.7255	.0	25.0	.0	3.9
DRG 453	COMPLICATIONS OF TREATMENT W/O CC	28	3.8 (3.3)	48.6	33.7	.4177	14.3	3.6	3.6	3.6
DRG 334	MAJOR MALE PELVIC PROCEDURES W CC	27	8.5 (2.8)	99.9	98.6	1.7509	.0	3.7	3.7	2.6
DRG 213	AMPUTATION FOR MUSCULOSKEL SYS & CONN TISSUE DISORD	26	7.2 (4.0)	92.4	81.0	1.7471	.0	50.0	.0	3.2
DRG 309	MINOR BLADDER PROCEDURES W.O CC	26	3.9 (3.4)	49.0	34.3	.7375	.0	.0	.0	2.9
DRG 231	LOCAL EXCIS&REMOV OF INT FIX DEVISES EXC HIP&FEMUR	25	4.1 (3.4)	53.8	38.0	1.0817	.0	4.0		2.9
DRG 349	BENIGN PROSTATIC HYPERTROPHY W/O CC	25	4.1 (4.6)	46.9	34.5	.4049	24.0	12.0		2
DRG 368	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM	25	6.6 (6.3)	72.1	59.1	.9233	8.0	[illegible]	[illegible]	[illegible]
DRG 214	BACK & NECK PROCEDURES WITH CC	24	4.5 (2.7)	68.5	48.3	1.8748	.0	.0	[illegible]	[illegible]

DRG		NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS > 3.0	% OF CASES WITH LOS > 4.0	RELATIVE WEIGHT	% OF CASES DISCH. TO HOSP	% OF CASES DISCH. TO SNF	DIED (%)	% OF HOSP HAVING CASES (N=690)
DRG 224	SHOULD, ELBOW OR FOREARM PROC, EXC JT PROC, W/O CC	24	2.6 (2.0)	29.8	17.2	.6306	.0	8.3	.0	2.2
DRG 347	MALIGNANCY, MALE REPRODUCTIVE SYSTEM, W/O CC	24	3.5 (2.8)	44.2	29.2	.5016	16.7	12.5	25.0	3.3
DRG 440	WOUND DEBRIDEMENTS FOR INJURIES	23	6.4 (5.3)	75.5	61.6	1.8492	4.3	13.0	.0	2.6
DRG 443	OTHER O.R. PROCEDURES FOR INJURIES W/O CC	23	3.2 (2.7)	40.0	25.9	.7595	.0	21.7	.0	3.0
DRG 84	MAJOR CHEST TRAUMA W/O CC	22	4.5 (3.7)	59.2	43.4	.4920	.0	9.1	.0	3.2
DRG 44	ACUTE MAJOR EYE INFECTIONS	21	4.3 (2.4)	66.8	45.4	.6119	4.8	4.8	.0	3.0
DRG 215	BACK & NECK PROCEDURES W/O CC	21	4.1 (3.1)	56.3	39.4	1.1156	4.8	4.8	.0	.6
DRG 228	MAJOR THUMB OR JT PROC,OR HAND OR WRIST PROC W CC	21	2.5 (2.1)	28.4	16.5	.8015	.0	4.8	.0	1.6
DRG 335	MAJOR MALE PELVIC PROCEDURES W/O CC	21	7.1 (2.5)	99.0	93.2	1.3574	4.8	4.8	.0	1.7
DRG 400	LYMPHOMA & LEUKEMIA W MAJOR O.R. PROCEDURE	21	8.1 (6.0)	88.6	77.9	2.5985	4.8	4.8	4.8	2.9
DRG 476	PROSTATIC O.R. PROC UNRELATED TO PRINCIPAL DIAG	21	8.1 (4.9)	93.7	84.5	2.2175	4.8	9.5	4.8	2.2
DRG 227	SOFT TISSUE PROCEDURES W/O CC	20	2.4 (1.6)	25.5	12.7	.6791	.0	5.0	.0	2.2
DRG 199	HEPATOBILIARY DIAGNOSTIC PROCEDURE FOR MALIGNANCY	18	10.6 (6.6)	97.1	91.9	2.4049	11.1	11.1	11.1	2.6
DRG 226	SOFT TISSUE PROCEDURES WITH CC	18	4.9 (3.2)	69.9	51.8	1.3613	5.6	11.1	.0	2.3
DRG 275	MALIGNANT BREAST DISORDERS W/O CC	18	4.1 (2.6)	59.0	39.9	.5870	11.1	16.7	16.7	2.5
DRG 319	KIDNEY & URINARY TRACT NEOPLASMS W/O CC	18	7.8 (12.3)	62.6	52.6	.5455	22.2	5.6	16.7	2.6
DRG 95	PNEUMOTHORAX W/O CC	17	2.7 (1.4)	33.0	14.8	.6108	23.5	5.9	.0	2.3
DRG 373	VAGINAL DELIVERY W/O COMPLICATING DIAGNOSES	17	2.1 (.9)	13.7	3.7	.3169	.0	.0	.0	2.5
DRG 7	PERIPH & CRANIAL NERVE & OTHER NERV SYST WITH CC	16	9.1 (6.7)	91.4	82.4	2.7185	.0	12.5	.0	2.0
DRG 276	NON-MALIGNANT BREAST DISORDERS	16	4.8 (3.5)	64.9	48.0	.5731	.0	.0	.0	1.9
DRG 45	NEUROLOGICAL EYE DISORDERS	15	2.9 (1.5)	37.5	18.0	.5938	20.0	6.7	.0	2.0
DRG 136	CARDIAC CONGEN & VALV DISORDERS AGE > 17 W/O CC	15	2.9 (1.1)	40.8	15.3	.5434	6.7	6.7	13.3	2.0
DRG 233	OTHER MUSCULOSKELET SYS & CONN TISS O.R. PROC W CC	15	8.5 (6.9)	86.5	76.0	1.9873	13.3	20.0	.0	1.9
DRG 266	SKIN GRAFT &/OR DEB EX FOR SKIN ULC OR CELLU W/O CC	15	3.5 (2.7)	45.6	29.8	.6814	6.7	6.7	.0	1.9
DRG 304	KIDNEY,URETER & MAJOR BLAD PROC FOR NON-NEOPL W CC	15	8.6 (4.5)	97.0	90.4	2.3986	.0	13.3	.0	1.9
DRG 459	NON-EXTEN BURNS W WOUND DEBRID OR OTHER O.R. PROC	15	9.9 (9.7)	85.2	75.8	1.9637	.0	40.0	.0	2.0
DRG 27	TRAUMATIC STUPOR & COMA, COMA > 1 HR	14	3.4 (2.9)	41.9	28.0	1.3566	14.3	14.3	14.3	2.0
DRG 260	SUBTOTAL MASTECTOMY FOR MALIGNANCY W/O CC	14	3.0 (1.4)	42.0	19.3	.5720	.0	.0	.0	1.9
DRG 261	BREAST PROC FOR NON-MALIG EXC BIOPSY & LOCAL EXCIS	14	2.4 (1.7)	26.5	14.0	.6749	.0	.0	.0	2.0
DRG 367	MALIGNANCY, FEMALE REPRODUCTIVE SYSTEM W/O CC	14	4.5 (2.0)	77.0	52.9	.4953	7.1	14.3	35.7	1.9
DRG 153	MINOR SMALL & LARGE BOWEL PROCEDURES W/O CC	13	6.8 (2.8)	96.7	86.9	1.0534	7.7	7.7	.0	1.9
DRG 171	OTHER DIGESTIVE SYSTEM O.R. PROCEDURES W/O CC	13	6.8 (8.0)	66.5	54.8	1.1303	.0	7.7	15.4	1.9
DRG 222	KNEE PROCEDURES W/O CC	13	6.3 (7.1)	65.3	53.1	.9721	.0	23.1	.0	1.7
DRG 230	LOCAL EXCIS & REMOV OF INT FIX DEVICES OR HIP&FEMUR	13	3.3 (2.3)	44.4	27.7	.9278	.0	7.7	.0	1.9
DRG 265	SKIN GRAFT &/OR DEB EXC FOR SKIN ULC OR CELLU W CC	13	6.4 (4.5)	81.2	66.9	1.3860	7.7	.0	.0	1.7
DRG 303	KIDNEY, URETER & MAJOR BLADDER PROC FOR NEOPLASM	13	8.5 (4.8)	96.0	88.6	2.6645	.0	7.7	7.7	1.0
DRG 428	DISORDERS OF PERSONALITY & IMPULSE CONTROL	13	7.6 (6.7)	80.5	68.7	.7831	.0	15.4	.0	1.4
DRG 200	HEPATOBILIARY DIAGNOSTIC PROC FOR NON-MALIGNANCY	12	11.7 (10.9)	90.7	83.3	2.7960	8.3	8.3	.0	1.6
DRG 285	AMPUTAT OF LOWER LIMB FOR ENDO,NUTRIT,&METABOL DIS	12	8.8 (5.0)	96.1	88.9	2.7210	.0	25.0	.0	1.6
DRG 305	KIDNEY,URETER&MAJOR BLAD PROC FOR NON-NEOPL W/O CC	12	4.2 (2.4)	63.9	43.0	1.1821	.0	.0	.0	1.4
DRG 402	LYMPHOMA & NON-ACUTE LEUKEM W OTH O.R. PROC W/O CC	12	2.9 (1.3)	39.6	17.6	.8701	.0	.0	.0	1.6
DRG 424	O.R. PROCEDURE W PRINCIPAL DIAG OF MENTAL ILLNESS	12	9.1 (8.0)	86.4	76.5	2.3695	8.3	8.3	.0	1.3
DRG 50	SIALOADENECTOMY	11	2.5 (2.2)	28.8	17.2	.6625	.0	.0	.0	1.6
DRG 234	OTH MUSCULOSKELET SYS & CONN TISS O.R. PROC W/O CC	11	3.8 (2.2)	57.8	37.0	1.0365	.0	27.3	.0	1.2
DRG 259	SUBTOTAL MASTECTOMY FOR MALIGNANCY WITH CC	11	4.5 (3.6)	60.7	44.5	.9073	.0	.0	.0	1.6

FY1991 DISCHARGES FROM RURAL HOSPITALS WITH AVERAGE DAILY CENSUS LESS THAN 10

DRG		NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS > 3.0	% OF CASES WITH LOS > 4.0	RELATIVE WEIGHT	% OF CASES DISCH. TO HOSP	% OF CASES DISCH. TO SNF	DIED (%)	% OF HOSP HAVING CASES (N=690)
DRG 345	OTHER MALE REPRO SYSTEM O.R. PROC EXCEPT FOR MALIG	11	5.5 (8.0)	52.9	42.4	.7263	.0	.0	.0	1.6
DRG 352	OTHER MALE REPRODUCTIVE SYSTEM DIAGNOSES	11	2.8 (2.0)	34.9	20.1	.5838	18.2	18.2	.0	1.6
DRG 408	MYELO DISORD OR POOR DIFF NEOPL W OTHER O.R. PROC	11	4.6 (4.1)	58.6	43.7	1.1046	9.1	9.1	.0	1.6
DRG 72	NASAL TRAUMA AND DEFORMITY	10	3.7 (2.5)	52.8	34.4	.5741	10.0	20.0	.0	1.3
DRG 299	INBORN ERRORS OF METABOLISM	10	3.7 (2.6)	52.0	34.2	.8598	10.0	10.0	.0	1.3
DRG 313	URETHRAL PROCEDURES, AGE > 17 W/O CC	10	2.3 (1.5)	23.8	11.6	.4607	.0	10.0	.0	1.2
DRG 432	OTHER MENTAL DISORDER DIAGNOSES	10	3.4 (1.9)	50.1	29.3	.6960	10.0	30.0	.0	1.3
DRG 42	INTRAOCULAR PROCEDURES EXCEPT RETINA, IRIS & LENS	9	1.9 (1.3)	15.3	6.8	.6162	.0	.0	.0	.9
DRG 328	URETHRAL STRICTURE AGE > 17 WITH CC	9	3.7 (2.8)	49.6	33.3	.6143	11.1	11.1	.0	1.3
DRG 401	LYMPHOMA & NON-ACUTE LEUKEM W OTH O.R. PROC W CC	9	5.7 (3.4)	81.8	65.0	2.2510	22.2	.0	.0	1.3
DRG 406	MYELO DIS OR POOR DIFF NEOPL W MAJ O.R. PROC W CC	9	11.4 (6.9)	98.4	94.8	2.6566	.0	44.4	22.2	1.3
DRG 456	BURNS, TRANSFERRED TO ANOTHER ACUTE CARE FACILITY	9	6.4 (4.2)	84.4	70.2	2.0198	100.0	.0	.0	1.3
DRG 461	O.R. PROC W DIAG OF OTHER CONTACT W HEALTH SERVICES	9	7.7 (13.3)	59.3	49.9	.8268	.0	.0	.0	1.3
DRG 6	CARPAL TUNNEL RELEASE	8	1.3 (.5)	.5	.0	.4868	.0	.0	.0	.9
DRG 147	RECTAL RESECTION W/O CC	8	7.0 (3.2)	96.1	86.5	1.6301	.0	25.0	.0	1.0
DRG 221	KNEE PROCEDURES WITH CC	8	4.8 (3.2)	68.3	50.3	1.8350	12.5	25.0	.0	1.0
DRG 229	HAND OR WRIST PROC, EXCEPT MAJOR JOINT PROC, W.O CC	8	1.5 (1.0)	8.5	3.4	.5403	.0	.0	.0	.6
DRG 262	BREAST BIOPSY & LOCAL EXCISION FOR NON-MALIGNANCY	8	3.6 (3.5)	44.9	31.6	.4944	.0	25.0	.0	1.2
DRG 289	PARATHYROID PROCEDURES	8	3.1 (1.1)	48.6	19.5	1.0079	.0	.0	.0	.9
DRG 342	CIRCUMCISION AGE > 17	8	3.1 (2.4)	40.6	25.4	.5955	.0	.0	.0	1.2
DRG 53	SINUS & MASTOID PROCEDURES AGE > 17	7	4.0 (2.3)	61.9	41.0	.6590	.0	.0	.0	.7
DRG 63	OTHER EAR, NOSE, MOUTH & THROAT O.R. PROCEDURES	7	3.0 (2.4)	38.1	23.9	1.0595	.0	.0	.0	1.0
DRG 77	OTHER RESP SYSTEM O.R. PROCEDURES W/O CC	7	3.0 (2.2)	38.9	23.6	1.0289	28.6	.0	.0	1.0
DRG 115	PERM CARD PACE IMPLANT WI AMI, HEART FAIL OR SHOCK	7	11.1 (5.5)	99.5	97.7	3.6795	14.3	14.3	.0	.9
DRG 194	BILIARY TRACT PROC W/O CC EXCEPT ONLY CHOLECYST	7	8.3 (2.8)	99.8	98.0	1.6189	.0	28.6	.0	1.0
DRG 486	OTHER O.R. PROCEDURES FOR MULTIPLE SIG TRAUMA	7	10.9 (5.5)	99.3	97.0	5.2491	14.3	14.3	14.3	1.0
DRG 39	LENS PROCEDURES WITH OR WITHOUT VITRECTOMY	6	1.8 (.8)	8.0	1.7	.4732	.0	.0	.0	.9
DRG 111	MAJOR CARDIOVASCULAR PROCEDURES W/O CC	6	6.8 (4.1)	89.3	76.7	2.3980	.0	16.7	.0	.7
DRG 216	BIOPSIES OF MUSCULOSKELETAL SYS & CONNECTIVE TISSUE	6	5.2 (3.5)	72.6	55.7	2.0321	.0	66.7	.0	.9
DRG 268	SKIN, SUBCUTANEOUS TISSUE & BREAST PLASTIC PROC	6	6.0 (6.0)	67.6	54.8	.7194	.0	16.7	.0	.9
DRG 292	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC WITH CC	6	5.1 (2.9)	78.4	59.8	2.8387	16.7	16.7	16.7	.6
DRG 312	URETHRAL PROCEDURES, AGE > 17 WITH CC	6	4.0 (1.2)	78.7	44.4	.8174	.0	.0	.0	.6
DRG 344	OTHER MAL REPRODUCTIVE SYSTEM O.R. PROC FOR MALIG	6	3.7 (2.2)	55.3	34.9	1.0492	.0	.0	.0	.9
DRG 363	D&C, CONIZATION & RADIO-IMPLANT, FOR MALIGNANCY	6	5.7 (8.5)	53.7	43.6	.6440	.0	.0	.0	.9
DRG 458	NON-EXTENSIVE BURNS W SKIN GRAFT	6	12.3 (8.2)	98.0	94.4	3.9835	.0	.0	.0	.9
DRG 479	OTHER VASCULAR PROCEDURES W/O CC	6	5.0 (1.1)	98.8	82.6	1.3259	.0	.0	.0	.9
DRG 21	VIRAL MENINGITIS	5	3.2 (2.4)	43.0	27.4	1.4685	40.0	20.0	.0	.7
DRG 40	EXTRAOCULAR PROCEDURES EXCEPT ORBIT AGE >17	5	19.8 (34.3)	84.9	78.8	.5101	.0	20.0	.0	.7
DRG 43	HYPHEMA	5	2.6 (1.1)	30.6	11.7	.3579	.0	.0	.0	.7
DRG 55	MISCELLANEOUS EAR, NOSE, MOUTH & THROAT PROCEDURES	5	1.2 (.4)	.4	.0	.5134	.0	.0	.0	.3
DRG 91	SIMPLE PNEUMONIA & PLEURISY AGE 0-17	5	6.2 (1.6)	99.6	94.2	.7846	.0	20.0	20.0	.7
DRG 118	CARDIAC PACEMAKER DEVICE REPLACEMENT	5	2.8 (3.5)	31.9	22.5	1.6957	20.0	.0	.0	.7
DRG 192	PANCREAS, LIVER & SHUNT PROCEDURES W/O CC	5	6.8 (3.3)	94.4	83.3	1.7379	20.0	20.0	.0	.7
DRG 392	SPLENECTOMY AGE >17	5	10.0 (5.6)	98.1	93.7	3.2912	.0	.0	.0	.7
DRG 441	HAND PROCEDURES FOR INJURIES	5	2.4 (2.6)	27.1	17.7	.6872	.0	.0	.0	.6

FY1991 DISCHARGES FROM RURAL HOSPITALS WITH AVERAGE DAILY CENSUS LESS THAN 10

DRG		NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS > 3.0	% OF CASES WITH LOS > 4.0	RELATIVE WEIGHT	% OF CASES DISCH. TO HOSP	% OF CASES DISCH. TO SNF	DIED (%)	% OF HOSP HAVING CASES (N=690)
DRG 37	ORBITAL PROCEDURES	4	2.0 (.8)	12.1	2.9	.7951	.0	.0	.0	.6
DRG 51	SALIVARY GLAND PROCEDURES EXCEPT SIALOADENECTOMY	4	4.0 (1.6)	71.8	44.1	.5871	.0	.0	25.0	.6
DRG 112	PERCUTANEOUS CARDIOVASCULAR PROCEDURES	4	8.5 (9.0)	79.3	69.1	2.0163	.0	25.0	25.0	.6
DRG 298	NUTRITIONAL & MISC METABOLIC DISORDERS AGE 0-17	4	5.0 (4.8)	61.5	48.0	.5396	.0	.0	.0	.6
DRG 329	URETHRAL STRICTURE AGE > 17 W/O CC	4	3.8 (1.9)	61.1	37.6	.3978	.0	.0	.0	.6
DRG 370	CESAREAN SECTION W CC	4	5.0 (1.2)	98.4	81.3	1.0237	.0	.0	.0	.6
DRG 431	CHILDHOOD MENTAL DISORDERS	4	3.0 (2.3)	39.6	25.0	.7355	.0	25.0	25.0	.6
DRG 465	AFTERCARE W HISTORY OF MALIG AS SECONDARY DIA	4	9.8 (11.6)	79.6	70.4	.3706	.0	50.0	.0	.4
DRG 485	LIMB REATT,HIP AND FEMUR PROC FOR MULTI SIG TRAUMA	4	9.0 (4.1)	99.1	95.4	3.0632	.0	50.0	.0	.6
DRG 8	PERIPH & CRANIAL NERVE & OTHER NERV SYST W/O CC	3	3.7 (2.5)	54.0	36.3	.7730	.0	.0	.0	.4
DRG 36	RETINAL PROCEDURES	3	2.3 (.6)	13.2	1.3	.6434	.0	.0	.0	.1
DRG 67	EPIGLOTTITIS	3	6.3 (4.5)	81.9	68.3	.8708	.0	.0	.0	.4
DRG 71	LARYNGOTRACHEITIS	3	2.3 (2.3)	28.1	18.1	.8197	.0	.0	.0	.4
DRG 124	CIRCUL DISORD EXC AMI, W CARD CATH & COMPLEX DIAG	3	5.3 (2.1)	91.9	73.8	1.1973	33.3	.0	.0	.3
DRG 125	CIRCUL DISORD EXC AMI, WI CARD CATH W/O COMP DIAG	3	4.3 (2.9)	64.9	46.8	.7387	33.3	.0	.0	.4
DRG 168	MOUTH PROCEDURES WITH CC	3	8.3 (1.5)	100.0	100	1.0601	.0	33.3	.0	.4
DRG 279	CELLULITIS AGE 0-17	3	17.3 (16.7)	96.3	92.6	.7278	.0	33.3	.0	.4
DRG 353	PELVIC EVISCERATION, RAD HYSTER & RAD VULVECTOMY	3	6.0 (1.0)	100.0	99.2	2.0590	.0	33.3	.0	.4
DRG 371	CESAREAN SECTION W/O CC	3	4.7 (.6)	100.0	88.6	.6456	.0	.0	.0	.4
DRG 383	OTHER ANTEPARTUM DIAGNOSES W MEDICAL COMPLICATIONS	3	3.7 (1.1)	70.9	35.0	.3934	.0	.0	.0	.3
DRG 394	OTHER O.R. PROC OF BLOOD AND BLOOD FORMING ORGANS	3	2.0 (1.0)	15.8	5.5	1.5719	.0	.0	.0	.4
DRG 439	SKIN GRAFTS FOR INJURIES	3	4.3 (1.2)	90.5	58.6	1.5267	.0	.0	.0	.4
DRG 490	HIV W OR W.O OTHER RELATED CONDITION	3	4.0 (2.6)	60.2	41.8	1.1904	33.3	33.3	33.3	.4
DRG 4	SPINAL PROCEDURES	2	6.5 (2.1)	99.0	92.3	2.4577	.0	100.0	.0	.3
DRG 59	TONSILLECTOMY &/OR ADENOIDECTOMY ONLY, AGE > 17	2	1.5 (.7)	5.2	1.2	.4071	.0	.0	.0	.3
DRG 81	RESPIRATORY INFECTIONS & INFLAMMATIONS AGE 0-17	2	15.5 (10.6)	99.1	97.3	1.0899	.0	.0	.0	.3
DRG 117	CARDIAC PACEMAKER REVIS EXC DEVICE REPLACEMENT	2	7.0 (4.2)	90.6	79.3	1.2743	.0	.0	.0	.3
DRG 169	MOUTH PROCEDURES W/O CC	2	2.5 (2.1)	33.4	21.3	.5406	.0	50.0	.0	.3
DRG 184	ESOPHAGITIS, GASTRO & MISC DIGEST DISORD AGE 0-17	2	3.5 (2.1)	54.8	35.4	.5125	.0	.0	.0	.3
DRG 187	DENTAL EXTRACTIONS & RESTORATIONS	2	2.0 (1.4)	21.9	11.4	.5094	.0	50.0	.0	.3
DRG 201	OTHER HEPATOBILIARY OR PANCREAS O.R. PROCEDURES	2	10.0 (5.7)	98.1	93.9	2.3034	.0	.0	50.0	.3
DRG 212	HIP & FEMUR PROCEDURES EXCEPT MAJOR JOINT AGE 0-17	2	18.0 (9.9)	99.9	99.7	.9139	.0	50.0	.0	.3
DRG 291	THYROGLOSSAL PROCEDURES	2	1.5 (.7)	5.2	1.2	.4416	.0	.0	.0	.3
DRG 322	KIDNEY & URINARY TRACT INFECTIONS AGE 0-17	2	7.0 (1.4)	100.0	99.7	.6334	.0	50.0	.0	.3
DRG 361	LAPAROSCOPY & INCISIONAL TUBAL INTERRUPTION	2	2.0 (1.4)	21.9	11.4	.8512	.0	.0	.0	.3
DRG 372	VAGINAL DELIVERY W COMPLICATING DIAGNOSES	2	2.5 (.7)	23.5	4.0	.5235	.0	.0	.0	.3
DRG 381	ABORTION W D&C, ASPIRATION CURETTAGE OR HYSTEROTOMY	2	2.5 (2.1)	33.4	21.3	.3827	.0	.0	.0	.3
DRG 384	OTHER ANTEPARTUM DIAG W/O MEDICAL COMPLICATIONS	2	5.5 (6.4)	63.5	52.5	.3027	.0	.0	.0	.3
DRG 411	HISTORY OF MALIGNANCY W/O ENDOSCOPY	2	3.0 (1.4)	45.4	22.9	.4569	.0	.0	.0	.3
DRG 422	VIRAL ILLNESS & FEVER OF UNKNOWN ORIGIN AGE 0-17	2	1.0 (.0)	.	.	.5916	.0	50.0	.0	.3
DRG 457	EXTENSIVE BURNS W/O O.R. PROCEDURE	2	8.5 (3.5)	99.3	96.0	1.6731	.0	50.0		.3
DRG 482	TRACHEOSTOMY WITH MOUTH, LARYNX OR PHARYNX DISORDER	2	1.0 (.0)	.	.	3.1795	100.0			3
DRG 489	HIV W MAJOR RELATED CONDITION	2	8.5 (4.9)	95.9	88.9	1.9790	.0		.0	.1
DRG 56	RHINOPLASTY	1	3.0 (.)	.	.	.5444	.0	.0		.1
DRG 105	CARDIAC VALVE PROCEDURES W/O CARDIAC CATH	1	4.0 (.)	.	50.0	6.1581	.0	.0		.1

DRG		NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS > 3.0	% OF CASES WITH LOS > 4.0	RELATIVE WEIGHT	% OF CASES DISCH. TO HOSP	% OF CASES DISCH. TO SNF	DIED (%)	% OF HOSP HAVING CASES (N=690
DRG 252	FX,SPRN,STRN&DISL OF FOREARM, HAND, FOOT AGE 0-17	.	(.)	.	.	.3454	.	.	.	.
DRG 282	TRAUMA TO THE SKIN, SUBCUT TISS & BREAST AGE 0-17	.	(.)	.	.	.3383	.	.	.	.
DRG 293	OTHER ENDOCRINE, NUTRIT & METAB O.R. PROC W/O CC	.	(.)	.	.	1.1528	.	.	.	.
DRG 302	KIDNEY TRANSPLANT	.	(.)	.	.	3.8891	.	.	.	.
DRG 314	URETHRAL PROCEDURES, AGE 0-17	.	(.)	.	.	.4271	.	.	.	.
DRG 317	ADMIT FOR RENAL DIALYSIS	.	(.)	.	.	.4825	.	.	.	.
DRG 327	KIDNEY & URINARY TRACT SIGNS & SYMPTOMS AGE 0-17	.	(.)	.	.	.5444	.	.	.	.
DRG 330	URETHRAL STRICTURE AGE 0-17	.	(.)	.	.	.2754	.	.	.	.
DRG 333	OTHER KIDNEY & URINARY TRACT DIAGNOSES AGE 0-17	.	(.)	.	.	.9094	.	.	.	.
DRG 340	TESTES PROCEDURES, NON-MALIGNANCY AGE 0-17	.	(.)	.	.	.4283	.	.	.	.
DRG 343	CIRCUMCISION AGE 0-17	.	(.)	.	.	.3742	.	.	.	.
DRG 351	STERILIZATION, MALE	.	(.)	.	.	.3293	.	.	.	.
DRG 362	ENDOSCOPIC TUBAL INTERRUPTION	.	(.)	.	.	.4921	.	.	.	.
DRG 374	VAGINAL DELIVERY W STERILIZATION &/OR D&C	.	(.)	.	.	.5045	.	.	.	.
DRG 375	VAGINAL DELIVERY W O.R. PROC EXC STERILE &.OR D&C	.	(.)	.	.	.6735	.	.	.	.
DRG 377	POSTPARTUM & POST ABORTION DIAGNOSES W.O.R. PROC	.	(.)	.	.	1.0278	.	.	.	.
DRG 378	ECTOPIC PREGNANCY	.	(.)	.	.	.7532	.	.	.	.
DRG 385	NEONATES, DIED OR TRANS TO ANOTH ACUTE CARE FACILI	.	(.)	.	.	1.2084	.	.	.	.
DRG 386	EXTREME IMMATURITY OR RESP DISTRESS SYND, NEONATE	.	(.)	.	.	3.6039	.	.	.	.
DRG 387	PREMATURITY W MAJOR PROBLEMS	.	(.)	.	.	1.8046	.	.	.	.
DRG 388	PREMATURITY W/O MAJOR PROBLEMS	.	(.)	.	.	1.1431	.	.	.	.
DRG 389	FULL TERM NEONATE W MAJOR PROBLEMS	.	(.)	.	.	1.3846	.	.	.	.
DRG 391	NORMAL NEWBORN	.	(.)	.	.	.2191	.	.	.	.
DRG 393	SPLENECTOMY AGE 0-17	.	(.)	.	.	1.5022	.	.	.	.
DRG 396	RED BLOOD CELL DISORDERS AGE 0-17	.	(.)	.	.	.5246	.	.	.	.
DRG 405	ACUTE LEUKEMIA W/O MAJOR O.R. PROCEDURE AGE 0-17	.	(.)	.	.	1.0281	.	.	.	.
DRG 412	HISTORY OF MALIGNANCY W ENDOSCOPY	.	(.)	.	.	.4216	.	.	.	.
DRG 417	SEPTICEMIA AGE 0-17	.	(.)	.	.	1.0315	.	.	.	.
DRG 438	NO LONGER VALID	.	(.)	.	.	.0000	.	.	.	.
DRG 446	TRAUMATIC INJURY AGE 0-17	.	(.)	.	.	.4738	.	.	.	.
DRG 448	ALLERGIC REACTIONS AGE 0-17	.	(.)	.	.	.3428	.	.	.	.
DRG 451	POISONING & TOXIC EFFECTS OF DRUGS AGE 0-17	.	(.)	.	.	.5126	.	.	.	.
DRG 469	PRINCIPAL DIAGNOSIS INVALID AS DISCHARGE DIAGNOSIS	.	(.)	.	.	.0000	.	.	.	.
DRG 470	UNGROUPABLE	.	(.)	.	.	.0000	.	.	.	.
DRG 472	EXTENSIVE BURNS W O.R. PROCEDURE	.	(.)	.	.	13.9563	.	.	.	.
DRG 474	NO LONGER VALID	.	(.)	.	.	.0000	.	.	.	.
DRG 480	LIVER TRANSPLANT	.	(.)	.	.	22.8213	.	.	.	.
DRG 481	BONE MARROW TRANSPLANT	.	(.)	.	.	15.2890	.	.	.	.
DRG 484	CRANIOTOMY FOR MULTIPLE SIGNIFICANT TRAUMA	.	(.)	.	.	6.2599	.	.	.	.
DRG 488	HIV W EXTENSIVE O.R. PROCEDURE	.	(.)	.	.	4.3106	.	.	.	.
DRG 491	MAJOR JOINT & LIMB REATTACHMENT PROC - UPPER EXTR	.	(.)	.	.	1.5633	.	.	.	.
DRG 492	CHEMOTHERAPY WITH ACUTE LEUKEMIA AS SECOND DIAG	.	(.)	.	.	2.5737	.	.	.	.

APPENDIX 2

Calculating the Variance of Length of Stay of Cases in a DRG and
Percent Cases in a DRG with Length of Stay Greater than Three Days

1. Calculating the Variance of Length of Stay of Cases in a DRG

Assume X_{ij} = LOS of patient j at hospital i in particular DRG

$\bar{X}_i$ = mean LOS of patients in a particular DRG at hospital i

$\bar{X}$ = mean LOS of patients in a particular DRG across all hospitals

n_i = total cases at hospital i in a particular DRG

N = total cases at all hospitals in a particular DRG

$$\text{Var}(X) = \frac{1}{N}\sum_i\sum_j (X_{ij} - \bar{X})^2$$

$$= \frac{1}{N}\sum_i\sum_j (X_{ij} - \bar{X}_i + \bar{X}_i - \bar{X})^2$$

$$= \frac{1}{N}\sum_i\sum_j (X_{ij} - \bar{X}_i)^2 + \frac{1}{N}\sum_i\sum_j (\bar{X}_i - \bar{X})^2$$

$$= \frac{1}{N}\sum_i (n_i - 1)\, Var(X_i) + \frac{1}{N}\sum_i N_i (\bar{X}_i - \bar{X})^2$$

2. Calculating % Cases in a DRG with Length of Stay Greater than 3 Days

Assume X, which is length of stay (LOS) of cases in a DRG, is lognormally distributed with mean $\bar{X}$, variance σ_X^2

Then Y = log X is normally distributed with mean μ_y, variance σ_y^2 (*i.e.* $Y \sim N(\mu_y, \sigma_y^2)$

If $\bar{X}$ and σ_x^2 are known, then μ_y and σ_y^2 can be calculated as follows:

$$\mu_y = 2 \log \bar{X} - \frac{1}{2} \log (\sigma_x^2 + \bar{X}^2)$$

$$\sigma_y^2 = \log (\sigma_x^2 + \bar{X}^2) - 2 \log (\bar{X})$$

Then, the P (LOS > 3) can be found from a standardized normal distribution table as follows:

$$P\{LOS > 3\} = 1 - P\{LOS \le 3\}$$

$$= 1 - \Phi\left(\frac{\log 3 - \mu_y}{\sigma_y}\right)$$