
A Clinically Based Service Limitation Option for Alternative Model Rural Hospitals

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Alternative model rural hospitals are designed to address problems faced by small, isolated rural hospitals. Typically, hospital regulations are reduced in exchange for a limit on the services that alternative models may offer. The most common service limitation is a limit on length of stay (LOS), a method with little empirical or conceptual support. The purpose of this article is to present a clinically based service limitation for alternative model rural hospitals, such as the rural primary care hospital. The proposal is based on an analysis of Medicare discharges from rural hospitals most likely to convert and the judgments of a technical advisory panel of rural clinicians.

INTRODUCTION

A number of alternative model rural hospitals have been designed and implemented to address the problems faced by small, isolated rural hospitals (Moscovice et al., 1992; Christianson et al., 1990; Mick and Morlock, 1990; Moscovice, 1989). Alternative model rural hospitals typically feature a reduction in the regulations required of full-service hospitals in exchange for a limitation on the range of patient services the facility may provide. The

term limited-service rural hospital is used synonymously with alternative model rural hospital (Arthur D. Little, Inc., 1974). The most prominent examples of the alternative model rural hospitals to be implemented are the Montana medical assistance facility (MAF), the California alternative rural hospital model (ARHM), and the Federal rural primary care hospital (RPCH) of the Essential Access Community Hospital (EACH) program (Wellever, 1994; Moscovice et al., 1992).

Service limitation is the most important characteristic in defining alternatives to the traditional acute care rural hospital (Christianson et al., 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 establishing MAFs and the Federal statute establishing RPCHs define the service limitations for these facilities by a maximum LOS—96 hours for MAFs and 72 hours for RPCHs (Agency for Health Care Policy and Research, 1991). These LOS limitations have no clinical basis. Their strict enforcement would result in transfers of patients who may require only one or two

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additional inpatient treatment days, and inhibit transfer of patients from full-service hospitals to MAFs and RPCHs for convalescence.

A recent review of the current state of development of institutional alternatives to traditional rural hospitals identified four mechanisms used to define service limitations:

- LOS limits that restrict the amount of time a patient may remain in a facility following admission.
- 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 modules depending on the needs of the community and capabilities of the facility and staff.
- Diagnosis-related group (DRG)-based limits that place restrictions on the types of patients that may be admitted to a limited-service facility.

This review also found that the most common service limitation used in defining alternative models is an LOS limit, although it has little empirical or conceptual support (Moscovice et al., 1992).

The issue of defining service limitations for alternative model rural hospitals has become a source of controversy in discussions about implementation of the Federal EACH/RPCH program. Following the publication of proposed rules for the program (*Federal Register*, 1991), the seven States that received EACH/RPCH grants participated in a series of implementation meetings. At these meetings, the States stated the need for program-

matic 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 concerns about the strict interpretation of both the 72-hour LOS and the 6-bed limit in law and HCFA regulations. The States were concerned that an inflexible policy could lead to increased costs and considerable disruption for Medicare patients treated in RPCHs.

The purpose of this article 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 judgments of a technical advisory panel of rural clinicians. Although our findings are relevant to all alternative model rural hospitals, they are specifically intended to inform RPCH policymaking. For this reason, the term RPCH is used interchangeably with alternative model rural hospital.

ANALYSIS OF MEDICARE DATA

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 limited-service facilities. Based on our previous research, we defined this group as non-metropolitan statistical area (MSA) hospitals with an average acute patient daily census of fewer than 10. 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 Medicare provider analysis and review (MEDPAR) hospital file, which contains detailed information (e.g. DRG, LOS 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 percent 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 an Agency for Health Care Policy and Research report that summarizes the 50 most frequent DRGs and procedures in small rural hospitals, based on 1986 data from the Hospital Cost and Utilization Project (Lemrow et al., 1990).

Based on data from the 1989 American Hospital Association (AHA) master file and 1989 prospective payment system files, we identified 784 rural (i.e. non-MSA) hospitals with average daily census of fewer than 10. For each hospital on the list, we requested fiscal year (FY) 1991 data from HCFA on the total number of discharges, LOS (mean and standard deviation), discharge status (transfers by destination, discharge to home, and deaths), total charges, and total Medicare payment for each DRG. In April 1992, we received the above information from HCFA for 690 rural hospitals on our origi-

nal list that were still operational as inpatient facilities in 1991 (i.e. had not closed, converted, or merged).

Because of the large size of the data file, we requested aggregate data (e.g., total number of cases, mean and standard deviation of LOS, and percent of 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 LOS and the percent of cases with LOS greater than 3 or 4 days. We assumed that individual patients' LOS are independent from each other, both within and across hospitals, and that the distribution of LOS in each DRG is log normal. The log normal assumption is appropriate for a variable such as LOS 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 LOS (U.S. Department of Health and Human Services, 1982).

Several key points highlighted by our analysis are¹:

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

¹We conservatively assumed that rural hospitals interested in becoming a limited-service facility included those with average daily census of fewer than 10. To better understand the sensitivity of our results to this assumption, we also computed results for the 467 rural hospitals in the sample with average daily census of fewer than 8 and again for the 299 with average daily census of fewer than 6. After ordering these lists by descending order of discharges in a DRG, we calculated Spearman Rank Order Correlation Coefficients of 0.99 between the average daily census of fewer than 10 list and average daily census of fewer than 8 list, and 0.98 between the average daily census of fewer than 10 list and average daily census of fewer than 6 list. The ordering of the DRG lists does not appear to be sensitive to the average daily census limit used to define the sample.

Table 1
Medicare Diagnosis-Related Groups (DRGs) Most Frequently Treated in Small Rural Hospitals

| DRG Code | Definition | Number of Cases | Percent of Total Cases | Length of Stay (Standard Deviation) | Percent of Cases With Length of Stay | |
|----------|---|-----------------|------------------------|-------------------------------------|--------------------------------------|------------------|
| | | | | | More Than 3 Days | More Than 4 Days |
| 89 | Simple Pneumonia & Pleurisy Age >17 w CC | 12,242 | 8.5 | 6.2 (4.4) | 79.4 | 64.5 |
| 127 | Heart Failure & Shock | 11,500 | 7.9 | 5.3 (5.7) | 57.9 | 44.9 |
| 140 | Angina Pectoris | 6,027 | 4.2 | 3.1 (2.5) | 37.6 | 23.7 |
| 14 | Specific Cerebrovascular Disorders Except TIA | 5,581 | 3.9 | 6.2 (8.5) | 57.3 | 46.3 |
| 182 | Esophagitis, Gastroent & Misc Digest Disord Age > 17 w CC | 5,332 | 3.7 | 4.2 (3.1) | 57.3 | 40.1 |
| 96 | Bronchitis & Asthma Age > 17 w CC | 4,088 | 2.8 | 5.0 (6.3) | 51.5 | 39.9 |
| 296 | Nutritional & Misc Metabolic Disorders Age > 17 w CC | 4,084 | 2.8 | 5.4 (5.5) | 61.1 | 47.6 |
| 320 | Kidney & Urinary Tract Infections Age > 17 w CC | 3,590 | 2.5 | 5.6 (3.7) | 76.7 | 59.9 |
| 79 | Respiratory Infections & Inflammations Age > 17 w CC | 3,511 | 2.4 | 7.8 (6.7) | 81.7 | 69.7 |
| 88 | Chronic Obstructive Pulmonary Disease | 3,307 | 2.3 | 5.0 (4.8) | 58.9 | 44.8 |

NOTES: CC is complications and comorbidities. TIA is transient ischemic attack. Gastroent is gastroenterological. Disord is disorders. Misc is miscellaneous.

SOURCE: Moscovice, I., Wellever, A., Sales, A., Chen, M.M., and Christianson, J., University of Minnesota, 1993.

medical admissions. In FY 1991, the 10 most frequent DRGs accounted for 41 percent of the total caseload of rural hospitals with average daily census of fewer than 10; the top 20 DRGs accounted for 57 percent of the caseload (Table 1). In addition, 71 DRGs were not seen in any of the 690 hospitals, and 170 DRGs had fewer than 10 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 our results with the list of most frequent DRGs discharged from all hospitals in 1986 (Lemrow et al., 1990), one observes a similarity in the most frequent DRGs on both lists. Five of the 10 most frequent DRGs in small rural hospitals are also in the top 10 DRGs discharged from all hospitals; of the remaining 5 in the all-hospital list, 3 are associated with obstetrical deliveries, and 1 with hysterectomies for women under 70 years of age. These DRGs are not represented in our sample. A similar pattern exists for the next 10 most frequent DRGs on the list.

- 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 percent were transferred to another hospital. Of the 155

Table 2

Medicare Diagnosis-Related Groups (DRGs¹) Most Frequently Transferred from Small Rural Hospitals to Other Hospitals

| DRG Code | Definitions | Transfer Rate to Other Hospitals | Number of Discharges |
|----------|---|-------------------------------------|-------------------------|
| | | In Percent | |
| 122 | Circulatory Disorders w/AMI and w/o C.V. Comp Disch Alive | 32.6 | 2,058 |
| 121 | Circulatory Disorders w/AMI and C.V. Comp Disch Alive | 26.1 | 2,078 |
| 475 | Respiratory System Diagnosis with Ventilator Support | 24.1 | 191 |
| 189 | Other Digestive System Diagnoses Age > 17 w/o CC | 23.7 | 135 |
| 207 | Disorders of Biliary Tract w/CC | 22.3 | 1,024 |
| 133 | Atherosclerosis w/o CC | 21.9 | 320 |
| 181 | G.I. Obstruction w/o CC | 21.1 | 606 |

¹DRGs with at least 100 discharges in fiscal year 1991.

NOTES: AMI is acute myocardial infarction. C.V. is cardiovascular. Comp is complications. Disch is discharged. CC is complications and comorbidities. G.I. is gastrointestinal.

SOURCE: Moscovice, I., Wellever, A., Sales, A., Chen, M.M., and Christianson, J., University of Minnesota, 1993.

DRGs that had at least 100 discharges, only 7 had a transfer rate of at least 20 percent and 40 had a transfer rate of at least 10 percent. Table 2 presents a list of the DRGs that were transferred most frequently to other hospitals.² 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.

- LOSs in small rural hospitals frequently exceed 3 or 4 days. Using LOS 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 had an average LOS of fewer than 3 days, and only 4 averaged fewer than 4 days.

Moreover, 62.4 percent of all of the cases in the top 20 DRGs had LOSs more than 3 days and 47.8 percent more than 4 days. Comparable figures for all 492 DRGs are 61.6 percent of admissions with LOS more than 3 days, and 47.1 percent more than 4 days.

In estimating the number of inpatient days lost because of LOS cutoffs (such as those used in the EACH/RPCH and the Montana MAF programs), we assumed that hospitals would admit these cases and transfer them after the LOS cutoff was reached. With this assumption, we estimate that small rural hospitals would lose a substantial portion of their inpatient days (51.1 percent with a 3-day LOS limit and 40.7 percent with a 4-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

²Table 2 does not include DRGs that had fewer than 100 discharges, because reasonable inferences could not be made about the transfer rate for those DRGs.

³The estimates of lost inpatient days increase dramatically (86.5 percent with a 3-day LOS limit, 76.8 percent with a 4-day LOS limit) if we assume hospitals would not admit cases that were expected to have LOSs longer than the cutoff point.

by rural hospitals that are not already closed or on the brink of closure.

AN ALTERNATIVE SERVICE LIMITATION PROPOSAL

The proposed method for limiting services in institutional alternatives to the traditional rural hospital combines several approaches that have already been used or suggested (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 preliminary DRG. Administrators of the program would divide the 492 DRGs into two groups: (1) conditions that are not appropriate to treat at limited-service rural hospitals; and (2) conditions that are appropriate to treat at limited-service rural hospitals.

The DRG assigned to the patient would be compared with 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, he or she would be transferred immediately, or an "exceptions review" would be requested. If the patient's DRG is among those on the list approved for treatment, he or she would be 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 him or her. That is, the facility would not be required to treat patients with diagnoses that appear on the approved DRG list.

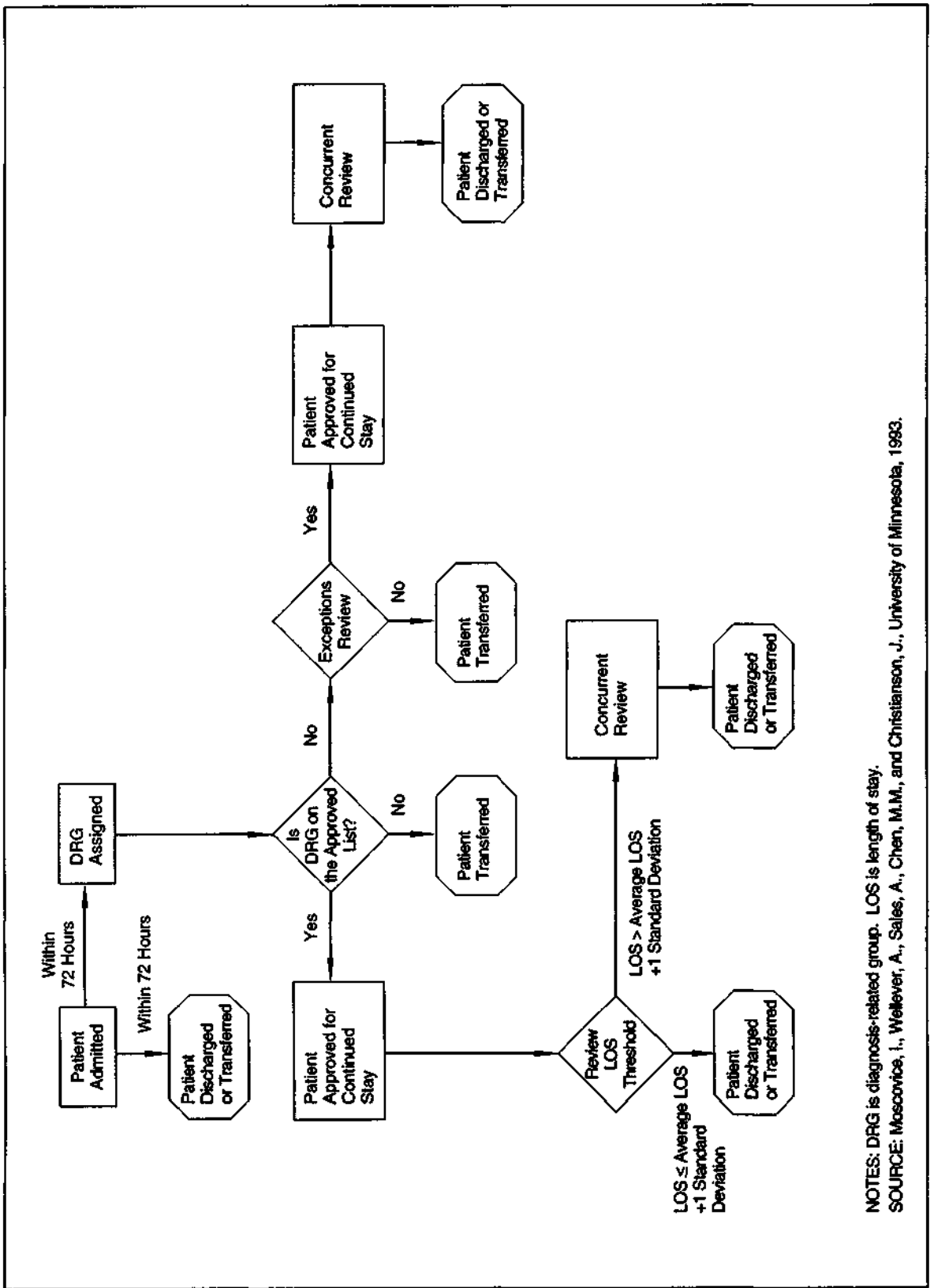
If the patient's DRG is not on the approved list, the facility may request a review of the appropriateness of admission

for this particular case. As part of this exceptions review, the peer review organization (PRO) would assess the capability of the facility to care for the patient and the condition and prognosis of the patient, and render a decision either to transfer the patient to a full-service hospital or to certify the patient for a continuation of the stay at the limited-service facility. The decision of the PRO reviewer may be appealed to a physician reviewer whose decision would be final. Violations of PRO directives would 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 would be evaluated by PRO staff at the earliest available time, and a decision would be made to concur with the continuation of the stay or to deny it. Providers who call and leave an appropriate message would be presumed to be acting in good faith, and would 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 the stay, a process of mandatory concurrent review would be triggered. The PRO would monitor the care of the patient for appropriateness of care, and, if warranted, 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

Figure 1
A New Proposal for Defining Service Limitation



NOTES: DRG is diagnosis-related group. LOS is length of stay.
 SOURCE: Moscovice, I., Weliver, A., Sales, A., Chen, M.M., and Christianson, J., University of Minnesota, 1993.

choose to transfer the patient. If the patient is not transferred, he or she would be discharged from the limited-service rural hospital. If the patient's DRG is not on the approved list and the facility does not request an exceptions review, the patient would have to be transferred immediately to a full-service hospital.

Mandatory concurrent utilization review would also be 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 LOS exceeded the mean LOS plus one standard deviation for similar DRGs. The procedure for review by the PRO and the transfer and discharge options in these cases would be identical to those previously described relating to the exceptions process.

In summary, the proposed system for limiting services would begin with an evaluation period based on an LOS limitation. Following the evaluation, patients would be assigned to one of two modules that are determined by DRGs. Patients whose DRGs are on the approved list would be allowed to continue to receive care in the facility. Facilities would have to justify that an exception is warranted for patients whose DRGs are not on the approved list, otherwise such patients would 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 on existing features of the

EACH Program and the prospective payment system (PPS). The EACH legislation and the rules for the program limit patient stays in RPCHs to a maximum of 72 hours. Implicitly, there are no limitations placed on 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 some time during the 72-hour limit. The service limitation previously described 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 intravenous fluids and has been responding well to treatment. The physician feels the patient needs 2 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 threshold 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 RPCHs. 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 (i.e., two rural family physicians and one physician's assistant) was asked to review the 492 DRGs and to assign each DRG to one of two groups: conditions that are not appropriate to treat at RPCHs, and conditions that are appropriate to treat at RPCHs. In making these assignments, 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 [*Federal Register*, 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).

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 on the characteristics of Medicare discharges from small rural hospitals before making decisions on which DRGs are appropriate to treat at RPCHs.

The 492 DRGs were divided into surgical and medical DRGs, and assumption was made that no surgical cases would be treated at RPCHs. This left 279 medi-

cal DRGs; of these, another 8 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 judgment. When there was no consensus on a given DRG, the judgment of two of the three clinicians was used to determine whether it 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), and 109 DRGs were considered appropriate to admit and treat in a limited-service rural facility (Table 3). These DRGs were divided by major 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 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

⁴DRG relative weights may be used as a proxy for intensity of service as measured by normative resource consumption and LOS. 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 their weighted average on the approved list for RPCHs is 0.8881, as compared with 1.1455 for those DRGs not on the approved list. This supports our belief that the proposed service limitation focuses on admissions that require less intensive treatment.

Table 3

Medical DRGs Appropriate to Admit and Treat in Rural Primary Care Hospitals

| MDC and DRG Codes | Definitions |
|-------------------|--|
| MDC 1 | 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/o 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 2 | Diseases and Disorders of the Eye |
| DRG 43 | Hyphema |
| MDC 3 | Diseases and Disorders of the Ear, Nose, Mouth, and Throat |
| DRG 66 | Epistaxis |
| DRG 68 | Otitis Media & URI Age > 17 w 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 Ear, Nose, Mouth and Throat Diagnoses Age > 17 |
| DRG 74 | Other Ear, Nose, Mouth and Throat Diagnoses Age 0-17 |
| MDC 4 | Diseases and Disorders of the Respiratory System |
| DRG 80 | Respiratory Infections & Inflammations Age > 17 w/o CC |
| DRG 81 | Respiratory Infections & Inflammations Age 0-17 |
| DRG 86 | Pleural Effusion w/o CC |
| DRG 88 | Chronic Obstructive Pulmonary Disease |
| DRG 89 | Simple Pneumonia & Pleurisy Age > 17 w 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 w CC |
| DRG 97 | Bronchitis & Asthma Age > 17 w/o CC |
| DRG 98 | Bronchitis & Asthma Age 0-17 |
| DRG 99 | Respiratory Signs & Symptoms w CC |
| DRG 100 | Respiratory Signs & Symptoms w/o CC |
| DRG 101 | Other Respiratory System Diagnoses w CC |
| DRG 102 | Other Respiratory System Diagnoses w/o CC |
| MDC 5 | 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 6 | Diseases and Disorders of the Digestive System |
| DRG 178 | Uncomplicated Peptic Ulcer w/o CC |
| DRG 179 | Inflammatory Bowel Disease |
| DRG 183 | Esophagitis, Gastroent & Misc Digest Disorders Age > 17 w/o CC |
| DRG 184 | Esophagitis, Gastroent & Misc Digest Disorders Age 0-17 |
| DRG 187 | Dental Extractions & Restorations |
| DRG 189 | Other Digestive System Diagnoses Age > 17 w/o CC |
| DRG 190 | Other Digestive System Diagnoses Age 0-17 |
| MDC 7 | Diseases and Disorders of the Hepatobiliary System and Pancreas |
| DRG 208 | Disorders of the Biliary Tract w/o CC |

See footnotes at end of table.

Table 3—Continued

Medical DRGs Appropriate to Admit and Treat in Rural Primary Care Hospitals

| MDC and DRG Codes | Definitions |
|----------------------|---|
| MDC 8 | 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 | Signs & Symptoms of Musculoskeletal System & Conn Tissue |
| DRG 248 | Tendonitis, Myositis & Bursitis |
| DRG 249 | Aftercare, Musculoskeletal System & Conn Tissue |
| DRG 251 | Fx, Sprn, Strn & Disl of Forearm, Hand, Foot Age > 17 w/o CC |
| DRG 252 | Fx, Sprn, Strn & Disl of Forearm, Hand, Foot Age 0-17 |
| DRG 254 | Fx, Sprn, Strn & Disl of Upper Arm, Lowleg Except Foot Age > 17 w/o CC |
| DRG 255 | Fx, Sprn, Strn & Disl of Upper Arm, Lowleg Except Foot Age 0-17 |
| DRG 256 | Other Musculoskeletal System & Conn Tissue Diagnoses |
| MDC 9 | 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 the Skin, Subcutaneous Tiss & Breast Age > 17 w CC |
| DRG 281 | Trauma to the Skin, Subcutaneous Tiss & Breast Age > 17 w/o CC |
| DRG 282 | Trauma to the Skin, Subcutaneous Tiss & Breast Age 0-17 |
| DRG 283 | Minor Skin Disorders w 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 | Nutritional & Misc Metabolic Disorders Age > 17 w CC |
| DRG 297 | Nutritional & Misc Metabolic Disorders Age > 17 w/o CC |
| DRG 298 | Nutritional & 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 Infections Age > 17 w CC |
| DRG 321 | Kidney & Urinary Tract Infections Age > 17 w/o CC |
| DRG 322 | Kidney & Urinary Tract Infections Age 0-17 |
| DRG 324 | Urinary Stones w/o CC |
| DRG 326 | Kidney & Urinary Tract Signs & Symptoms Age > 17 w/o CC |
| DRG 327 | Kidney & Urinary Tract Signs & Symptoms Age 0-17 |
| DRG 332 | Other Kidney & Urinary Tract Diagnoses 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 w CC |
| DRG 349 | Benign Prostatic Hypertrophy w/o CC |
| DRG 350 | Inflammation of the Male Reproductive System |
| MDC 13 | Diseases and Disorders of the Female Reproductive System |
| DRG 368 | Infections, Female Reproductive System |
| DRG 369 | Menstrual & Other Female Reproductive System Disorders |
| MDC 14 | Pregnancy, Childbirth, and the Puerperium |
| DRG 382 | False Labor |
| MDC 17 | Myeloproliferative Diseases and Disorders, and Poorly Differentiated Neoplasms |
| DRG 410 | Chemotherapy w/o Acute Leukemia as Secondary Diagnosis |

See footnotes at end of table.

Table 3—Continued

Medical DRGs Appropriate to Admit and Treat in Rural Primary Care Hospitals

| MDC and DRG Codes | Definitions |
|-------------------|---|
| MDC 18 | Infectious and Parasitic Diseases (Systemic or Unspecified Sites) |
| 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 Diagnoses |
| MDC 19 | Mental Diseases and Disorders |
| DRG 428 | Disorders of Personality & Impulse Control |
| MDC 20 | Alcohol/Drug Use and Alcohol/Drug Induced Organic Mental Disorders |
| DRG 435 | Alc/Drug Abuse or Depend, Detox, or Oth Sympt Treat 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 Effect Diag w/o CC |
| 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 Malignancy as Secondary Diagnosis |
| DRG 466 | Aftercare w/o History of Malignancy as Secondary Diagnosis |
| DRG 467 | Other Factors Influencing Health Status |
| Other | |
| DRG 490 | HIV w or w/o Other Related Condition |
| DRG 492 | Chemotherapy w Acute Leukemia as Secondary Diagnosis |

NOTES: MDC is major diagnostic category. DRG is diagnosis-related group. TIA is transient ischemic attack. CC is complications and comorbidities. Gastroent is gastroenterological. Misc is miscellaneous. Digest is digestive. Conn is connective. Fx is fracture. Sprn is sprain. Str is strain. Disl is dislocation. Lowleg is lower leg. Tiss is tissue. Alc is alcohol. Depend is dependency. Detox is detoxification. Oth is other. Sympt is symptoms. Treat is treatment. Diag is diagnosis. O.R. is operating room. HIV is human immunodeficiency virus. URI is upper respiratory infection.

SOURCE: Moscovice, I., Wellever, A., Sales, A., Chen, M.M., and Christianson, J., University of Minnesota, 1993.

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 tissue and connective tissue both have 9 entries, and non-surgical diseases and disorders of the kidney and urinary tract have 8 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 over.

Many DRGs are paired as DRG sets with or without complications and comorbidities (CC); for example, DRG 16 (Non-Specific Cerebrovascular Disorders w CC), and DRG 17 (Non-Specific Cerebrovascular Disorders w/o CC). In many of these pairs, the DRG without complications was included in the list of DRGs approved for treatment in a limited-service facility, whereas the DRG with complications was not included. Of 61 pairs of DRGs (with or without complications), 51 of those with

complications (84 percent) were excluded from, and 36 of those without complications (59 percent) 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.

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.

Following are a few examples of these:

- 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 w CC. 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 253: Fracture, Sprain, Strain, and Dislocation of Upper Arm, Lower Leg except Foot, Age > 17 w CC. 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 because of other conditions (arthritis of lower extremi-

ties 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, 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, although DRGs might suggest the type of patient, they cannot predict the complete needs of the particular patient who has been assigned the DRG. Second, it is not usually 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" (*Code of Federal Regulations*, 1990). Although 72 hours may not be adequate in all cases to render a definitive diagnosis, it is sufficiently long for a practitioner to provide a diagnosis to determine 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. The 72-hour LOS limitation at RPCHs discourages transfers from EACHs to RPCHs because there is no way to assure that the patient will be able to be discharged from the RPCH within 72 hours of admission.

The service limitation proposed in this article 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 their 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 previously mentioned arrangement remains to be addressed.

Role of the PRO

Under the system proposed in this article for limiting services, the role of the PRO would include 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. These functions are consistent with the scope of PRO review for full-service hospitals (*Code of Federal Regulations*, 1990). The first two of these functions would 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. The PRO would not be called upon to judge the medical necessity of non-Medicare admissions. A large proportion of RPCH inpatient utilization likely would be attributable to Medicare patients. Accordingly, it is assumed that confining the denial of payment for services delivered unnecessarily to Medicare patients is sufficient sanction to control RPCH admitting behavior for all patients.

RPCHs would be required to report DRG assignments on all patients to the PRO. Retrospective validation of DRGs would 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 would be reported by the PRO to the State licensing agency.

The final two functions proposed for the PRO would coincide with the patient's stay. If a patient's DRG is not on the list of those approved for treatment at an RPCH, the RPCH may request an exceptions review by the PRO. According to authority 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 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 the care to be delivered. This determination would be made neither simply on the basis of the DRG nor by consulting a list of the RPCH's resources, but in consultation with the RPCH to gather specific information about the condition, prognosis, and wishes of the patient in question.

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 LOS has exceeded the average LOS plus one standard deviation for similar DRGs in rural hospitals whose average daily census is 10 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 and 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 subcontract with organizations that possess this capability.

The proposed method for limiting services is interactive and requires the in-

volvement of key participants to function appropriately, yet it does not place an unreasonable administrative burden on either PROs or facilities. Also, the additional costs of operating the system are minimal.

Under the proposed method, PRO review is required only if patients are expected to stay in facilities longer than 72 hours. In our national sample of 690 hospitals, 38.4 percent of patients admitted to hospitals with an average daily census of fewer than 10 were discharged or transferred within 3 days (72 hours). No review by the PRO would be required for these patients. The remaining 61.6 percent of patients may be divided into two groups: those with approved DRGs and those whose DRGs are not on the approved list. Cases with LOSs of more than 3 days and DRGs approved in advance for continued stay are not subject to review. Approximately 54 percent of all admissions to small rural hospitals are for DRGs that are on the approved list. Some of the patients whose DRGs are not on the approved list may be transferred or discharged before the 72nd hour of the stay and thus are also not subject to PRO review. Cases with LOSs of more than 3 days and whose DRGs are not on the approved list also fall into two groups: those that would be transferred at the end of the third day of care, and those for which an exceptions review would be requested. Only the latter would be reviewed by the PRO.

What does this rate of PRO review mean in terms of the workload for facilities and the PRO? If we assume an average daily census at the RPCH of six (a census equal to the maximum number of licensed acute beds), an average LOS of 4 days, and an exceptions review request rate of 15 percent, the number of reviews

that would be requested per facility per year is 82. This means that a facility would have no more than 1.6 requests for exceptions review per week and, likely, much fewer. If a State were to have 20 RPCHs, the review burden for the PRO would be only 32 per week. The proposal would not seem to place an exceptional administrative burden on the RPCH and PRO in terms of time, recordkeeping, and record transmittal.

DRG validation, exceptions reviews, and concurrent utilization review would be performed on all patients regardless of whether or not they are Medicare patients. 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.⁵

CONCLUSION

The method proposed in this article achieves 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 according to their ability to provide them. The flexible administration of the service limitation accommodates individual practitioner decision-making. The expert panel of clinicians convened for the project were critical of both the LOS 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 it does allow them to participate in deciding where patients should be treated.

The proposed method is reasonably unambiguous. DRGs are assigned to one of two mutually exclusive lists: Cases on the approved list may be certified for an extended stay in an RPCH, and patients whose DRGs are on the other list must be transferred. The PRO is the sole arbiter of exceptions to this decision rule, and its decision is final and unequivocal. Although the facility can appeal the first level of review, there is no appeal above the second level of review (i.e., physician review). To reduce uncertainty, PRO reviewers would be available to consult with RPCH staff on interpretations of the service limitation at any time during the 72-hour evaluation period.

The service limitation for alternative models (such as RPCHs) proposed in this article builds upon existing features of the EACH Program and PPS. Specifically, it features the 72-hour LOS 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 pro-

⁵The Montana-Wyoming Foundation for Medical Care, the PRO for Montana, provides preadmission, concurrent, and retrospective reviews for non-Medicare MAF patients. It charges MAFs either \$17 or \$37 per review, depending on the type and scope of the review. Assuming 82 exceptions requests per year, a Medicare utilization rate of 50 percent, and an average review charge of \$37, the annual cost to an RPCH of exceptions reviews would be \$1,517. The Montana PRO's contract with HCFA was modified to include the costs of providing Medicare review services to MAFs.

posal. Because the proposal "reuses" existing features of the Medicare program, it minimizes the need for elaborate new policies.

Unlike the static LOS limitation for RPCHs as currently envisioned, the proposed method features a clinical basis for approving care. It recognizes the variation that would 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.

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