

significant cost differences, we used the regression coefficients of those variables to determine the size of the corresponding payment adjustments. Based on the regression analysis, we are proposing to adjust the per diem payment for differences in the patient's DRG, age, comorbidities, and the day of the stay. Also, we are proposing adjustments for area wage levels, rural IPFs, and teaching IPFs.

We computed a per diem cost for each Medicare inpatient psychiatric stay, including routine operating, ancillary, and capital components using information from the 1999 MedPAR file and data from the 1999 Medicare cost reports. The method described below that was used to construct the proposed per diem cost for IPFs is a standard method that has been used to construct a Medicare cost per discharge for inpatient acute care (Newhouse, J.P., S. Cretin, and C. Witsberger. Predicting Hospital Accounting Costs, *Health Care Financing Review*, V.11, No. 1. Fall 1989). We believe that this method provides a full account of IPF's per diem costs.

To calculate the cost per day for each inpatient psychiatric stay, routine costs were estimated by multiplying the routine cost per day from the IPF's 1999 Medicare cost report by the number of Medicare covered days on the 1999 MedPAR stay record. Ancillary costs were estimated by multiplying each departmental cost-to-charge ratio by the corresponding ancillary charges on the MedPAR stay record. The total cost per day was calculated by summing routine and ancillary costs for the stay and dividing it by the number of Medicare covered days for each day of the stay. We used the best available data and methods for this proposed IPF prospective payment system. However, the data are potentially limited for the purpose of determining the extent to which differences in patient characteristics influence the per diem cost of inpatient psychiatric care.

This potential limitation results from Medicare cost accounting practices in which routine per diem costs are calculated as an average and, therefore, do not vary among patients within a facility (that is, a patient requiring intensive staff attention is assigned the same routine cost as a patient requiring little staff attention). This potential limitation assumes heightened importance for IPFs because routine costs represent about 88 percent of total costs. As a result, our cost measure may not capture the degree of variation in routine cost attributable to differences in patient characteristics. Patient differences are reflected in our measure

of routine cost only to the extent that facilities tend on average to treat different proportions of patients with differing routine resource needs. For example, one IPF may have higher routine per diem costs because it treats a higher proportion of older patients (or patients who require continuous monitoring) than another IPF. However, our cost variable will not measure the extent to which older patients within the same IPF are more costly than younger patients. We are currently conducting a research study with the RTI International® (trade name of Research Triangle Institute) that will provide information as to the effects of this data limitation. As a result, we expect to have more information about the extent to which routine costs vary by certain patient characteristics. We solicit suggestions on other data sets or studies that could provide additional information on the relationship between individual patients and average facility routine costs.

This routine cost limitation does not apply to ancillary costs because they can be measured at the patient level using Medicare claims as reported in the MedPAR file. However, there are differences in charging practices between psychiatric hospitals and psychiatric units that affect our measurement of ancillary costs. For example, there are approximately 100 hospitals in our MedPAR data file that do not bill ancillary charges; the majority of these providers are State psychiatric hospitals who bill a single average per diem rate that includes routine, ancillary, and other costs.

The proposed payment adjustors were derived from regression analysis of 100 percent of the 1999 MedPAR data file. The MedPAR data file used for the final regression contains 467,372 cases although the complete file contains 476,541 cases. We deleted 5,822 cases (1.24 percent) from this file because routine cost data for certain IPFs was not available. In order to include as many IPFs as possible in the regression, we substituted the 1998 Medicare cost report data for routine cost and ancillary cost to charge ratios (using the 1998 Medicare cost report data).

For the remaining 470,719 cases, we used the following method to trim extraordinarily high or low cost values that most likely contained data errors, in order to improve the accuracy of our results. The means and standard deviations of the logged per diem total cost were computed separately for cases from psychiatric hospitals and psychiatric units. Separate statistics were computed for the groups of IPFs, because we did not want to

systematically exclude a larger proportion of cases from the higher cost psychiatric units. Before calculating the means of the logged per diem total cost, we trimmed cases from the file when covered days were zero, or routine costs were less than \$100 or greater than \$3,000, (because we believe this range captured the grossly aberrant cases), so that the means would not be distorted. We trimmed cases when the logged per diem cost was outside the standard and generally used statistical trim points of plus or minus 3 standard deviations from the respective means for hospitals and psychiatric units. These criteria eliminated another 3,347 cases, leaving 467,372 cases that were used in the final regression.

The log of per diem cost, like most health care cost measures, appears to be normally distributed. Therefore, the natural logarithm of the per diem cost was the dependent variable in the regression analysis. To control for psychiatric hospitals that do not bill ancillary costs, we included a categorical variable that identified them.

The proposed per diem cost was adjusted for differences in labor cost across geographic areas using the FY 1999 hospital wage index unadjusted for geographic reclassifications, in order to be consistent with our use of the market basket labor share in applying the wage index adjustment.

We computed a proposed wage adjustment factor for each case by multiplying the Medicare hospital wage index for each facility by the proposed labor-related share (.72828) and adding the proposed non-labor share (.27172). We used the proposed excluded hospital with capital market basket to determine the labor-related share (see section III.A. of this proposed rule). The per diem cost for each case was divided by this factor before taking the natural logarithm (that is, a standard mathematical practice accepted by the scientific community). The payment adjustment for the wage index was computed consistently with the wage adjustment factor, which is equivalent to separating the per diem cost into a labor portion and a non-labor portion and adjusting the labor portion by the wage index.

With the exception of the proposed payment adjustment for teaching facilities, the independent variables were specified as one or more categorical variables. Once the regression model was finalized based on the log normal variables, the regression coefficients for these variables were converted to payment adjustment factors by treating each coefficient as an exponent of the base e for natural