

**A DRG-BASED SERVICE LIMITATION SYSTEM
FOR RURAL PRIMARY CARE HOSPITALS**

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Working Paper #4

December, 1993

This paper was prepared under contract from the Federal Office of Rural Health Policy
under PHS Grant No. CSR 000003-01-0.

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EXECUTIVE SUMMARY

In an earlier paper, we proposed limiting admissions at alternative model rural hospitals to a list of 109 approved diagnostic related groups (DRGs). The foundation for our assessment of the DRGs appropriate to admit and treat in alternative model rural hospitals was a review by a technical advisory panel of rural clinicians of Medicare discharges at the 690 rural hospitals across the country with an average daily census less than ten in 1991. Due to the limitations of our original data source, we could not examine the effect of a clinical service limitation on certain areas of practice, such as obstetrics and pediatrics.

This study expands on our previous work by analyzing admission, length-of-stay, and transfer patterns of non-Medicare and Medicare patients at very small rural hospitals. We acquired data for all patients discharged in 1991 from hospitals with an average daily census of less than ten in three states: Kansas, Michigan, and Washington. The purpose of the analysis was to revise, if necessary, the list of 109 "approved" DRGs from our previous study and to propose a method for limiting services at a specific type of alternative model rural hospital, the rural primary care hospital of the Essential Access Community Hospital Program.

When the sample is enlarged beyond Medicare discharges to include all discharges, obstetrical and newborn cases are the most frequent types of DRGs treated in very small rural hospitals. The frequency and rank of all other DRGs is relatively consistent between data sets containing only Medicare discharges and those containing data on all discharges. The analysis of admitting behavior does not alter our earlier conclusion: small rural hospitals admit patients in a limited number of DRG categories, which typically represent low-intensity medical conditions.

Aside from neonates and some antepartum conditions, there is substantial similarity between the two data sets (i.e., Medicare only versus all patients) in the DRGs most frequently transferred from small rural hospitals to other hospitals. In both cases, small rural hospitals tend to transfer relatively few cases to other hospitals.

Twenty-nine DRGs were added to the list of 109 DRGs based on the analysis and two DRGs were deleted, yielding a net total of 136 DRGs appropriate to admit and treat in RPCHs. The clinical advisory panel used to select appropriate conditions recommended that obstetrical and newborn care should not be provided routinely and that inpatient surgical procedures requiring general anesthesia not be performed routinely in RPCHs. Some of the large number of small rural hospitals that offer obstetrical and surgical services may view the exclusion of routine obstetrics and surgery as a barrier to conversion. However, RPCHs that have the skills, equipment, and desire to provide care to obstetrical and surgical patients may apply to local PROs for exceptions to the rule.

If the sample hospitals had been limited to a list of approved DRGs, their patient days in 1991 would have been reduced by approximately one-half. This amount is consistent with the magnitude of reductions that would have resulted from a service limitation based on 72 or 96 hours. However, the time-limited methods merely cut days off a patient's stay, while the DRG method attempts to match the resources of a facility with the needs of the community.

The service limitation method proposed in this paper will reduce RPCH Medicare expenditures by reducing RPCH per diem costs and eliminating double-payments (i.e., per diem payments to RPCHs and DRG payments to EACHs) required by transfers. It will also help assure local access to acute health care services in sparsely populated rural areas, improve continuity of care, and promote the RPCH model by fostering the notion that, within the limitations of the model, RPCHs are complete acute care treatment centers.

Before implementing a system such as the one proposed above, three issues need to be more fully addressed:

- the process used to select the set of approved DRGs should be replicated to produce a commonly accepted list of approved DRGs;
- responsible parties, evaluation criteria, and procedures need to be identified to more fully develop the concept of an exceptions process; and
- studies should be conducted to assess whether, and under what conditions, obstetrics and surgery can safely be performed in RPCHs.

INTRODUCTION

Alternative model rural hospitals, such as the primary care rural hospital of the federal Essential Access Community Hospital Program, are "alternatives to the traditional, hospital-based model of health care services delivery," whose purpose in rural areas is to "match the needs of rural residents with the available resources in cost effective delivery systems" and to "provide entry points to a continuum of essential health services" (Alpha Center, 1991). Alternative model rural hospitals typically limit the range of inpatient services a hospital may offer in exchange for a relaxation of hospital licensing criteria. The method by which services are limited in alternative model rural hospitals is important to their development. If the service limitation is too restrictive, hospitals and physicians may be unwilling to convert to alternative model rural hospitals. If the service limitation does not appropriately control the range of activities in which a facility may engage and yet the state has reduced the facility's regulatory burden, the health and safety of patients may be put at unnecessary risk. The service limitation placed upon alternative model rural hospitals should seek a balance between the needs and resources of rural residents and the state's obligation to protect the health and safety of its citizens.

Previously we reviewed the current state of development of alternative model rural hospitals (also known as limited service rural hospitals) and discussed various mechanisms for defining the limitations placed on them (Moscovice, Sales, Christianson, and Wellever, 1992). We found that the most common service limitation in alternative model rural hospitals is an upper limit on the length of time a patient may remain in the facility. Our earlier work presented an alternative to length-of-stay limits for alternative

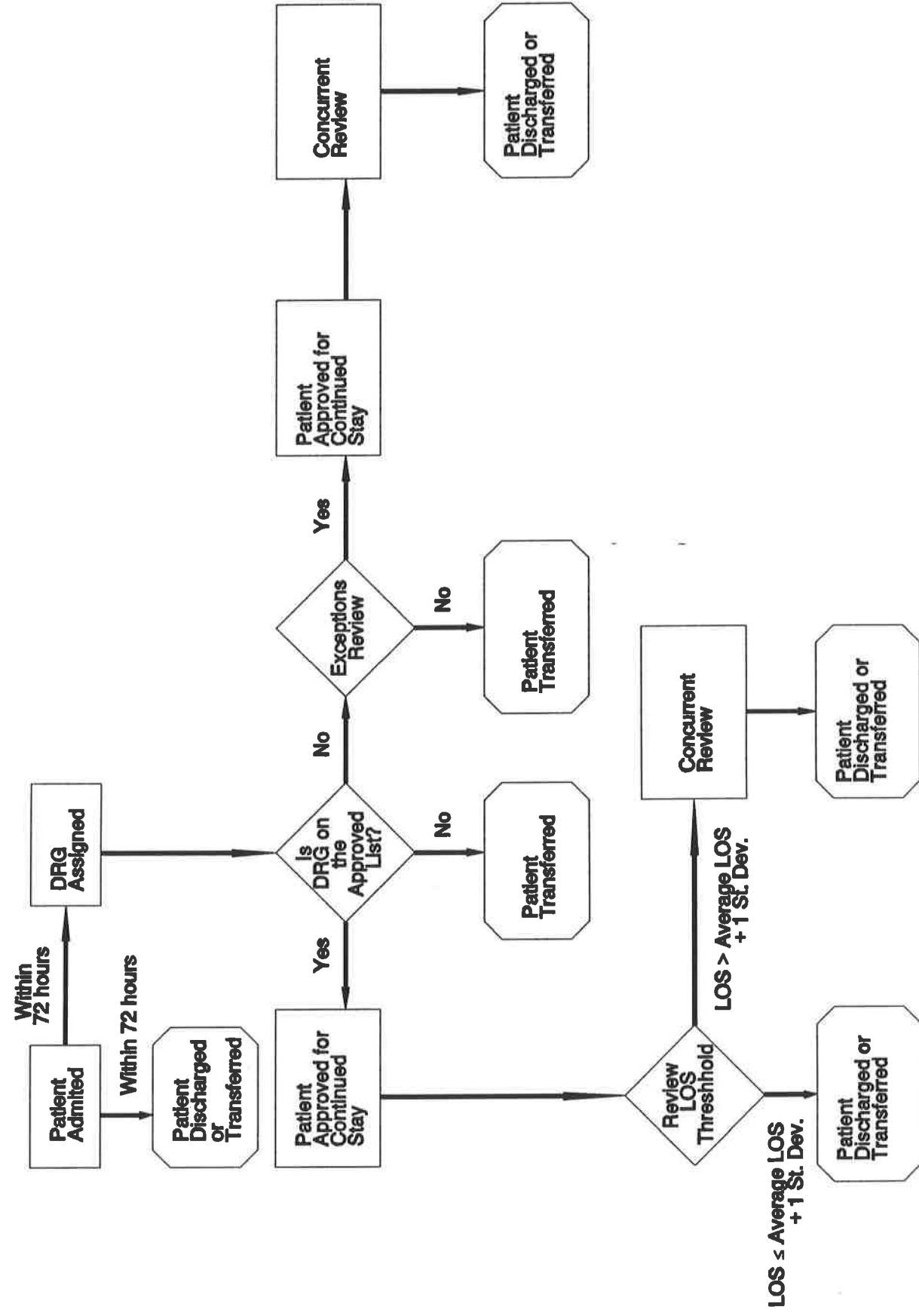
model rural hospitals (Moscovice, Wellever, Sales, Chen, and Christianson, 1993). Figure 1 is a model of the system proposed.

The system we proposed begins with an evaluation period of 72 or fewer hours. At the end of the evaluation period, patients are assigned a preliminary DRG for the purpose of dividing them into one of two mutually exclusive groups. Patients whose DRGs are on a list of DRGs considered appropriate for treatment at a limited service rural hospital, are allowed to continue to receive care in the facility. Patients whose DRGs are not on the list of DRGs considered appropriate for treatment at a limited service rural hospital must be transferred. Recognizing that these simple decision rules may not be appropriate for every situation, two additional features were added to the proposal. First, facilities may be granted an exception to the requirement that certain patients be transferred, if they can justify that an exception is warranted. Exceptions would be granted on a case-by-case basis according to the capability of the facility to care for the patient and the condition and prognosis of the patient. Second, patients whose care is extended beyond the 72-hour evaluation period may be subject to concurrent utilization review if the length of stay passes predetermined thresholds.

In developing this proposed method of limiting services in limited service rural hospitals, we analyzed FY 1991 HCFA MEDPAR data for 690 rural hospitals with an average daily census of less than 10.¹ The results of our analysis were submitted to a

¹ We expected rural (i.e., non-MSA) hospitals with average daily census less than ten to be more interested in becoming alternative model rural hospitals than other rural hospitals. We tested the sensitivity of our results to this assumption by comparing the results for hospitals with average daily census of less than eight and less than six to the results for hospitals with average daily census less than ten. The ordering of DRG lists does not appear to be sensitive to the average daily census limit used to define the sample (Moscovice, Wellever, Sales, Chen and Christianson, 1993).

FIGURE 1
A NEW PROPOSAL FOR DEFINING SERVICE LIMITATION



three-member clinical advisory panel who assisted us in dividing the 492 DRGs into those DRGs appropriate to admit and treat in a limited service rural facility (a total of 109 DRGs) and those DRGs that were inappropriate (the remaining 383 DRGs). The clinical advisory panel assumed that no obstetrics and no surgery would be performed in alternative model rural hospitals. The 109 DRGs selected as appropriate to admit to limited service hospitals are all low-intensity, medical DRGs.

The Need for a Clinically-Based Service Limitation

Interest in alternatives to time-limited methods of limiting services in alternative model rural hospitals has not lessened since our earlier report on the subject. Much of the discussion about temporal service limitations has focused on rural primary care hospitals (RPCHs). The 72-hour length-of-stay limit placed on RPCHs under the EACH/RPCH program is among its most controversial features. In response to the proposed program rules for RPCHs (Federal Register, October 25, 1991), HCFA received many comments opposing the 72-hour length-of-stay limitation and suggesting alternatives to it. HCFA summarized the comments it received on the 72-hour limit, when it issued the final EACH/RPCH rules (Federal Register, May 26, 1993). Because HCFA's summary of comments shows the breadth of discontent with the rule and the range of options suggested to replace it, it is reproduced below in its entirety.

Many commenters objected to the 72-hour limit on length of inpatient stay in RPCHs, citing various objections to it. Some of them stated that the limit may be so low as to discourage RPCHs from accepting some patients whom they are otherwise equipped to furnish care. Another commenter noted that inpatient stays will likely be a major source of revenue for RPCHs, but that many patients could avoid admissions to RPCHs if they expect to need a stay of more than 72 hours. One commenter suggested

that the length-of-stay restriction could limit physicians' practices and make it more difficult to attract them to rural areas. Several commenters did not cite detailed objections to the limitation but merely characterized it as arbitrary.

Commenters varied in their recommendations as to whether any alternative limitation should be imposed. Some commenters simply suggested that the 72-hour limit be eliminated and not replaced. Others recommended that a 72-hour limit be retained but applied to the facility's average length of stay rather than to individual stays, so that the facility would have more flexibility to keep individual patients if care beyond 72 hours is needed. One commenter recommended that the length-of-stay limit be increased to 96 hours to add flexibility in treating patients who may require only an additional day of care before discharge.

Some commenters stated that RPCHs should be allowed case-by-case exceptions to the length-of-stay limits if PRO review indicates that keeping the patient at the RPCH would not jeopardize his or her health or safety or if the patient's acuity of illness is diminishing at the end of 72 hours of care. Others suggested that there should also be an exceptions review and approval process that would allow RPCHs to admit patients who are expected to need more than 72 hours of inpatient care if the RPCH can furnish the appropriate treatment and transfer of the patient is contraindicated by the patient's condition. Several commenters recommended the use of a State-level exceptions process or a review committee comprised of physicians at the EACH and the RPCH to evaluate the patient's condition and allow stays beyond 72 hours. Several commenters recommended allowing stays of more than 72 hours where they are approved in advance by the PRO. Other commenters suggested that exceptions to the 72-hour limit could be permitted for the following reasons:

- Limited DRGs that are clearly appropriate to the capabilities of small rural hospitals, as selected by HCFA or under a procedure administered by the States, that would allow the DRGs to vary from network to network.
- Transfers that would cause a hardship for the patient, or which are contraindicated by the patient's medical conditions, or are refused by the patient.
- Terminally ill patients who have executed a living will or other advance directive which indicates they do not wish to have heroic measures undertaken to prolong life.

The commenters further recommended that, as additional experience with RPCH operations is gained, HCFA should ask the Congress to remove the restriction on the number of beds (as well as the length of inpatient stays) and replace both with alternative guidelines based on patient severity or diagnosis.

HCFA did not adopt any of the comments because it believes that it is prohibited from doing so by the explicit language of the law that created the EACH/RPCH program. In anticipation of this response from HCFA, the seven states that received EACH/RPCH grants recommended a set of legislative proposals, one of which was to limit RPCH inpatient services to an *average* length of stay of 72 hours. These legislative recommendations were incorporated into H.R. 11, a \$27 billion tax and urban aid bill that passed Congress shortly before the 1992 election. President Bush vetoed the bill on election day, stating that the "original focus of the bill -- to help revitalize America's inner cities -- has been lost in a blizzard of special-interest pleading" (*AHA News*, November 9, 1992). Undeterred, the EACH/RPCH amendments were reintroduced verbatim as H.R. 21 when the new Congress convened in January 1993. The EACH/RPCH amendments again fell victim to larger political events. As the Congress struggled with issues of budget reconciliation and deficit reduction, the amendments were stripped from the reconciliation bill, the legislative vehicle on which it was intended to ride through Congress. No decision has yet been made to re-introduce the amendments.

The service limitation proposal contained in H.R. 21, would have been a slight improvement over current law, but it too misses the point: the length of time a patient resides in an acute facility is not in itself an indicator of severity of illness and, consequently, should not be used to limit services. If the service limitation is intended to

exclude complex and/or medically intense cases from RPCHs, some device other than a temporal limitation will be required. In several passages from the final EACH/RPCH rules, HCFA indicates its understanding that the severity of illness, and not the duration of the patient's stay in a facility, is a key issue in limiting RPCH services:

1. We believe that the restriction on the number of beds passed by Congress represents a reasonable attempt to *limit the type and severity of cases* to be treated by RPCHs without resorting to overly prescriptive standards. (Emphasis added.)

Limiting bed size and length of stay may have been well intentioned attempts to limit the type and severity of cases treated in RPCHs, but they are not particularly effective attempts. Limiting bed size and length of stay does not erect barriers to the types of patients who can be admitted to RPCHs. Presumably, any patient can be admitted to a RPCH, but he or she can only remain in the facility for up to 72 hours. Limiting the type and severity of patients to be admitted to RPCHs is an appropriate goal. However, the proxy chosen to accomplish the goal is inappropriate.

2. We are anticipating that most inpatient admissions will be for *low intensity conditions* (for example, pneumonia), and that more serious conditions (for example, severe trauma injuries) will be stabilized and transferred to the EACH. (Emphasis added.)

HCFA is correct in its belief that most RPCH admissions would be for low intensity conditions. However, the low intensity condition it uses to illustrate the type of condition most reasonable to admit to a RPCH, pneumonia, is one that likely would not be admitted to a RPCH under the present rules, and if admitted would be transferred to an EACH after three days. The mean length of stay in small rural hospitals for Medicare pneumonia patients with complications (DRG 89) is six days. Seventy-seven percent of these

Medicare pneumonia patients have lengths of stay greater than three days. In other words, only one out of four pneumonia cases could be treated in an RPCH for the complete spell of illness under the 72-hour rule. Yet, most would agree that pneumonia is the very type of low intensity illness that is appropriate to admit to an RPCH.

3. [PRO] review will be conducted to ensure that the care [provided in RPCHs] is medically necessary, *that the RPCH level of care is the appropriate level of care for the patient*, that the care meets acceptable standards of quality, and that the patient's diagnosis or diagnoses are supported by the patient's medical record. (Emphasis added.)

The authority granted to PROs by HCFA to determine the appropriateness of care provided in RPCHs would seem to imply that some care should not be delivered in RPCHs. Yet, there is no statutory or regulatory limitation on the types of cases that may or may not be admitted to RPCHs. Limiting services by length of stay does not address the appropriateness of care; limiting services by a DRG-based approach that matches the resources and capabilities of a facility with the needs of particular patients does.

The method we proposed for limiting services in alternative model rural hospitals in our earlier work, and upon which we expand in this paper, addresses many of the criticisms raised against the current service limitation for RPCHs. Furthermore, it promotes key elements of the RPCH model identified by HCFA: It limits the type and severity of cases treated to low-intensity conditions, and it assures that the care provided in RPCHs is appropriate to the needs of patients. The purpose of this paper, therefore, is to propose a method that can be used by HCFA as a starting point to develop a system for limiting services in RPCHs that is more consistent than the current system with the original intent of the program.

DATA AND METHODS

The MEDPAR file used for our earlier study is a Medicare discharge data set. Although Medicare patients represent a substantial portion of the discharges from small rural hospitals, the lack of information on non-Medicare patients precluded the examination of several important clinical areas, such as obstetrics and pediatrics. To remedy the data limitation of our previous inquiry, we expanded the data set used for analysis in this study to include non-Medicare discharge data. Based on this more complete analysis of very small hospital admission, treatment, and transfer patterns, the clinical advisory panel reviewed the list of 109 "approved" DRGS to see if modifications were appropriate.

The data used to answer these questions were compiled by merging several computer files. We acquired FY 1991 data on all patients discharged from small rural hospitals in the states of Kansas, Michigan, and Washington. These three states were selected in the following manner. All of the states were listed in descending rank order by the number of hospitals in the state with an average daily census of less than 10 in FY 1991. Next we identified the states that maintained hospital discharge data bases in FY 1991. Kansas (the third ranking state), Colorado (eighth ranking), Michigan (tenth ranking) and Washington (eleventh ranking) were the highest ranking states to have hospital discharge data bases. In an effort to obtain geographic dispersion, Kansas, Michigan, and Washington were selected. In 1991, Washington state had only three fewer hospitals with an average daily census of ten or less than Colorado.

For each patient discharged from a rural hospital with an average daily census of less than 10, we requested the patient's DRG, length of stay, discharge disposition, and primary payer. For each hospital with an average daily census less than 10, we requested the Medicare Provider number. The data from the three states were merged into a single file of 47,544 discharges in 1991 from 109 hospitals. This file was merged with the American Hospital Association (AHA) annual survey for 1991 to construct a file that included hospital characteristics.

Appendix 1 describes the characteristics of discharges from the sample hospitals in the three states. The first line shows that DRG 391, normal newborn, is the most frequent DRG in small rural hospitals and that a total of 3,845 cases with DRG 391 were admitted. The average length of stay for those cases was 1.9 days and the standard deviation was 1.0 day. Of all the cases in DRG 391, 7.6 percent had lengths of stay greater than 3 days and 2.0 percent had lengths of stay greater than 4 days. The next column displays the relative weight (.2191) of DRG 391. The following three columns show that no patients (zero percent) with DRG 391 were transferred to another hospital or a skilled nursing facility or died in the hospital. Finally, 73.4 percent of all hospitals in the 109-hospital sample had at least one hospital discharge coded as DRG 391. Comparable information is presented in the table in descending order of the number of discharges for every DRG.

The clinical advisory panel used to create the original list of 109 "approved" DRGs was asked to reassess its earlier work.² Panel members were supplied a table identical

²The three members of the advisory panel were Raymond Christensen, MD, Moose Lake, MN; James Reid, PA-C, Billings, MT; and Thomas Simpson, MD, Sterling, KS.

to the one in Appendix 1 that listed the frequency of DRGs treated in small rural hospitals. They were also supplied with tables in the same format that listed Medicare-only discharges by DRG and non-Medicare discharges by DRG from the sample hospitals.

Following our initial assumptions, which were based on the proposed rules for RPCHs, panel members were asked to assume that only basic laboratory and radiology services would be available and that the facilities would not have blood banking services. They were also asked to assume that only primary care providers would offer medical services at the facilities. In our previous study, it was assumed that obstetrics and surgery would not be performed in alternative model rural hospitals. However, due to the high numbers of obstetrically-related discharges and the high number of small rural hospitals in the sample performing at least some inpatient surgery, panel members were asked to re-evaluate whether obstetrical and surgical patients should be admitted to RPCHs.

Working independently, the panel members were asked to divide the set of all DRGs into two mutually exclusive groups, those appropriate to treat in RPCHs and those that are not appropriate. If a DRG received two positive votes from panel members, it was considered appropriate for admission to any RPCH; if a DRG received two negative votes, it was considered not appropriate. The responses of the panel members were compiled and shared with them. A conference call was held with the clinical advisory panel to resolve differences and form consensus on a list of DRGs appropriate for admission to RPCHs. The discussion focused on two types of cases: 1) additions to the list of 109 approved DRGs from our previous list (32 cases) and 2) deletions from the list

of 109 approved DRGs (6 cases). In every case, the panel voted unanimously to add or delete DRGs to the original list of approved DRGs. Following the discussion, the panel added 29 DRGs to the list and deleted two. The revised list of DRGs, based upon an analysis of Medicare and non-Medicare discharges from very small rural hospitals, forms the basis for our proposal for limiting services in RPCHs.

RESULTS

Types of Patients Admitted to Small Rural Hospitals

The 15 most frequent DRGs treated at the 109 hospitals in our three-state sample are listed on Table 1. Table 1 also lists the 15 most frequent DRGs from our previous study of Medicare discharges from all rural hospitals in the United States with an average daily census less than 10 (Moscovice, Wellever, Sales, Chen, and Christianson, 1993). The primary difference between the two lists is that the all-patient list contains three obstetrical/newborn DRGs and the Medicare-only list contains none. Indeed, normal newborn (DRG 391) and vaginal delivery without complicating diagnosis (DRG 373) are the two most frequent causes for admission to very small rural hospitals. The 15 most frequent DRGs were responsible for 43.4 percent of all admissions to the sample hospitals in the three states. The 30 most frequent DRGs accounted for 58.2 percent of all admissions.

The admitting patterns of the hospitals in our sample are similar to those found in larger national samples. Table 2 compares the list of the 15 most frequent DRGs in the 109-hospital sample to a list of the most frequent DRGs treated in small rural hospitals compiled by the Agency for Health Care Policy and Research (Lemrow, Adams, Coffey,

TABLE 1

COMPARISON OF MOST FREQUENTLY TREATED DRGS IN SMALL RURAL HOSPITALS
(ALL PATIENTS FROM 3-STATE SAMPLE AND MEDICARE PATIENTS ONLY FROM NATIONAL SAMPLE, 1991)

All Patients (n=109 Hospitals)					Medicare Patients Only (n=690 Hospitals)				
Rank	DRG #	Description	% of Admits		Rank	DRG #	Description	% of Admits	
1	391	Normal Newborn	8.1		1	089	Simple pneumonia & pleurisy, age >17, w/ cc	8.5	
2	373	Vaginal delivery w/o complicating diag.	6.3		2	127	Heart failure and shock	7.9	
3	089	Simple pneumonia & pleurisy, age >17, w/cc	5.0		3	140	Angina pectoris	4.2	
4	127	Heart failure and shock	3.8		4	014	Specific cerebrovascular disorders except TIA	3.9	
5	140	Angina pectoris	2.8		5	182	Esophagitis, gastro & misc. digestive disorders, age >17, w/ cc	3.7	
6	182	Esophagitis, gastro & misc. digestive disorders, age >17, w/ cc	2.6		6	096	Bronchitis & asthma, age >17, w/ cc	2.8	
7	014	Specific cerebrovascular disorders except TIA	2.1		7	296	Nutritional & misc. metabolic disorders, age >17 w/ cc	2.8	
8	243	Medical back problems	1.9		8	320	Kidney & urinary tract infections, age >17 w/ cc	2.5	
9	183	Esophagitis, gastro & misc. digestive disorders, age >17, w/o cc	1.8		9	079	Respiratory infections & inflammations, age >17, w/ cc	2.4	
10	096	Bronchitis & asthma, age >17 w/ cc	1.8		10	088	Chronic obstructive pulmonary disease	2.3	
11	090	Simple pneumonia & pleurisy, age >17, w/o cc	1.7		11	138	Cardiac arrhythmia & conductive disorders w/ cc	2.1	
12	138	Cardiac arrhythmia & conductive disorders w/ cc	1.5		12	174	G.I. hemorrhage w/ cc	2.0	
13	174	G.I. hemorrhage w/ cc	1.4		13	090	Simple pneumonia & pleurisy, age >17, w/o cc	1.7	
14	371	Caesarian section w/o cc	1.4		14	243	Medical back problems	1.6	
15	091	Simple pneumonia & pleurisy, age 0-17	1.3		15	183	Esophagitis, gastro & misc. digestive disorders, age >17, w/o cc	1.5	

TABLE 2

COMPARISON OF MOST FREQUENTLY TREATED DRGS IN SMALL RURAL HOSPITALS
(ALL PATIENTS FROM 3-STATE SAMPLE (1991) AND ALL PATIENTS FROM NATIONAL SAMPLE (1986))

All Patients (n=109 Hospitals)			AHCPR Study		
Rank	DRG #	Description	Rank	DRG #	Description
1	391	Normal Newborn	1	391	Normal Newborn
2	373	Vaginal delivery w/o complicating diag.	2	373	Vaginal delivery w/o complicating diag.
3	089	Simple pneumonia & pleurisy, age > 17, w/ cc	3	089	Simple pneumonia & pleurisy, age > 17, w/ cc
4	127	Heart failure and shock	4	127	Heart failure and shock
5	140	Angina pectoris	5	140	Angina pectoris
6	182	Esophagitis, gastro & misc. digestive disorders, age > 17, w/ cc	6	182	Esophagitis, gastro & misc. digestive disorders, age > 17, w/ cc
7	014	Specific cerebrovascular disorders except TIA	7	014	Specific cerebrovascular disorders except TIA
8	243	Medical back problems	8	243	Medical back problems
9	183	Esophagitis, gastro & misc. digestive disorders, age > 17, w/o cc	9	183	Esophagitis, gastro & misc. digestive disorders, age > 17, w/o cc
10	096	Bronchitis & asthma, age > 17 w/ cc	10	096	Bronchitis & asthma, age > 17 w/ cc
11	090	Simple pneumonia & pleurisy, age > 17, w/o cc	11	138	Cardiac arrhythmia & conductive disorders w/ cc
12	138	Cardiac arrhythmia & conductive disorders w/ cc	12	296	Nutritional & misc. metabolic disorder, age > 17, w/ cc
13	174	G.I. hemorrhage w/ cc	13	371	Caesarian section w/o cc
14	371	Caesarian section w/o cc	14	122	Circulatory disorder w/ AMI w/o C.V. comp., disch. alive
15	091	Simple pneumonia & pleurisy, age 0-17	15	143	Chest pain

and Farley, 1990). The AHCPR study is based on a 60 percent sample of small (i.e., fewer than 60 beds) rural hospital discharges in 1986. The order of the 10 most frequent DRGs is essentially the same for both studies. The remaining five DRGs on both lists, although not identical, are similar. With the exception of Cesarean sections, neither list contains a surgical DRG.

Types of Patients Transferred from Small Rural Hospitals

Of the 47,544 patients discharged from hospitals in the 3-state sample, 5.8 percent were transferred to other hospitals. This transfer rate is somewhat less than the 7.2 percent transfer rate reported for the Medicare-only sample. Some of the difference between the two is due to the high frequency and low transfer rates of obstetric/newborn cases. Normal newborns (DRG 391) have a transfer rate of zero; vaginal delivery cases without complications (DRG 373) have a transfer rate of 0.3 percent; even a somewhat more complex obstetrical case such as Cesarean section without complications or comorbidity (DRG 371) has a relatively low transfer rate of 0.5 percent.

Table 3 lists the DRGs that were transferred most frequently to other hospitals.³ None of the DRGs with high transfer rates are on the list of 109 DRGs that were identified in the earlier study as being appropriate to admit to a limited service hospital. The expanded list of "approved" DRGs discussed in the next section contains three DRGs with relatively high transfer rates. One of them, DRG 122 (circulatory disorders with acute myocardial infarction, without cardiovascular complications, discharged alive) has a

³Only DRGs with 100 or more cases were included because it was assumed that reasonable inferences about the transfer rates of DRGs could not be made with fewer cases.

TABLE 3

**DRGS MOST FREQUENTLY TRANSFERRED FROM SMALL RURAL HOSPITALS
TO OTHER HOSPITALS, FY 1991[†]**
(n = 109)

DRG	Description	Percent of Discharges Transferred to Other Hospitals	# of Discharges
385	Neonates, died or transferred to another acute care facility	95.8	118
122*	Circulatory disorders w/ AMI w/o C.V. comp., discharged alive	35.5	558
121	Circulatory disorders w/ AMI and C.V. comp., discharged alive	31.9	405
384*	Other antepartum diagnoses w/o medical complication	27.0	141
188	Other digestive system diagnoses, age >17 w/ cc	22.3	130
236	Fractures of hip & pelvis	19.0	210
323	Urinary stones w/ cc, and/or ESW lithotripsy	18.4	163
181*	G.I. obstruction w/o cc	18.1	166
207	Disorders of the biliary tract w/ cc	17.8	214
316	Renal failure	17.2	145
180	G.I. obstruction w/ cc	17.0	335
082	Respiratory neoplasms	15.3	176

[†]At least 100 discharges per DRG in FY 1991.

*DRG is on the list of 136 DRGs appropriate to admit to limited service rural hospitals.

transfer rate of 35.5 percent. Providers at sample hospitals apparently transfer cardiac cases they believe are too complex to treat locally.

DRGs Appropriate for Admission to Rural Primary Care Hospitals

The clinical advisory panel recommended adding 29 DRGs and deleting 2 DRGs from the list of 109 DRGs appropriate to treat in RPCHs that it created for the earlier study. The revised list of 136 DRGs the panel thought appropriate to admit to alternative model rural hospitals is found in Appendix 2 (the 29 additions to the list are marked with asterisks). Believing that most RPCHs will not have the human and technical resources to support the services, the clinical advisory panel recommended that obstetrical and newborn care should not be provided routinely and that inpatient surgical procedures requiring general anesthesia should not be performed routinely. However, the clinical panel recognized that some facilities possess the proper resources to perform high quality obstetric and surgical procedures and should be allowed to petition for an exception to the limitation.

Additions to the List of DRGs Appropriate for Admission to Rural Primary Care Hospitals

The 29 DRGs added to the list of DRGs appropriate to admit to alternative model rural hospitals span 14 of the 23 Major Diagnostic Categories (MDC), and generally represent low-intensity, short stay cases. The average length of stay of the 29 additions is 3.6 days, one-half day shorter than the 4.1 average length of stay of the original 109 DRGs.⁴

⁴The length of stay for both sets of DRGs was calculated using the three-state sample for all discharged patients.

Three of the additions are relatively high volume DRGs at small rural hospitals. DRG 182 (esophagitis, gastroenteritis, and miscellaneous digestive disorders, age >17 with complications) is responsible for 2.6 percent of admissions; DRG 122 (circulatory disorders with acute myocardial infarction, without cardiovascular complications, discharged alive) is responsible for 1.2 percent of all admissions; and DRG 359 (uterine and adnexa procedures for non-malignancy without complications) accounts for 1.0 percent of admissions.

DRG 182 is not only a high volume DRG, it is also a prevalent one with 96.3 percent of all hospitals in the sample treating patients who have been assigned the DRG. A common DRG of the elderly, DRG 182, is the fifth most prevalent condition treated by hospitals in the sample. DRG 122 has the highest transfer rate among the list of 136 "approved" DRGs, and the second highest transfer rate among all DRGs (see Table 3). More than one-third of the cases (35.5 percent) with this DRG are transferred. All DRG 122 admissions are made on an emergency basis. Patients are stabilized in the emergency room and admitted for observation and treatment. That one-third of the DRG 122 patients are transferred out of the facility for higher level care should not diminish the achievement of retaining two thirds of the patients in the community following the personal and familial trauma of heart attack. The most common procedure suggested by DRG 359 is tubal ligation. The frequency of this procedure in alternative model rural hospitals may decrease in comparison to traditional small rural hospitals if deliveries at alternative models are restricted.

Table 4 lists the DRGs that are not included on the list of 136 "approved" DRGs and account for 0.5 percent or more admissions to the sample hospitals. These relatively high volume cases will only be admitted to alternative model rural hospitals on an exceptions basis. Seven of the 22 DRGs on this list are for obstetrical conditions. Three are for surgical procedures. The remaining DRGs on the list are for medical conditions. Despite the frequency with which they are admitted to small rural hospitals currently, the clinical advisory panel believed that most RPCHs would not be equipped to treat these conditions safely.

Discussion of merits of the proposal made in this paper likely will focus on the DRGs listed on Table 4, because they are few in number, they represent almost one-third of all admissions to very small rural hospitals, and they routinely will be excluded from RPCHs. Providers who object to the proposed method are apt to claim that they currently deliver care to patients with these DRGs with few or no untoward clinical events and should be permitted to continue doing so. Many small rural hospitals will deliver high quality services to patients with these DRGs. They may be permitted to continue to treat them by applying for an exception to the rule. The clinical advisory panel recommended that facilities wishing to treat patients with these DRGs should be required to make an affirmative case that they possess the requisite human and technical resources to treat these patients rather than simply relying on a presumption that high quality services will be delivered. RPCHs may continue to provide these services, but the burden of proof that they are able to do so rests with them.

TABLE 4

PREVALENT DRGs THAT ARE NOT ON THE LIST OF 136 'APPROVED' DRGs

DRG #	Description	Percent of Admissions
391	Normal newborn	8.1
373	Vaginal delivery w/o complicating diagnoses	6.3
138	Cardiac arrhythmia & conduction disorders w/ cc	1.5
174	G.I. Hemorrhage w/ cc	1.4
371	Cesarean section w/o cc	1.4
079	Respiratory Infections & Inflammation, age >17, w/ cc	1.3
121	Circulatory disorder w/ AMI & C.V. comp., disch. alive	0.9
416	Septicemia, age >17	0.9
139	Cardiac arrhythmia & conduction disorders w/o cc	0.8
390	Neonate w/ other significant problems	0.8
167	Appendectomy w/o complicated principal diag. w/o cc	0.7
180	G.I. obstruction w/ cc	0.7
198	Cholecystectomy w/o C.D.E. w/o cc	0.6
277	Cellulitis, age >17, w/ cc	0.6
374	Vaginal delivery w/ sterilization and/or D&C	0.6
087	Pulmonary edema & respiratory failure	0.5
148	Major small & large bowel procedures w/ cc	0.5
207	Disorders of the biliary tract w/ cc	0.5
372	Vaginal delivery w/ complicating diagnoses	0.5
383	Other antepartum diagnoses w/ medical complications	0.5
395	Red blood cell disorders, age >17	0.5
430	Psychoses	0.5

Deletions to the List of DRGs Appropriate for Admission to Rural Primary Care Hospitals

DRG 187 (dental extractions and restorations) and DRG 492 (chemotherapy with acute leukemia as second diagnosis) were deleted from the list of 109 "approved" DRGs. Reconsidering its earlier work, the panel decided that these DRGs were not appropriate for admission to alternative model rural hospitals, because of the intensity of the condition, the resources necessary to treat the patient, or both. The deletion of these two DRGs will not have a material effect on the operation of alternative model facilities. Patients with these two conditions are not frequently admitted to small rural hospitals. In our sample of 47,544 discharges from three states, there was only one case of DRG 187 (the length of stay was 1 day), and there were no cases of DRG 492.

Obstetric Services in Rural Primary Care Hospitals

While the clinical advisory panel recommended that obstetrical and newborn care should not be provided routinely in alternative model rural hospitals, it did add four new DRGs that fall within MDC 14 (Pregnancy, Childbirth and the Puerperium) to the approved list. False labor (DRG 38) was the only DRG in MDC 14 on the original list of 109 appropriate DRGs. The new obstetrically related DRGs are DRG 376 (postpartum and post abortion diagnoses without surgical procedure); DRG 379 (threatened abortion); DRG 380 (abortion without D&C); and DRG 384 (other antepartum diagnoses without medical complications). These DRGs respond to the need for locally available non-delivery, obstetrically-related emergency services.

Surgical Services in Rural Primary Care Hospitals

The clinical advisory panel also added six surgical DRGs to the list of approved DRGs. These DRGs are for low intensity surgical procedures which commonly do not require general anesthesia. The DRGs are: DRG 227 (soft tissue procedures without complications); DRG 266 (skin graft and/or debridement, except for skin ulcer or cellulitis without complications); DRG 267 (perianal and pilonidal procedures); DRG 270 (other skin, subcutaneous tissue and breast procedure without complications); DRG 359 (uterine and adnexa procedures for non-malignancy without complications); and DRG 440 (wound debridement for injuries). These procedures may also be performed on an outpatient basis.

DISCUSSION

The system proposed in this paper is intended as a starting point for policymakers interested in developing a clinically-based method of limiting services in rural hospitals. Before a system such as the one we propose is implemented, three issues should be more fully addressed. These issues are:

- the ability to reproduce the recommendations of the clinical advisory panel;
- assessment of the procedure and burden of the exceptions process on providers and regulators; and
- analysis of whether low-risk obstetrics should be included on the list of approved DRGs.

Our clinical advisory panel was composed of three rural medical practitioners from different parts of the country. Despite their near unanimity in all clinical choices put before them in the course of this study, another group of rural practitioners may have selected

a different set of DRGs as those appropriate to treat in RPCHs. The process we used to develop the list of DRGs appropriate to treat in RPCHs should be replicated using different panels of practitioners, with the work of the several panels used to produce a commonly accepted list of approved DRGs.

We do not believe that the exceptions process will be onerous for RPCHs or the agencies that grant exceptions. If an RPCH has an average daily census of six (a number equal to the maximum allowable number of licensed acute RPCH beds); an average length of stay of four days; and requests an exception for 15 percent of its patients, it will request 82 exception reviews per year or 1.6 reviews per week. It is likely that the number of exceptions reviews per facility would actually be much lower than this example. This illustration may be extended to the state agency administering the exceptions process. If 20 RPCHs were located in a state (there are currently only 36 facilities that have received RPCH grants across all seven of the states participating in the program) and they requested exceptions reviews at a rate of 1.6 per week, the state agency would be called upon to make 32 reviews per week. Once criteria for reviews are established, the granting of exceptions should be a relatively routine task requiring only a short time to complete.

Even though it does not appear that an exceptions process would place an exceptional administrative burden on either RPCHs or the agencies that administer the procedure, there are still some issues in regard to the exceptions process that need to be resolved before a system such as the one we propose can be implemented. Among them are: Who should grant exceptions (e.g., the state PRO, the state department of

health, participating EACH medical staff)? What criteria are to be used in determining if an exception is appropriate? Should exceptions be granted on a case-by-case basis or should long-term exceptions be granted to allow specific DRGs or blocks of DRGs to be admitted to a facility?

The first two issues raised in this discussion, the determination of a commonly accepted set of DRGs appropriate for treatment in an RPCH and the criteria for an exceptions process, are related to the third: Should obstetrics (i.e., deliveries) be allowed in RPCHs, and, if so, under what conditions? This question can be phrased another way: Do low-risk obstetrical services properly belong on the list of approved DRGs? Our clinical advisory panel said "no." The panel argued that an exception to the rule could be granted, if RPCHs can prove that they are capable of performing obstetrics safely and efficiently. However, another clinical panel may decide to add obstetrics directly to the list of approved DRGs. We believe that the appropriateness of obstetrics services in RPCHs deserves further study. The decision to include or exclude obstetrical services and, to a lesser degree, surgical services at RPCHs is a volatile one and has the potential to derail this policy initiative. Therefore, we propose that the issues be decoupled. The merits of providing obstetrical and surgical services at RPCHs should be considered independently of an evaluation of the virtues of a clinically-based method of limiting services in RPCHs. In the next section we discuss the prevalence of obstetrical and surgical services in small rural hospitals and, for the sake of illustration, show how an exception to the exclusion of obstetrics and surgery from RPCHs might work.

Obstetrics and Surgery in Small Rural Hospitals

Approximately three of every four small rural hospitals in the states of Kansas, Michigan, and Washington are owned by a governmental entity. County, city, and district hospitals account for 73.8 percent of all hospitals in the sample. Public ownership may effect the perception of mission and the range of services hospitals choose to offer their patients. For example, publicly owned facilities may charge less for their services than comparable hospitals, choosing to finance operating shortfalls from non-operating (i.e., tax) revenues. Some publicly owned hospitals may choose to provide emergency, obstetrical, and surgical services at a financial loss, because these services are perceived to be essential to the community. Compared to other not-for-profit and for-profit hospitals, publicly owned facilities may be under greater pressure to conform to the demands of the community for a full range of medical and health services. Consequently, hospitals whose self-image and sense of mission conflict with the service limitation of a particular alternative model may be unwilling to convert even to obtain favorable reimbursement and regulatory relief. Therefore, the decision to exclude routine obstetrics and surgery from RPCHs under this proposal, may have an affect on some hospitals' willingness to participate.

Approximately one-quarter of the hospitals in our three-state sample (26.2 percent) did not deliver babies in 1991. Another quarter (25.7 percent) delivered between one and 25 babies, or an average of two or fewer deliveries per month. Another quarter (23.9 percent) delivered between 26 and 50 babies during 1991 or an average of between about 2 and about 4 deliveries per month. The remaining quarter delivered more than

50 babies in 1991, however, only 7.3 percent delivered more than 100 babies (or an average of roughly 8 per month). Despite this seemingly low delivery rate, obstetrical cases are the leading causes for admission to small rural hospitals.

Only 7.5 percent of the hospitals studied did not perform any inpatient surgeries during 1991. Twenty-eight percent performed 25 or fewer inpatient surgical procedures. Almost one quarter of the hospitals (24.2 percent) performed more than 100 surgical procedures in 1991, with 6.5 percent performing in excess of 200 inpatient surgeries. A similar pattern is repeated with outpatient surgeries, although the number of surgeries performed is doubled. Six and one-half percent of hospitals did not perform any outpatient surgeries in 1991. Almost one-third (30.8 percent) performed fifty or fewer outpatient surgical procedures. Twenty-eight percent of the hospitals performed more than 200 outpatient surgical procedures in 1991 with 7.5 percent of them performing more than 400.

The clinical advisory panel decided to exclude deliveries and surgeries requiring general anesthesia from the list of approved DRGs knowing that the elimination of these DRGs may make it more difficult for some communities and facilities to accept conversion. The panel members believed that some facilities may be capable of providing services and may be permitted to do so through the exceptions process. Rather than giving all limited service facilities permission to perform obstetrics and surgery with no review other than that which occurs retrospectively during licensure surveys, the panel felt that facilities should be required to verify in advance their capability to perform OB and surgical

procedures. Examples of how the exceptions process might work for obstetrics and surgery will serve to illustrate the concept:

Obstetrics A family physician who has delivered over 200 babies in the past has been providing prenatal care to a 30 year old woman since the first trimester of her pregnancy. The woman has had two other children and their births were without complication. The woman has no medical problems. The physician's office is equipped with ultrasonography and the hospital is equipped with a fetal monitor and a fax machine. The physician has a consulting arrangement with an obstetrician at a larger hospital. The hospital is staffed with two registered nurses who have OB experience and training. During the 34th week of pregnancy the local physician and the OB consultant confer and agree that the delivery may be performed in the RPCH with a high probability of success. The local physician contacts the PRO and requests preauthorization for an exception to deliver the baby sometime within the next four weeks. The PRO agrees and grants an exception.

Surgery A 67 year old man has been treated by a family physician for cholecystitis. The patient has no other serious medical problems. The physician recommends a cholecystectomy and refers the patient to the care of a consulting surgeon, who plans to perform the surgery in the RPCH. The local attending physician will serve as first assistant at surgery. The surgeon and the certified registered nurse anesthetist employed by the surgeon set a date for the surgery. They plan to meet and examine the patient at 8:00 a.m. on the day of the surgery. The surgery is scheduled for 11:00 a.m. The surgeon plans to remain in the community until 6:00 p.m. on the day of the surgery. The hospital is staffed with one registered nurse who has surgical experience and training and one certified nurse aide who has experience in preparing surgical packs and trays. The week before the scheduled surgery, the local physician contacts the PRO and requests preauthorization for an exception to perform the cholecystectomy on the day set for the surgery. The PRO grants an exception.

In the obstetrics example, the PRO might have denied the exception if the woman had a medical complication, such as diabetes, or if the facility did not have a sufficient number of nurses trained in obstetrics to provide around the clock coverage.

If facilities request and are granted and successfully perform a number of obstetrical and surgical procedures, PROs may grant a blanket exception for certain obstetrical and surgical DRGs, creating a facility-specific list of appropriate conditions to

admit and treat. PROs may wish to extend this blanket exceptions process to medical DRGs as well, requiring that facilities periodically certify that the criteria that earned them the exception to the rule are still in place.

Effects of Limiting Inpatient Utilization

Any limitation on services will reduce the inpatient utilization of most, if not all, small rural hospitals that convert to alternative models. Limiting services to a set of pre-approved DRGs may provide a better match between the health needs of the patient and the resources of the facility than temporal limitations, but both methods produce similar reductions in inpatient utilization. Table 5 is an estimate of the reduction of utilization in alternative model rural hospitals by service limitation approach. The precision of these estimates may be limited, because the behavioral response of physicians, administrators, and consumers to various service limits is not known at this time. For example, the effect on utilization of a 72-hour limitation on length of stay varies according to the assumptions one selects. If one assumes that only patients whose length of stay is less than three days would be admitted, 70.4 percent of patient days in the three-state sample would have been eliminated.

Table 5 also compares the effect on utilization of 72-hour and 96-hour service limitations to two DRG-based approaches. The reduction in patient days was calculated for both temporal limits using the "admit and discharge" and the "admit and transfer" assumptions. The estimates related to DRG-based approaches use the earlier list of 109 approved DRGs and the new list of 136 DRGs. Some patients and practitioners may choose not to use a hospital whose admitting practices are circumscribed by a list of

TABLE 5
ESTIMATED EFFECTS OF SERVICE LIMITATION APPROACHES
ON HOSPITAL UTILIZATION FOR RPCHs

Service Limitation	Estimated Patient Day Reduction	Estimated % Reduction In Patient Days
72 Hours		
Admit and Discharge*	131,007	70.4
Admit and Transfer**	73,167	39.3
96 Hours		
Admit and Discharge*	107,463	57.8
Admit and Transfer**	53,887	29.0
109 Approved DRGs	102,969	55.4
136 Approved DRGs	89,059	47.9

* Assumes that only patients whose complete length of stay is below the limit (i.e., 72 or 96 hours) will be admitted; all other patients will be admitted to a full service hospital.

** Assumes all patients will be admitted. Patients whose length of stay exceed the time limit will be transferred to a full service hospital when the time limit is reached. Patient days are counted for patients who are admitted and discharged plus those who are transferred after 3 days (72 hours) or 4 days (96 hours).

appropriate conditions, and will thereby reduce utilization below the level estimated. However, the exceptions process of the proposed method will allow these facilities to admit some patients whose conditions are not on the approved list, thereby reducing the degree of decline in utilization.

Patient days will decline by approximately one-half using the proposed DRG method. This degree of utilization reduction falls in the middle of the range of reduction estimated for the temporal limitations. But while the temporal methods merely cuts days without regard to the condition of the patient or the resources of the facility, the DRG method selects cases that are appropriate to admit and treat.

The average daily census of the hospitals in the three-state sample was 4.7 patients and the standard deviation was 2.5 patients. A service limitation which reduces the number of patient days by approximately one-half is also likely to reduce the average daily census by roughly one-half. The distribution of daily census is particularly meaningful to RPCHs, because the legislation that created it limited the bed size of facilities as well as length of stay. The final rules to implement the RPCH program limit the number of acute beds to six, but allow RPCHs to "swing" six more beds. Because swing beds are licensed for both acute care and skilled nursing care, acute patients can be treated in the swing beds during times of high census. This means that up to 12 acute patients can be treated in RPCHs at any one time. It appears that the six bed limitation will not serve as a detriment to the majority of hospitals willing to convert to RPCH status, and on those occasions when census temporarily soars, the swing beds should be adequate to absorb the additional volume.

Cost Implications of Temporal Service Limitations

Identifying in advance a set of conditions appropriate for admission and treatment in RPCHs would improve the continuity of care provided to patients, because it limits inappropriate transfers. Such a method of limiting services in RPCHs may also be less costly for the Medicare program than the current method. Among hospital cases that are transferred prior to reaching the geometric mean length of stay, one-day stays cost a little over twice the DRG per diem payment amount for cases in medical DRGs.⁵ Among medical DRG transfer cases, the costs of 2-day stays are approximately 20 percent higher than the per diem DRG rate, and stays over 2-days are approximately 10 percent higher than the per diem DRG rate (RAND, 1990).

Current Medicare reimbursement policy pays RPCHs on the basis of per diem costs. By truncating patient stays at three days or fewer, HCFA may be inflating the costs of care for short lengths of stay that would have averaged out to a lower cost per day over the course of an entire stay for a spell of illness. Current payment policy calls for Medicare to pay not only this higher per diem rate to the RPCH, but it also requires Medicare to pay the full DRG to the transfer facility. If the transfer facility is an EACH and if the EACH's payment status has been changed to reflect sole community provider rates by virtue of its participation in the EACH program, the full cost of the case to Medicare could be substantially greater than the standardized amount for the DRG.

A DRG-based service limitation would reduce some of the cost difference. A DRG-based system should reduce the number of patient transfers. If a physician plans to

⁵The DRG per diem payment is equal to the standardized amount multiplied by the DRG weight of a particular DRG divided by its federal mean length of stay.

admit a patient to an acute facility and knows the probable diagnosis of the patient, the list of DRGs that are appropriate to admit to an RPCH can be checked. If the condition is on the list the physician can admit the patient for the full stay. No transfer and double payment is required. Also, the lower daily costs at the end of the stay will be averaged with the higher daily costs at the beginning of the stay to reduce the per diem cost to the program. If the DRG is not on the list of conditions that may be admitted to RPCHs and if an exception is not granted, the patient will be admitted directly to a full service hospital. When patients bypass the RPCH and are admitted directly to full service hospitals, Medicare again forgoes the need to pay both the RPCH and the full service hospital for the care of the patient.

CONCLUSION

In conclusion, the use of the system proposed in this paper would help assure local access to basic acute care services in sparsely populated rural areas by identifying a group of core DRGs appropriate for admission to local facilities. It would improve the continuity of care delivered to patients in RPCHs and eliminate costly and unnecessary transfers. Allowing RPCHs to treat patients for the entire length of their illness may also promote greater acceptance of the model by helping the public to regard the RPCH as a place of definitive treatment and not merely an "inpatient waiting room" for a full-service hospital.

This proposal has positive implications for access and quality of care for local populations and is also likely to be less expensive for the Medicare program than the current system of paying RPCHs and EACHs. We believe that the system proposed in

this paper is superior to a service limitation based solely on time and can be used by HCFA as a starting point to develop a defensible, clinically-based service limitation for rural primary care hospitals.

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APPENDIX 1

Characteristics of 1991 Discharges from
Rural Hospitals with Average Daily Census Less than Ten
in the States of Kansas, Michigan, and Washington

DRG	NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS >		% OF CASES DISCH. TO		% OF HOSP HAVING AT LEAST ONE CASE (N=109)	
			3.0	4.0	HOSP	SNF	DIED	
DRG 391	3,845	1.9 (1.0)	7.6	2.0	0.0	.0	0.0	73.4
DRG 373	2,993	1.8 (3.0)	1.8	.5	.3	0.0	0.0	72.5
DRG 89	2,361	5.9 (3.6)	76.6	60.6	4.5	24.6	6.7	100.0
DRG 127	1,819	4.9 (3.8)	58.5	41.7	4.7	17.5	5.8	100.0
DRG 140	1,352	2.6 (1.6)	20.7	10.9	12.4	5.7	.3	98.2
DRG 182	1,251	3.5 (2.8)	38.9	23.7	4.6	9.4	.7	96.3
DRG 14	980	5.7 (7.6)	64.8	52.3	12.0	36.3	11.2	96.3
DRG 243	908	4.4 (3.5)	53.2	37.9	6.7	10.7	0.0	96.3
DRG 183	850	2.7 (2.1)	23.2	11.9	3.1	3.3	0.0	94.5
DRG 96	838	4.5 (2.7)	60.1	40.2	2.3	12.4	1.1	90.8
DRG 90	786	4.4 (2.3)	59.8	38.7	2.7	11.1	1.4	97.2
DRG 138	690	3.5 (2.5)	39.0	24.1	9.4	10.4	2.3	90.8
DRG 174	665	4.5 (3.1)	55.6	39.7	11.3	22.0	3.8	93.6
DRG 371	657	3.5 (1.0)	42.6	11.4	.5	0.0	0.0	65.1
DRG 91	619	3.1 (1.6)	29.7	14.4	2.4	.3	0.0	83.5
DRG 79	607	7.2 (4.7)	85.0	72.3	6.4	40.2	10.2	84.4
DRG 296	573	5.0 (4.5)	57.6	42.2	5.1	29.8	4.2	91.7
DRG 88	567	4.9 (4.7)	57.0	42.7	4.2	8.8	3.2	80.7
DRG 320	561	4.8 (2.6)	64.7	43.1	2.9	27.5	2.0	91.7
DRG 122	558	4.0 (3.1)	49.5	36.7	35.5	7.0	0.0	86.2
DRG 143	499	2.0 (3.0)	5.6	3.0	6.0	3.4	.4	78.0
DRG 359	493	3.7 (1.4)	53.3	19.5	.4	.4	0.0	73.4
DRG 294	456	4.8 (3.1)	62.1	40.1	3.3	14.9	1.3	90.8
DRG 98	442	2.5 (1.5)	14.9	6.8	2.0	.2	0.0	78.0
DRG 416	418	5.8 (3.7)	69.9	59.8	6.7	31.3	11.7	83.5
DRG 121	405	5.3 (3.7)	63.2	54.1	31.9	19.3	0.0	78.9
DRG 139	403	2.5 (1.8)	19.4	13.4	8.2	5.0	0.0	82.6
DRG 97	366	3.3 (1.8)	36.6	20.8	1.6	3.6	0.0	84.4
DRG 15	363	3.5 (2.7)	36.9	22.9	5.5	16.5	.6	81.7
DRG 390	361	2.2 (1.1)	11.6	3.0	0.0	.6	0.0	59.6
DRG 167	354	2.7 (1.3)	18.6	8.5	.3	0.0	0.0	66.1
DRG 180	335	4.9 (3.5)	59.4	47.8	17.0	20.0	4.5	81.7
DRG 198	305	3.4 (2.0)	46.2	25.6	0.0	2.0	0.0	61.5
DRG 374	303	2.2 (.9)	7.3	1.0	.3	0.0	0.0	49.5
DRG 277	286	5.8 (4.0)	73.4	54.2	1.4	24.5	.3	87.2
DRG 324	282	1.8 (2.4)	5.3	2.1	8.5	1.1	0.0	79.8
DRG 321	279	3.4 (2.0)	38.7	22.9	2.5	9.3	1.1	74.3
DRG 297	278	3.4 (2.8)	32.0	22.3	1.8	14.4	.7	78.9
DRG 184	256	2.0 (1.7)	7.8	3.9	3.9	0.0	0.0	72.5
DRG 87	252	5.5 (7.4)	58.3	46.4	11.1	16.3	14.7	72.5
DRG 148	246	9.8 (5.2)	95.5	93.1	1.6	24.8	4.5	52.3
DRG 278	241	4.3 (3.2)	52.3	31.1	4.1	9.1	0.0	75.2
DRG 208	240	2.6 (1.6)	25.4	12.5	11.3	2.1	0.0	78.9
DRG 430	235	6.6 (5.9)	62.1	51.5	8.9	5.5	.4	50.5
DRG 395	224	4.4 (4.2)	47.8	33.5	4.9	17.0	.4	75.2

	DRG	NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS >		RELATIVE WEIGHT	% OF CASES DISCH. TO		% DIED	% OF HOSP HAVING AT LEAST ONE CASE (N=109)
				3.0	4.0		HOSP	SNF		
DRG 372	VAGINAL DELIVERY W COMPLICATING DIAGNOSES	221	2.3 (1.5)	10.4	4.5	.5235	0.0	0.0	0.0	49.5
DRG 383	OTHER ANTEPARTUM DIAGNOSES W MEDICAL COMPLICATIONS	216	2.5 (2.3)	17.6	8.8	.3934	12.5	0.0	0.0	57.8
DRG 207	DISORDERS OF THE BILIARY TRACT WITH CC	214	4.0 (2.9)	45.3	33.2	.9732	17.8	6.5	1.4	67.0
DRG 389	FULL TERM NEONATE W MAJOR PROBLEMS	212	2.7 (1.6)	25.0	14.6	1.3846	0.0	.5	0.0	46.8
DRG 236	FRACTURES OF HIP & PELVIS	210	6.6 (8.1)	63.8	49.0	.8428	19.0	36.7	1.0	70.6
DRG 130	PERIPHERAL VASCULAR DISORDERS WITH CC	209	6.3 (7.7)	76.6	62.2	.9118	11.5	19.6	4.8	76.1
DRG 175	G.I. HEMORRHAGE W/O CC	198	3.1 (2.0)	32.3	16.2	.5723	13.1	12.1	1.0	71.6
DRG 197	CHOLECYSTECTOMY W/O C.D.E WITH CC	193	5.6 (3.1)	74.6	63.2	1.6872	1.0	4.1	.5	53.2
DRG 128	DEEP VEIN THROMBOPHLEBITIS	187	6.4 (3.0)	82.9	70.6	.7906	3.2	10.2	0.0	64.2
DRG 370	CESAREAN SECTION W CC	187	4.1 (1.9)	56.1	24.6	1.0237	1.1	0.0	0.0	42.2
DRG 358	UTERINE & ADNEXA PROC FOR NON-MALIGNANCY WITH CC	185	4.8 (2.2)	78.9	48.1	1.1104	0.0	2.7	0.0	55.0
DRG 25	SEIZURE & HEADACHE AGE > 17 W/O CC	181	2.5 (2.3)	18.8	11.0	.5252	3.9	5.0	0.0	67.0
DRG 65	DYSEQUILIBRIUM	180	2.8 (1.7)	23.9	11.7	.4727	2.2	5.6	0.0	68.8
DRG 131	PERIPHERAL VASCULAR DISORDERS W/O CC	180	6.0 (5.3)	82.2	64.4	.5882	2.8	8.9	.6	65.1
DRG 82	RESPIRATORY NEOPLASMS	176	5.3 (4.9)	55.7	42.0	1.2453	15.3	15.9	25.0	70.6
DRG 204	DISORDERS OF PANCREAS EXCEPT MALIGNANCY	175	4.9 (3.0)	65.1	47.4	1.0870	9.1	6.3	1.7	62.4
DRG 70	OTITIS MEDIA & URI AGE 0-17	168	2.4 (1.4)	16.1	7.1	.5295	1.2	0.0	0.0	60.6
DRG 181	G.I. OBSTRUCTION W/O CC	166	3.0 (1.9)	33.1	19.3	.4988	18.1	3.6	1.8	70.6
DRG 337	TRANSURETHRAL PROSTATECTOMY W/O CC	166	3.2 (1.5)	36.7	15.1	.6163	0.0	4.2	0.0	30.3
DRG 99	RESPIRATORY SIGNS & SYMPTOMS WITH CC	165	3.3 (2.2)	35.2	22.4	.7962	14.5	10.3	3.0	57.8
DRG 356	FEMALE REPRODUCTIVE SYSTEM RECONSTRUCTIVE PROC	164	3.3 (1.7)	39.6	17.7	.7076	.6	3.0	0.0	50.5
DRG 239	PATHOLOGICAL FRACT & MUSCULOSKEL & CONN TISS MALIG	163	5.9 (3.9)	69.9	56.4	1.0269	5.5	35.0	4.9	58.7
DRG 323	URINARY STONES WITH CC, &/OR ESW LITHOTRIPSY	163	2.4 (2.8)	16.0	9.2	.7422	18.4	2.5	0.0	63.3
DRG 123	CIRCULATORY DISORDERS W AMI. EXPIRED	162	3.4 (3.8)	28.4	24.7	1.3920	0.0	0.0	100.0	62.4
DRG 449	POISONING & TOXIC EFFECTS OF DRUGS AGE > 17 W CC	157	3.0 (2.4)	29.3	17.2	.7867	6.4	11.5	1.9	64.2
DRG 141	SYNCOPE & COLLAPSE WITH CC	156	3.6 (3.5)	39.1	25.0	.6950	6.4	17.9	.6	61.5
DRG 24	SEIZURE & HEADACHE AGE > 17 WITH CC	151	3.5 (3.0)	35.8	21.2	.9792	6.6	20.5	0.0	63.3
DRG 435	ALC/DRUG ABUSE OR DEP, DETOX OR OTH SYM TRT W/O CC	147	5.9 (8.3)	38.1	23.8	.5141	3.4	2.7	0.0	40.4
DRG 134	HYPERTENSION	145	3.3 (2.3)	34.5	19.3	.5663	4.1	8.3	0.0	58.7
DRG 316	RENAL FAILURE	145	6.1 (4.8)	61.4	56.6	1.2814	17.2	22.8	20.7	63.3
DRG 368	INFECTIONS, FEMALE REPRODUCTIVE SYSTEM	144	3.6 (3.1)	39.6	20.8	.9233	.7	0.0	0.0	63.3
DRG 144	OTHER CIRCULATORY SYSTEM DIAGNOSES W CC	141	4.9 (4.6)	52.5	38.3	1.0888	9.9	15.6	7.8	64.2
DRG 384	OTHER ANTEPARTUM DIAG W/O MEDICAL COMPLICATIONS	141	1.9 (1.9)	12.8	6.4	.3027	27.0	.7	0.0	45.0
DRG 336	TRANSURETHRAL PROSTATECTOMY WITH CC	138	4.0 (2.7)	47.1	31.2	.9005	1.4	6.5	.7	29.4
DRG 450	POISONING & TOXIC EFFECTS OF DRUGS AGE > 17 W/O CC	134	1.9 (1.4)	9.7	5.2	.4428	7.5	1.5	0.0	63.3
DRG 379	THREATENED ABORTION	132	1.8 (1.4)	6.8	3.8	.2892	12.1	0.0	0.0	34.9
DRG 188	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE > 17 WITH CC	130	4.2 (3.2)	50.0	32.3	.9846	22.3	11.5	5.4	62.4
DRG 68	OTITIS MEDIA & URI AGE > 17 WITH CC	129	3.5 (1.9)	38.8	22.5	.7277	1.6	5.4	.8	61.5
DRG 425	ACUTE ADJUST REACT & DISTURB OF PSYCHOSOCIAL DYS	129	3.6 (3.4)	36.4	24.8	.7113	1.6	8.5	0.0	51.4
DRG 421	VIRAL ILLNESS AGE > 17	127	3.1 (2.5)	29.9	15.7	.6667	2.4	2.4	0.0	59.6
DRG 132	ATHEROSCLEROSIS WITH CC	124	4.4 (4.7)	42.7	34.7	.7312	8.9	8.1	12.1	40.4
DRG 298	NUTRITIONAL & MISC METABOLIC DISORDERS AGE 0-17	119	2.2 (1.4)	11.8	5.9	.5396	2.5	0.0	.8	40.4
DRG 69	OTITIS MEDIA & URI AGE > 17 W/O CC	118	2.9 (1.5)	28.8	10.2	.5156	1.7	0.0	0.0	53.2
DRG 80	RESPIRATORY INFECTIONS & INFLAMMAT AGE > 17 W/O CC	118	5.0 (2.7)	73.7	48.3	1.0066	3.4	25.4	7.6	49.5
DRG 385	NEONATES, DIED OR TRANS TO ANOTH ACUTE CARE FACILI	118	1.3 (.9)	3.4	1.7	1.2084	95.8	0.0	4.2	45.0

FY1991 DISCHARGES FROM KANSAS, MICHIGAN, AND WASHINGTON SMALL RURAL HOSPITALS WITH AVERAGE DAILY CENSUS LESS THAN 10										PAGE	
DRG	NUM OF CASES	AVERAGE LOS (SD)	% OF CASES WITH LOS >		RELATIVE WEIGHT	% OF CASES DISCH. TO		% DIED	% OF HOS HAVING AT LEAS ONE CAS (N=109		PAGE
			3.0	4.0		HOSP	SNF				
DRG 460	56	4.8 (5.5)	46.4	35.7	1.0435	0.0	7.1	0.0	0.0	38.5	
DRG 33	54	1.4 (1.0)	3.7	1.9	.2427	3.7	1.9	0.0	0.0	32.1	
DRG 71	54	2.2 (1.7)	11.1	3.7	.8197	5.6	0.0	1.9	29.4		
DRG 179	54	5.4 (3.9)	59.3	37.0	1.1141	5.6	5.6	0.0	0.0	34.9	
DRG 257	54	4.1 (2.0)	57.4	31.5	.9024	0.0	18.5	0.0	0.0	31.2	
DRG 350	54	3.8 (2.2)	44.4	25.9	.6731	3.7	7.4	0.0	0.0	33.0	
DRG 210	53	8.3 (3.6)	98.1	90.6	1.9386	0.0	67.9	5.7	13.8		
DRG 429	53	5.2 (4.0)	66.0	41.5	.9342	5.7	49.1	0.0	0.0	28.4	
DRG 12	50	7.2 (7.4)	68.0	50.0	.9372	2.0	42.0	4.0	30.3		
DRG 253	50	6.9 (13.1)	58.0	44.0	.7885	12.0	38.0	0.0	0.0	33.9	
DRG 418	50	5.2 (3.7)	54.0	40.0	.9585	4.0	18.0	0.0	0.0	33.9	
DRG 437	50	23.5 (9.0)	98.0	96.0	1.1775	0.0	0.0	0.0	0.0	2.8	
DRG 150	48	9.7 (5.1)	91.7	89.6	2.5069	6.3	22.9	2.1	25.7		
DRG 154	48	9.8 (4.5)	97.9	97.9	4.1746	8.3	20.8	2.1	24.8		
DRG 166	48	4.4 (2.3)	56.3	39.6	1.2931	2.1	2.1	0.0	0.0	28.4	
DRG 190	48	1.9 (1.2)	10.4	4.2	.7555	4.2	0.0	0.0	0.0	27.5	
DRG 145	47	2.9 (3.4)	27.7	12.8	.6454	14.9	6.4	6.4	29.4		
DRG 159	47	4.5 (3.2)	61.7	42.6	1.0701	0.0	6.4	0.0	28.4		
DRG 161	47	3.2 (2.3)	34.0	19.1	.7382	0.0	6.4	4.3	31.2		
DRG 176	47	5.8 (4.7)	59.6	53.2	1.0235	14.9	8.5	2.1	32.1		
DRG 158	46	3.1 (1.8)	32.6	15.2	.4909	0.0	2.2	0.0	29.4		
DRG 346	46	4.9 (3.3)	60.9	47.8	.9609	6.5	30.4	13.0	29.4		
DRG 195	45	8.5 (3.3)	97.8	93.3	2.2099	4.4	8.9	2.2	23.9		
DRG 202	44	5.9 (3.9)	59.1	54.5	1.2231	9.1	18.2	18.2	27.5		
DRG 206	44	4.0 (2.5)	45.5	31.8	.6029	9.1	0.0	0.0	29.4		
DRG 376	44	2.6 (1.5)	22.7	11.4	.3764	0.0	0.0	0.0	26.6		
DRG 397	44	4.3 (2.9)	45.5	34.1	1.2128	9.1	27.3	2.3	26.6		
DRG 113	43	8.7 (6.5)	76.7	67.4	2.6925	2.3	72.1	7.0	26.6		
DRG 81	41	4.1 (2.7)	43.9	24.4	1.0899	7.3	4.9	0.0	19.3		
DRG 94	41	6.2 (5.1)	68.3	56.1	1.2472	2.4	12.2	4.9	26.6		
DRG 66	40	2.7 (2.2)	25.0	12.5	.4608	10.0	12.5	0.0	23.9		
DRG 92	40	4.8 (2.7)	65.0	55.0	1.1997	20.0	5.0	5.0	30.3		
DRG 256	40	2.8 (2.1)	25.0	17.5	.6409	0.0	2.5	0.0	29.4		
DRG 427	40	6.0 (5.5)	62.5	42.5	.6028	2.5	2.5	0.0	11.0		
DRG 436	40	12.6 (7.1)	100.0	97.5	1.0782	0.0	0.0	0.0	1.8		
DRG 445	40	3.2 (1.8)	32.5	25.0	.4911	2.5	7.5	0.0	28.4		
DRG 398	39	5.1 (3.3)	61.5	51.3	1.2080	10.3	5.1	0.0	23.9		
DRG 463	39	7.6 (11.6)	46.2	46.2	.7297	0.0	28.2	2.6	26.6		
DRG 20	38	5.6 (4.3)	60.5	50.0	1.9348	18.4	10.5	2.6	25.7		
DRG 83	37	4.2 (2.9)	54.1	32.4	.9606	2.7	13.5	0.0	26.6		
DRG 325	37	3.3 (2.9)	40.5	18.9	.6673	8.1	10.8	0.0	27.5		
DRG 185	36	3.7 (2.5)	47.2	30.6	.7766	8.3	2.8	0.0	25.7		
DRG 279	36	2.8 (1.2)	16.7	8.3	.7278	0.0	0.0	0.0	24.8		
DRG 300	36	5.3 (5.1)	72.2	47.2	1.1191	5.6	16.7	8.3	27.5		
DRG 151	35	5.8 (4.2)	60.0	51.4	1.2042	0.0	5.7	0.0	22.9		