APPENDIX D

Methods and data for modeling the impact of inpatient payment provisions

APPENDIX D

Methods and data for modeling the impact of inpatient payment provisions

In Chapter 5, MedPAC estimates the impact of the Balanced Budget Act of 1997 (BBA) and the Balanced Budget Refinement Act of 1999 (BBRA) on prospective payment system (PPS) hospital Medicare inpatient margins. A detailed analysis of the projected inpatient margin by hospital group is presented in Table C-5. This section outlines the methodological approach MedPAC used to estimate the impact of BBA and BBRA provisions. The study produced hospital Medicare inpatient margins for each year from 1999 through 2002, in total and for select hospital groups. The analysis produced payment and cost estimates for each year and calculated annual margins from these estimates.

The analysis involved four steps:

1. Project the change in inpatient payments from 1998 through 2002, based on BBA payment policy and other Medicare payment policies, using MedPAC's PPS payment model.
2. Project the change in inpatient costs from 1998 through 2002, based on market basket projections and other cost trends in the hospital industry.
3. Weight 1998 payments and costs to adjust for under-representation of teaching hospitals and align hospital-specific costs to fiscal year 1998 for consistency.
4. Apply percentage changes in payments from the payment model and costs for 1999 through 2002 to adjusted 1998 payments and costs from Medicare Cost Report data, and calculate inpatient margins for each year.

Each step is explained below.

Step 1: Estimate payments

Estimates of annual percent changes to payments were produced with our PPS payment model, which projects case-level data for PPS hospitals. MedPAC staff maintain and update the model to aid in simulating the effects of various payment policy changes that have been implemented or are under consideration. The model calculates standard operating and capital payments and all adjustments (geographic reclassification, sole community hospitals, disproportionate share (DSH), outlier, wage index, cost of living, indirect medical education (IME), and so forth) for each hospital subject to the inpatient PPS. The model was adjusted to incorporate the key inpatient policy provisions of the BBA and BBRA. These include:

1. The update factor, DSH payments, Medicare bad debt payments, and IME payments were reduced, as were payments due to the transfer policy and capital payments. For some of these provisions, such as the update factor and DSH reductions, the adjustment was a simple percentage point reduction. For other provisions, MedPAC calculated case-specific adjustment values. This was necessary for the operating IME adjustment by year and the expanded transfer policy.

   A. We applied the following values at the case level to estimate the reduction in operating IME payments:

   1998 $(1.72 \times ((1 + IRB)^{0.405} - 1))$

   1999 $(1.60 \times ((1 + IRB)^{0.405} - 1))$

   2000 $(1.60 \times ((1 + IRB)^{0.405} - 1))$

   2001 $(1.535 \times ((1 + IRB)^{0.405} - 1))$

   2002 $(1.35 \times ((1 + IRB)^{0.405} - 1))$

   IRB is the ratio of the number of interns and residents to the number of beds in the hospital.

B. The expanded transfer policy ultimately reduced inpatient payments by 0.72 percent each year from 1999 through 2002. Because the transfer policy affects hospital groups differently, however, MedPAC produced group-specific reduction factors as follows:

Major teaching urban: -0.83%

Major teaching rural: -0.71%

Other teaching urban: -0.79%

Other teaching rural: -0.44%

Nonteaching urban: -0.41%

Nonteaching rural: -0.49%

2. Certain hospital groups were treated differently in the model. The exception to update factor reductions granted to sole-community hospitals in the BBRA was applied, and critical access hospitals (which are paid on a cost basis) were excluded from the final hospital groups.

3. Payment growth in 1999–2002 was reduced to account for a drop in the case-mix index (CMI) of 0.5 percent in 1999, based on a preliminary HCFA estimate. We assume the CMI remained constant for the remaining years.

Step 2: Estimate cost growth

Inpatient costs were calculated independent of the PPS payment model, building from 1998 Medicare Cost Report data with an estimate of the anticipated annual change in costs. Certain key assumptions underlie the calculation of cost growth. Cost growth in 1999 is estimated as 1.1 percentage points below the market basket, based on the National Hospital Indicators Survey (NHIS). For 2000–2002, we estimated costs to increase at the latest projected market basket minus 1.0 percentage point. We were prepared to estimate greater cost growth if evidence suggested that length of stay was stabilizing; however, the latest NHIS data show a continued decline in length of stay.

After all adjustments, costs were predicted to increase by the following factors:

1999: 1.2%

2000: 1.8%

2001: 1.6%

2002: 1.7%

Step 3: Adjust 1998 Medicare Cost Report data

Using 1998 cost report data for the analysis had the advantage of projecting from a base that already reflected a significant portion of the BBA changes.[1] However, the 1998 data required adjustment to reflect the hospital universe in terms of teaching status and to align costs to fiscal year 1998.

The available sample of Medicare Cost Reports for 1998 includes 56 percent of PPS hospitals and is under-representative of teaching hospitals due to variations in hospital reporting cycles. An analysis based only on the available 1998 data could bias the true impact of the BBA (and possibly other policy changes). To control for this effect, we weighted by three teaching groups (major, other and nonteaching),[2] and differentiated between urban and rural hospitals, which created six groups. 1998 costs and payments were adjusted based on the distribution of Medicare inpatient costs from 1997 Medicare Cost Reports among these groups. The weight for each hospital group is the ratio of its 1997 proportion of aggregate inpatient costs to its 1998 proportion of inpatient costs.

We aligned the data from various hospital cost-reporting periods to fiscal year 1998, because most of the BBA policy changes go into effect at the beginning of the federal fiscal year. All hospitals with cost reporting periods beginning after October 1, 1998 had their 1998 costs adjusted backward by a monthly factor. The 1999 Indicators Survey suggested that Medicare costs per case increased by 1.2 percent from 1998 to 1999. Thus, a per month adjustment was applied to costs by dividing by the 12th root of 1.012, or approximately 1.001.

Step 4: Apply percentage changes to payments and costs, and calculate inpatient margins

The percentage changes calculated in Steps 1 and 2 were applied to the adjusted 1998 payment and cost data from Step 3. The margins for each group were calculated for 1999–2002 by subtracting Medicare inpatient costs from Medicare inpatient payments and then dividing the difference by Medicare inpatient payments.

1 These payments and costs for inpatient services do not include graduate medical education payments or costs.

2 A "major teaching" hospital has a ratio of interns and residents to beds of greater than or equal to 0.25 and an "other teaching" hospital has a ratio greater than zero and less than 0.25.