Appendixes

Appendix A

Payment for Physicians' Services Under the Resource Based Relative Value Scale

Appendix A. Payment for Physicians' Services Under the Resource Based Relative Value Scale

Payments for most physicians' services under Medicare Part B are determined according to a common scale for pricing physicians' services called the Resource Based Relative Value Scale (RBRVS). The RBRVS was created to provide a standard system of pricing physicians' services that weighted services according to the resources used in delivering the service. The RBRVS system established Relative Value Units (RVU) as the method for assessing the value of and paying for the services of health care providers within Medicare Part B.[37]

Payments under the RBRVS are based on the principle that payments for various services should reflect their relative resource use. A formula is used to calculate the resources used in producing medical services. A Relative Value Scale unit represents a combination of a physician work component, a practice expense factor, and a malpractice expense relative value. The RVU physician work component accounts for 55 percent, on average, of a final RVU factor. The physician work values represent the time, technical skill, physical effort, mental effort, and judgment required; and the stress experienced by the physician performing the service because of potential risk to the patient. The RVU work, malpractice, and practice expense factors are multiplied by a geographic cost factor that varies according to the location of the billing physician. Finally, this value is multiplied by a conversion factor that determines the final dollar payment. Conversion factors are standard throughout the nation but are updated annually through the update factor discussed above.

For physician services furnished after January 1, 1992, payments were based on the RBRVS fee schedule. Between 1992 and 1998, many other professional providers were brought within the RBRVS payment system, while other services continued to be reimbursed according to historical charges. As a result, some services are paid according to the RBRVS, while others are paid and adjusted over time using other factors. Some professional service payments reflect physician RBRVS payments, but final payments are discounted relative to the final physician payment. For example, nurse practitioners are paid 85 percent of the physician payment (determined by the RBRVS) for a service provided to a patient.

[37] In addition to medical doctors, Medicare reimbursed other professionals as if they were medical doctors. For example, Optometrists are considered "physicians" under Medicare law.

Appendix B

1993 OLS Model Estimation Results

Appendix B. 1993 OLS Model Estimation Results

Dependent Variable: 1993 RVUs; Mean = 38.1	Coefficient	Robust Standard Error
65-69 years	4.32	3.63
70-74 years	8.84*	3.89
75-79 years	8.21**	4.38
80-84 years	0.10	3.49
85+ years	-1.41	6.22
Male	2.68	4.48
65-69 & male	1.39	5.24
70-74 & male	-2.09	5.51
75-79 & male	3.19	6.37
80-84 & male	10.67**	5.87
85+ & male	0.15	7.94
> High school education	4.02**	2.36
Medicaid	17.80*	4.13
Private supplement	15.49*	2.16
Drug coverage	-1.16	2.10
Urban residence	8.45*	1.85
Midwest	-0.63	3.01
South	-4.59*	2.24
West	-1.84	2.78
Other	-4.07	4.47
1-2 ADLs	0.40	2.77
3+ ADLs	6.02	4.52
1-2 IADLs	15.09*	2.81
3+ IADL	21.80*	4.37
Ever smoked	1.32	1.87
Hardening of the arteries	4.53	3.18
Hypertension	3.97*	1.69
Myocardial infarction	12.11*	4.00
Angina pectoris/CHD	5.20	3.35
Other heart condition	7.45*	2.41
Stroke/brain hemorrhage	-6.93*	3.13
Other cancer (not listed below)	9.94*	4.55
Skin cancer	5.52*	2.26
Lung cancer	56.95*	19.33
Colon cancer	19.55*	6.33
Breast cancer	13.99*	7.02
Prostate cancer	25.49*	6.70
Diabetes	8.13*	2.56
Arthritis	3.52**	1.98
Alzheimer's	-7.57	6.00

1993 OLS Model Estimation Results (continued)

Dependent Variable: 1993 RVUs; Mean = 38.1	Coefficient	Robust Standard Error
Mental disorder	2.41	3.18
Osteoporosis	-3.51	3.38
Broken hip	12.98	9.51
Parkinson's	-5.45	4.69
Emphysema, asthma, COPD	1.51	2.43
Decedent	43.75*	8.05
Constant	-11.45*	4.77
Number of observations	*9,627*	
R^2 = 0.0684		

* significant at p< 0.0.5
** significant at p< 0.10

OLS = ordinary least squares.
ADLs = activities of daily living.
IADLs = instrumental activities of daily living.
CHD = chronic heart disease.
COPD = chronic obstructive pulmonary disease.

Note: Omitted categories are <65 years, <65 years and male, Northeast region, zero ADLs, zero IADLs, and no self-reported conditions.

Appendix C

1993 Two-part Model Estimation Results

Appendix C. 1993 Two-part Model Estimation Results

	Probit Model on Any Use		GLM Model on Use Given Any Use	
	Coefficient	Robust Standard Error	Coefficient	Semi-Robust Standard Error
65-69 years	-0.09	0.11	-0.01	0.10
70-74 years	0.11	0.11	0.11	0.10
75-79 years	0.16	0.11	0.09	0.10
80-84 years	0.26*	0.12	-0.08	0.09
85+ years	0.01	0.12	-0.05	0.13
Male	-0.30*	0.10	0.14	0.13
65-69 & male	0.08	0.13	0.07	0.16
70-74 & male	-0.01	0.14	-0.11	0.15
75-79 & male	0.14	0.14	0.05	0.16
80-84 & male	0.11	0.15	0.22	0.15
85+ & male	0.50*	0.16	-0.04	0.19
> High school education	0.12*	0.05	0.06	0.05
Medicaid	0.51*	0.09	0.37*	0.09
Private supplement	0.69*	0.06	0.30*	0.07
Drug coverage	0.01	0.05	-0.05	0.05
Urban residence	0.05	0.05	0.22*	0.05
Midwest	-0.01	0.06	-0.02	0.06
South	-0.08	0.06	-0.08**	0.05
West	-0.17*	0.07	-0.01	0.06
Other	-0.22	0.16	0.06	0.12
1-2 ADLs	0.02	0.06	0.03	0.06
3+ ADLs	0.01	0.09	0.11	0.08
1-2 IADLs	0.17*	0.06	0.38*	0.06
3+ IADL	-0.02	0.09	0.48*	0.08
Ever smoked	-0.07	0.05	0.04	0.05
Hardening of the arteries	0.07	0.07	0.11**	0.06
Hypertension	0.32*	0.04	0.08**	0.04
Myocardial infarction	0.09	0.07	0.22*	0.07
Angina pectoris/CHD	0.15*	0.08	0.11**	0.06
Other heart condition	0.31*	0.06	0.20*	0.05
Stroke/brain hemorrhage	-0.04	0.08	-0.07	0.07
Other cancer (not below)	0.11	0.09	0.29*	0.09
Skin cancer	0.37*	0.07	0.11*	0.05
Lung cancer	0.54**	0.30	0.87*	0.21
Colon cancer	0.24**	0.14	0.39*	0.11
Breast cancer	0.31*	0.14	0.37*	0.12
Prostate cancer	0.29**	0.17	0.56*	0.10
Diabetes	0.48*	0.07	0.11*	0.05
Arthritis	0.25*	0.04	0.07	0.05

1993 Two-part Model Estimation Results (continued)

	Probit Model on Any Use		GLM Model on Use Given Any Use	
	Coefficient	**Robust Standard Error**	**Coefficient**	**Semi-Robust Standard Error**
Alzheimer's	0.27	0.17	-0.08	0.15
Mental disorder	0.11	0.09	0.17*	0.08
Osteoporosis	0.07	0.09	-0.05	0.07
Broken hip	0.20	0.13	0.36*	0.18
Parkinson's	0.39**	0.20	-0.12	0.11
Emphysema, asthma, COPD	0.23*	0.07	0.05	0.05
Decedent	-0.02	0.12	0.82*	0.09
Constant	0.14	0.12	2.56*	0.13
	R^2(pseudo) = 0.1513		(1/df) deviance = 1.5625 (1/df) pearson = 3.1202	
Number of observations	*9,627*		*8,619*	

Note: The probability of any use was 88.7 percent. The mean of number of RVUs conditional on use was 42.97.

* significant at p< 0.05
** significant at p< 0.10

GLM = generalized linear model.
ADLs = activities of daily living.
IADLs = instrumental activities of daily living.
CHD = chronic heart disease.
COPD = chronic obstructive pulmonary disease.

Note: Omitted categories are <65 years, <65 years and male, Northeast region, zero ADLs, zero IADLs, and no self-reported conditions.

Appendix D

Actual Characteristics of the 1993 FFS, 1993 HMO, 1998 FFS, and 1998 HMO Samples

Appendix D. Actual Characteristics of the 1993 FFS, 1993 HMO, 1998 FFS, and 1998 HMO Samples

	1993 Characteristics (%)		1998 Characteristics (%)		RVU Model Regression Coefficient
	FFS Proportion	HMO Proportion	FFS Proportion	HMO Proportion	
65-69 years*	23.6	27.4	19.8	27.6	4.32
70-74 years*	26.0	29.1	24.1	24.3	8.84
75-79 years*	19.4	18.8	20.1	21.0	8.21
80-84 years*	12.8	13.1	13.9	11.9	0.1
85+ years*	9.2	7.5	10.3	8.5	-1.41
< 65 years	9.12	4.23	11.8	6.74	ne
Male	42.6	43.6	43.3	44.5	2.68
65-69 & male	10.8	11.6	9.1	12.9	1.39
70-74 & male	11.1	13.6	10.9	10.4	-2.09
75-79 & male	7.8	7.3	8.3	8.9	3.19
80-84 & male	4.5	5.4	5.1	5.2	10.67
85+ & male	2.9	2.8	3.3	3.1	0.15
High school education or less	74.89	28.95	70.49	68.06	ne
> High school education*	25.1	29.0	29.5	31.9	4.02
Medicaid*	12.8	0.0	14.6	0.0	17.8
Private supplement*	74.6	100.0	73.7	100.0	15.49
Drug coverage*	50.9	67.4	63.0	91.4	-1.16
No supplement	12.6	0	11.72	0	ne
Urban residence*	72.2	94.9	70.3	94.1	8.45
Northeast	21.79	11.01	21.27	21.39	ne
Midwest§	24.8	16.3	23.2	22.4	-0.63
South§	36.9	18.1	36.1	34.7	-4.59
West§	15.3	54.5	17.9	20.3	-1.84
Other§	1.3	0.1	1.5	1.2	-4.07
0 ADLs	68.23	74.55	70.86	76.33	ne
1-2 ADLs	20.5	18.6	19.1	16.5	0.4
3+ ADLs	11.2	6.8	10.2	7.2	6.02
0 IADLs	60.30	68.21	62.73	71.26	ne
1-2 IADLs	25.5	22.6	23.7	20.6	15.09
3+ IADL	14.2	9.2	13.6	8.2	21.8
Ever smoked	61.3	63.6	60.4	64.8	1.32
Hardening of the arteries	15.2	13.0	12.3	10.7	4.53
Hypertension	53.7	52.0	55.5	54.5	3.97
Myocardial infarction§	15.7	12.2	14.8	13.8	12.11
Angina pectoris/CHD	15.7	14.0	15.0	13.8	5.2
Other heart condition¥	28.9	26.9	28.8	24.8	7.45
Stroke/brain hemorrhage	10.8	8.8	11.0	9.7	-6.93
Other cancer (not below)	6.9	5.7	5.4	5.7	9.94

Actual Characteristics of the 1993 FFS, 1993 HMO, 1998 FFS, and 1998 HMO Samples (continued)

	1993 Characteristics (%)		1998 Characteristics (%)		RVU Model Regression Coefficient
	FFS Proportion	HMO Proportion	FFS Proportion	HMO Proportion	
Skin cancer	16.2	16.7	17.9	16.1	5.52
Lung cancer	1.0	0.2	1.1	1.0	56.95
Colon cancer	2.9	3.1	2.5	2.6	19.55
Breast cancer¥	4.2	5.8	4.1	5.0	13.99
Prostate cancer¥	2.2	2.2	3.0	3.9	25.49
Diabetes	17.0	16.3	16.1	17.1	8.13
Arthritis	59.5	55.9	60.2	59.4	3.52
Alzheimer's	1.7	1.2	2.4	2.4	-7.57
Mental disorder*	6.3	3.6	7.9	4.5	2.41
Osteoporosis¥	9.7	11.1	14.0	10.6	-3.51
Broken hip¥	3.9	3.2	4.6	2.9	12.98
Parkinson's§	1.7	0.7	1.5	1.5	-5.45
Emphysema, asthma, COPD	14.7	15.1	15.4	13.7	1.51
Decedent¥	3.9	2.3	3.5	2.3	43.75
Without any conditions	9.38	10.71	8.40	9.36	ne

* = significant between FFS and HMO in both years.
§ = significant between FFS and HMO only in 1993.
¥ = significant between FFS and HMO only in 1998.
ne = no coefficient estimate.

ADLs = activities of daily living.
IADLs = instrumental activities of daily living.
CHD = chronic heart disease.
COPD = chronic obstructive pulmonary disease.

Appendix E

Total Actual RVU Use by Beneficiary Age/Gender Categories, 1993 and 1998

Appendix E. Total Actual RVU Use by Beneficiary Age/Gender Categories, 1993 and 1998

1993 RVUs			
Age	**Female**	**Male**	**Total**
< 65 RVUs	36.59	33.16	34.52
< 65 observations	592	940	1,532
65-69 years RVUs	31.09	33.63	32.25
65-69 observations	968	855	1,823
70-74 years RVUs	37.55	38.66	38.02
70-74 years observations	994	749	1,743
75-79 years RVUs	41.16	45.77	43.02
75-79 years observations	967	670	1,637
80-84 years RVUs	37.48	49.50	41.74
80-84 years observations	1,032	577	1,609
85+ years RVUs	41.05	42.35	41.46
85+ years observations	863	420	1,283
Total RVUs	37.15	39.37	38.10
Total observations	5,416	4,211	9,627

1998 RVUs (in 1998 schedule)			
Age	**Female**	**Male**	**Total**
< 65 RVUs	48.59	37.16	42.13
< 65 observations	620	785	1,405
65-69 years RVUs	31.29	43.36	36.81
65-69 observations	751	651	1,402
70-74 years RVUs	48.26	49.18	48.67
70-74 years observations	999	839	1,838
75-79 years RVUs	54.21	52.26	53.40
75-79 years observations	913	659	1,572
80-84 years RVUs	59.84	78.64	66.65
80-84 years observations	955	560	1,515
85+ years RVUs	56.19	59.45	57.23
85+ years observations	851	403	1,254
Total RVUs	49.11	50.91	49.89
Total observations	5,089	3,897	8,986

Appendix F

Legislative Changes to Prices and Coverage, 1994-1998

Appendix F. Legislative Changes to Prices and Coverage, 1994-1998

1994 • Refinements made in the RVUs for 1993 and 1994 including projected increases in primary care services payment rates and reduced payment rates for most surgical services and many nonsurgical services other than primary care. • Physician fee schedule update would increase the performance standard rates of increase for surgical, primary care, and other nonsurgical services. • A payment freeze would affect nonsurgical services other than primary care. • Lower payment limits were established for clinical laboratory services. • OBRA '93 also included a provision to lower payment for practice expenses for certain services paid under the physician fee schedule. This provision would lower the VPS for both surgical and nonsurgical services. • An OBRA '93 provision that limited payment for the anesthesia care team would also reduce the surgical services VPS.
1995 • Refinements made in the RVUs for 1994 and 1995 would reduce payment rates for most surgical services and many nonsurgical services other than primary care. • adjustments to the physician fee schedule updates would increase the volume performance standard rates for surgical, primary care, and other nonsurgical services. • Nonsurgical service payments, other than primary care, were frozen. • A lower payment limit for clinical laboratory services was introduced. • OBRA '93 lowered payment for practice expenses, resulting in a lower VPS for both surgical and nonsurgical services. • OBRA '93 limited payment for anesthesia care teams, which would also have the effect of reducing the VPS for surgical services.
1996 • RVU refinements for 1995 and 1996 would increase some payment rates; therefore, the volume performance standard for primary care services would increase while there would be reduced payment rates for most surgical services and many nonsurgical services other than primary care. • Lower payments for practice expenses for certain services paid under the physician fee schedule would reduce the VPS for both surgical and nonsurgical services.
1997 • Changes in the RVUs for 1996 and 1997 would cause increased payment rates for primary care services and increases in the volume performance standard for those services. • Payment reductions would occur for most surgical services and many nonsurgical services other than primary care, which would lower the volume performance standard rates of increase for these services. • A volume and intensity adjustment for 1997 was required to ensure that changes in volume and intensity related to the fee changes did not cause an increase in expenditures. The MVPS targets are increased by this volume and intensity adjustment.

RVU = relative value units.
OBRA = Omnibus Budget Reconciliation Act.
VPS = volume performance system.

Legislative Changes to Prices and Coverage, 1994-1998 (continued)

1998
• Legislative changes contained in the Balanced Budget Act of 1997 included a single conversion factor for the Medicare physician fee schedule, which would cause the payments for surgical services to decline, while increasing the payments for nonsurgical services. These measures would cause an overall increase in expenditures for fiscal year 1998 relative to fiscal year 1997.
• Coverage changes for screening mammography, colorectal cancer screening, screening PAP smears, and screening pelvic exams would cause increases in Medicare expenditures.
• Changes in payments for nurse practitioners, clinical nurse specialists, and physician assistants would also increase expenditures.
• Provisions relating to payments for laboratory services would cause reductions in Medicare expenditures. (Laboratory service payments were frozen for fiscal years 1998-2002.)
• Fee changes associated with implementation of the 1998 physician fee schedule: the volume and intensity of physician services provided to Medicare beneficiaries would increase by 0.1 percent, but in order to prevent an increase in expenditures as a result of this volume and intensity response, an offsetting 0.1 percent reduction is made to the conversion factor.

RVU = relative value units.
OBRA = Omnibus Budget Reconciliation Act.
VPS = volume performance system.

Exhibit A

In Chapter 1 we briefly discussed how the updates and targets are calculated. This exhibit contains a detailed explanation of how the update and Sustainable Growth Rate were calculated for 2002. However, it is important to note that the system of updates and targets used in Medicare has changed over time, so the calculation of the updates and SGR in 2002 is somewhat different from the procedures used between 1993 and 1998. The MVPS was used prior to 1998: it set targets based on historical cost increases and compared target growth two years prior to actual growth in setting the performance update factor. The BBA 1997 created the SGR which uses GDP growth in setting targets and compares cumulative growth in expenditures to a cumulative target. The BBA also limited the performance adjustment factor to a range between negative 7 and positive 3 percent. Finally, various changes were introduced by the Balanced Budget Reconciliation Act 1999 including a shift to a calendar year rather than a fiscal year timeframe and mandated retrospective corrections of estimates made before the beginning of the year to reflect actual data.