## DEPARTMENT OF HEALTH & HUMAN SERVICES

Centers for Medicare & Medicaid Services Center for Consumer Information and Insurance Oversight 200 Independence Avenue SW Washington, DC 20201



**Date**: April 18, 2017

## Subject: 2018 Benefit Year Final HHS Risk Adjustment Model Coefficients

In the HHS Notice of Benefit and Payment Parameters for 2018 final rule, (final rule) HHS finalized that we would use 2013, 2014, and 2015 MarketScan® data to calculate the risk adjustment coefficients for the 2018 benefit year, to be released in guidance in the spring of 2017, in time for rate setting for the 2018 benefit year. This guidance announces the final risk adjustment model factors for the 2018 benefit year resulting from the blended factors from the MarketScan® data for 2013, 2014 and 2015 separately solved models, shown in the Tables 1, 3, and 4.

Table 1 contains factors for each adult model, including the diagnosis (hierarchical condition category (HCC)) and prescription drug class (RXC) interactions.<sup>2</sup> As we noted in the final rule, some interactions of RXCs and HCCs have negative coefficients; however, this does not mean that an enrollee's risk score decreases due to the presence of an RXC, an HCC, or both. For example, consider RXC 05 Inflammatory Bowel Disease Agents and HCC 048 Inflammatory Bowel Disease, for a silver plan enrollee. If RXC\_05 is first coded, the blended risk score increases by 1.642 (coefficient for RXC\_05), and if HCC\_048 is then coded, the blended risk score increases again by 1.793 + (-0.990) = 0.803 (coefficient for HCC\_048 + coefficient for interaction of RXC\_05 and HCC\_048), for a combined increase of 1.642 + 0.803 = 2.445. Similarly, If HCC 048 is first coded, the blended risk score increases by 1.793 (coefficient for HCC\_048), and if RXC\_05 is then coded, the blended risk score increases again by 1.642 + (-0.990) = 0.652 (coefficient for RXC 05 + coefficient for interaction of RXC 05 and HCC\_048), for a combined increase of 1.793 + 0.652 = 2.445.

Table 2 contains the HHS HCCs in the severity illness indicator variable. Table 3 contains the factors for each child model. Table 4 contains the factors for each infant model. Tables 5 and 6 include the HCCs included in the infant model maturity and severity categories. Table 7 includes the R-squared statistics for each model.

<sup>1</sup> 81 FR 94058, 94084 (Dec. 22, 2016)

<sup>&</sup>lt;sup>2</sup> We note that the interaction factors are additive, and not hierarchical in nature – that is, an enrollee could have several, additive interactions.

TABLE 1: Final Adult Risk Adjustment Model Factors for 2018 Benefit Year

HCC or						
RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
	1		phic Factors		1	T
	Age 21-24, Male	0.178	0.141	0.098	0.056	0.049
	Age 25-29, Male	0.157	0.121	0.078	0.035	0.028
	Age 30-34, Male	0.201	0.155	0.100	0.046	0.038
	Age 35-39, Male	0.264	0.208	0.143	0.077	0.065
	Age 40-44, Male	0.334	0.268	0.193	0.116	0.102
	Age 45-49, Male	0.405	0.330	0.245	0.156	0.141
	Age 50-54, Male	0.531	0.443	0.343	0.237	0.218
	Age 55-59, Male	0.607	0.507	0.396	0.277	0.255
	Age 60-64, Male	0.695	0.579	0.453	0.313	0.288
	Age 21-24, Female	0.301	0.245	0.175	0.105	0.094
	Age 25-29, Female	0.344	0.278	0.200	0.120	0.106
	Age 30-34, Female	0.474	0.392	0.300	0.208	0.192
	Age 35-39, Female	0.564	0.474	0.374	0.278	0.261
	Age 40-44, Female	0.631	0.531	0.422	0.313	0.295
	Age 45-49, Female	0.642	0.538	0.424	0.306	0.286
	Age 50-54, Female	0.726	0.613	0.488	0.355	0.331
	Age 55-59, Female	0.723	0.606	0.477	0.337	0.311
	Age 60-64, Female	0.759	0.631	0.493	0.338	0.310
	1	Diagno	sis Factors	T	1	_
HCC001	HIV/AIDS	0.49	0.409	0.33	0.259	0.248
HCC002	Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock	8.946	8.776	8.676	8.721	8.735
HCC003	Central Nervous System Infections, Except Viral Meningitis	5.99	5.904	5.851	5.871	5.877
HCC004	Viral or Unspecified Meningitis	4.377	4.167	4.048	3.989	3.985
HCC006	Opportunistic Infections	6.342	6.252	6.201	6.179	6.174
HCC008	Metastatic Cancer	22.073	21.676	21.417	21.455	21.467
HCC009	Lung, Brain, and Other Severe Cancers, Including Pediatric Acute Lymphoid Leukemia	11.573	11.272	11.081	11.07	11.071

HCC or						
RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
HCC010	Non-Hodgkin`s Lymphomas and Other Cancers and Tumors	5.401	5.194	5.059	5	4.99
HCC011	Colorectal, Breast (Age < 50), Kidney, and Other Cancers	4.619	4.412	4.272	4.213	4.202
HCC012	Breast (Age 50+) and Prostate Cancer, Benign/Uncertain Brain Tumors, and Other Cancers and Tumors	2.704	2.554	2.451	2.39	2.379
HCC013	Thyroid Cancer, Melanoma, Neurofibromatosis, and Other Cancers and Tumors	1.274	1.147	1.052	0.953	0.934
HCC018	Pancreas Transplant Status/Complications	4.599	4.409	4.298	4.312	4.319
HCC019	Diabetes with Acute Complications	0.659	0.587	0.525	0.454	0.441
HCC020	Diabetes with Chronic Complications	0.659	0.587	0.525	0.454	0.441
HCC021	Diabetes without Complication	0.659	0.587	0.525	0.454	0.441
HCC023	Protein-Calorie Malnutrition	12.16	12.155	12.146	12.206	12.217
HCC026	Mucopolysaccharidosis	2.119	2.018	1.947	1.888	1.877
HCC027	Lipidoses and Glycogenosis	2.119	2.018	1.947	1.888	1.877
HCC029	Amyloidosis, Porphyria, and Other Metabolic Disorders	2.119	2.018	1.947	1.888	1.877
HCC030	Adrenal, Pituitary, and Other Significant Endocrine Disorders	2.119	2.018	1.947	1.888	1.877
HCC034	Liver Transplant Status/Complications	11.061	10.947	10.883	10.878	10.879
HCC035	End-Stage Liver Disease	5.583	5.383	5.265	5.267	5.271
HCC036	Cirrhosis of Liver	2.16	2.039	1.963	1.92	1.913
HCC037 _1	Chronic Viral Hepatitis C	1.118	1.005	0.93	0.879	0.874
HCC037 _2	Chronic Hepatitis, Other/Unspecified	0.881	0.755	0.671	0.617	0.611

HCC or						
RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
HCC038	Acute Liver Failure/Disease, Including Neonatal Hepatitis	4.269	4.123	4.034	4.014	4.013
HCC041	Intestine Transplant Status/Complications	28.34	28.269	28.212	28.25	28.254
HCC042	Peritonitis/Gastrointesti nal Perforation/Necrotizing Enterocolitis	10.403	10.17	10.022	10.034	10.04
HCC045	Intestinal Obstruction	5.835	5.597	5.458	5.457	5.461
HCC046	Chronic Pancreatitis	4.599	4.409	4.298	4.312	4.319
HCC047	Acute Pancreatitis/Other Pancreatic Disorders and Intestinal Malabsorption	2.35	2.191	2.091	2.033	2.023
HCC048	Inflammatory Bowel Disease	2.085	1.912	1.793	1.702	1.686
HCC054	Necrotizing Fasciitis	5.834	5.661	5.549	5.555	5.559
HCC055	Bone/Joint/Muscle Infections/Necrosis	5.834	5.661	5.549	5.555	5.559
HCC056	Rheumatoid Arthritis and Specified Autoimmune Disorders	3.12	2.939	2.816	2.766	2.758
HCC057	Systemic Lupus Erythematosus and Other Autoimmune Disorders	1.062	0.947	0.864	0.768	0.75
HCC061	Osteogenesis Imperfecta and Other Osteodystrophies	2.844	2.67	2.548	2.477	2.464
HCC062	Congenital/Developme ntal Skeletal and Connective Tissue Disorders	2.844	2.67	2.548	2.477	2.464
HCC063	Cleft Lip/Cleft Palate	1.225	1.077	0.979	0.904	0.891
HCC066	Hemophilia	41.812	41.559	41.379	41.37	41.371
HCC067	Myelodysplastic Syndromes and Myelofibrosis	11.445	11.322	11.242	11.246	11.249
HCC068	Aplastic Anemia	11.445	11.322	11.242	11.246	11.249

HCC or						
RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
	Acquired Hemolytic					•
	Anemia, Including	7.92	7.779	7.682	7.655	7.652
	Hemolytic Disease of	1.92	1.119	7.082	7.033	7.032
HCC069	Newborn					
	Sickle Cell Anemia	7.92	7.779	7.682	7.655	7.652
HCC070	(Hb-SS)					
HCC071	Thalassemia Major	7.92	7.779	7.682	7.655	7.652
	Combined and Other					
	Severe	4.883	4.756	4.677	4.672	4.672
HCC073	Immunodeficiencies					
	Disorders of the	4.883	4.756	4.677	4.672	4.672
HCC074	Immune Mechanism		,60			
	Coagulation Defects					
	and Other Specified	2.521	2.436	2.375	2.34	2.333
1100075	Hematological					
HCC075	Disorders	3.86	3.632	3.485	3.381	3.362
HCC081	Drug Psychosis			<b>+</b>		
HCC082	Drug Dependence	3.86	3.632	3.485	3.381	3.362
HCC087	Schizophrenia	3.03	2.802	2.655	2.577	2.566
HGG000	Major Depressive and	1.596	1.453	1.351	1.249	1.23
HCC088	Bipolar Disorders Reactive and					
		1.596	1.453	1.351	1.249	1.23
HCC089	Unspecified Psychosis, Delusional Disorders	1.590	1.433	1.551	1.249	1.23
HCC090		1.08	0.967	0.872	0.765	0.745
110090	Personality Disorders Anorexia/Bulimia	1.00	0.707	0.672	0.703	
HCC094	Nervosa	2.572	2.423	2.319	2.256	2.245
1100074	Prader-Willi, Patau,					
	Edwards, and					
	Autosomal Deletion	2.17	2.056	1.979	1.92	1.909
HCC096	Syndromes					
	Down Syndrome,					
	Fragile X, Other					
	Chromosomal					
	Anomalies, and	0.804	0.713	0.638	0.559	0.546
	Congenital					
	Malformation					
HCC097	Syndromes					
HCC102	Autistic Disorder	1.08	0.967	0.872	0.765	0.745
	Pervasive					
	Developmental	1.08	0.967	0.872	0.765	0.745
1100102	Disorders, Except		0.501	0.0,2	0.702	J., 12
HCC103	Autistic Disorder					

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HCC or						
RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
HCC122	Non-Traumatic Coma, and Brain Compression/Anoxic Damage	8.517	8.393	8.305	8.294	8.292
HCC125	Respirator Dependence/Tracheost omy Status	29.212	29.187	29.166	29.234	29.247
HCC126	Respiratory Arrest	9.11	8.972	8.885	8.943	8.958
HCC127	Cardio-Respiratory Failure and Shock, Including Respiratory Distress Syndromes	9.11	8.972	8.885	8.943	8.958
HCC128	Heart Assistive Device/Artificial Heart	29.057	28.852	28.725	28.776	28.79
HCC129	Heart Transplant	29.057	28.852	28.725	28.776	28.79
HCC130	Congestive Heart Failure	2.92	2.827	2.768	2.758	2.758
HCC131	Acute Myocardial Infarction	9.095	8.794	8.605	8.694	8.717
HCC132	Unstable Angina and Other Acute Ischemic Heart Disease	4.791	4.546	4.408	4.407	4.414
HCC135	Heart Infection/Inflammation, Except Rheumatic	5.4	5.282	5.206	5.178	5.172
HCC142	Specified Heart Arrhythmias	2.531	2.4	2.314	2.253	2.241
HCC145	Intracranial Hemorrhage	8.274	8.023	7.869	7.857	7.859
HCC146	Ischemic or Unspecified Stroke	2.693	2.534	2.449	2.443	2.447
HCC149	Cerebral Aneurysm and Arteriovenous Malformation	3.496	3.326	3.219	3.165	3.157
HCC150	Hemiplegia/Hemiparesi s	4.807	4.721	4.67	4.709	4.718
HCC151	Monoplegia, Other Paralytic Syndromes	2.999	2.881	2.81	2.782	2.779
HCC153	Atherosclerosis of the Extremities with Ulceration or Gangrene	9.527	9.458	9.415	9.492	9.509
HCC154	Vascular Disease with Complications	6.854	6.69	6.587	6.575	6.575

HCC or						
RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
1100156	Pulmonary Embolism and Deep Vein	3.337	3.192	3.1	3.059	3.053
HCC156	Thrombosis Lung Transplant					
HCC158	Lung Transplant Status/Complications	27.363	27.207	27.107	27.178	27.196
HCC159	Cystic Fibrosis	9.269	9.006	8.823	8.813	8.814
HCC160	Chronic Obstructive Pulmonary Disease, Including Bronchiectasis	0.896	0.797	0.719	0.636	0.621
HCC161	Asthma	0.896	0.797	0.719	0.636	0.621
HCC162	Fibrosis of Lung and Other Lung Disorders	1.756	1.654	1.591	1.545	1.535
HCC163	Aspiration and Specified Bacterial Pneumonias and Other Severe Lung Infections	6.225	6.164	6.126	6.133	6.135
HCC183	Kidney Transplant Status	8.31	8.095	7.968	7.945	7.944
HCC184	End Stage Renal Disease	33.271	33.07	32.937	33.055	33.081
HCC187	Chronic Kidney Disease, Stage 5	1.512	1.448	1.411	1.418	1.421
HCC188	Chronic Kidney Disease, Stage 4	1.512	1.448	1.411	1.418	1.421
HCC203	Ectopic and Molar Pregnancy, Except with Renal Failure, Shock, or Embolism	1.259	1.105	0.985	0.802	0.76
HCC204	Miscarriage with Complications	1.259	1.105	0.985	0.802	0.76
HCC205	Miscarriage with No or Minor Complications	1.259	1.105	0.985	0.802	0.76
HCC207	Completed Pregnancy With Major Complications	3.421	2.986	2.782	2.594	2.584
HCC208	Completed Pregnancy With Complications	3.421	2.986	2.782	2.594	2.584
HCC209	Completed Pregnancy with No or Minor Complications	3.421	2.986	2.782	2.594	2.584
HCC217	Chronic Ulcer of Skin, Except Pressure	2.012	1.915	1.857	1.843	1.842

HCC or						
RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
HCC226	Hip Fractures and Pathological Vertebral or Humerus Fractures	8.908	8.71	8.585	8.611	8.619
HCC227	Pathological Fractures, Except of Vertebrae, Hip, or Humerus	2.177	2.06	1.977	1.903	1.891
HCC251	Stem Cell, Including Bone Marrow, Transplant Status/Complications	25.162	25.161	25.158	25.179	25.184
HCC253	Artificial Openings for Feeding or Elimination	8.702	8.616	8.561	8.589	8.596
HCC254	Amputation Status, Lower Limb/Amputation Complications	4.517	4.396	4.322	4.345	4.353
		In	teraction Fa	ictors		
SEVERE x HCC006	Severe illness x Opportunistic Infections	8.941	9.135	9.253	9.364	9.383
SEVERE x HCC008	Severe illness x Metastatic Cancer	8.941	9.135	9.253	9.364	9.383
SEVERE x HCC009	Severe illness x Lung, Brain, and Other Severe Cancers, Including Pediatric Acute Lymphoid Leukemia	8.941	9.135	9.253	9.364	9.383
SEVERE x HCC010	Severe illness x Non- Hodgkin`s Lymphomas and Other Cancers and Tumors	8.941	9.135	9.253	9.364	9.383
SEVERE x HCC115	Severe illness x Myasthenia Gravis/Myoneural Disorders and Guillain- Barre Syndrome/Inflammator y and Toxic Neuropathy	8.941	9.135	9.253	9.364	9.383

HCC or	Easton	Dlatinum	Cold	Cilvon	Dronzo	Catagtrophia
RXC No. SEVERE	Factor Severe illness x Heart	Platinum	Gold	Silver	Bronze	Catastrophic
SEVERE	Infection/Inflammation,	8.941	9.135	9.253	9.364	9.383
HCC135	Except Rheumatic					
SEVERE	Severe illness x					
X	Intracranial	8.941	9.135	9.253	9.364	9.383
HCC145	Hemorrhage Severe illness x HCC					
	group G06 (G06 is					
	HCC Group 6 which					
	includes the following	8.941	9.135	9.253	9.364	9.383
CEVEDE	HCCs in the blood					
SEVERE x G06	disease category: 67, 68)					
7.000	Severe illness x HCC					
	group G08 (G08 is					
	HCC Group 8 which	0.041	0.125	0.252	0.264	0.202
	includes the following HCCs in the blood	8.941	9.135	9.253	9.364	9.383
SEVERE	disease category: 73,					
x G08	74)					
SEVERE						
X	Severe illness x End-	2.012	2.120	2.183	2.278	2.294
HCC035	Stage Liver Disease Severe illness x Acute					
SEVERE	Liver Failure/Disease,	2015	0.100	2.105		
X	Including Neonatal	2.012	2.120	2.183	2.278	2.294
HCC038	Hepatitis					
CEVEDE	Severe illness x					
SEVERE x	Atherosclerosis of the Extremities with	2.012	2.120	2.183	2.278	2.294
HCC153	Ulceration or Gangrene					
SEVERE	Severe illness x					
X	Vascular Disease with	2.012	2.120	2.183	2.278	2.294
HCC154	Complications					
	Severe illness x Aspiration and					
SEVERE	Specified Bacterial	2.012	2.120	2.183	2.278	2.294
X	Pneumonias and Other	· · · · ·				
HCC163	Severe Lung Infections					
SEVERE	Severe illness x	2.012	2.120	2.102	0.070	2.204
X HCC252	Artificial Openings for	2.012	2.120	2.183	2.278	2.294
HCC253	Feeding or Elimination					

Factor	Platinum	Gold	Silver	Bronze	Catastrophic
Severe illness x HCC group G03 (G03 is HCC Group 3 which includes the following HCCs in the musculoskeletal disease category: 54, 55)	2.012	2.120	2.183	2.278	2.294
	Enrollment L	Ouration Fac	ctors		
One month of enrollment	0.501	0.444	0.401	0.384	0.383
Two months of enrollment	0.431	0.376	0.330	0.311	0.310
enrollment	0.375	0.325	0.281	0.261	0.259
enrollment	0.304	0.265	0.226	0.209	0.207
Five months of enrollment	0.264	0.229	0.195	0.178	0.176
Six months of enrollment	0.230	0.201	0.172	0.155	0.154
Seven months of enrollment	0.213	0.188	0.162	0.146	0.144
Eight months of enrollment	0.170	0.151	0.131	0.120	0.119
Nine months of enrollment	0.116	0.104	0.093	0.087	0.087
enrollment	0.105	0.097	0.089	0.085	0.085
Eleven months of enrollment	0.089	0.084	0.080	0.078	0.078
	Prescription	n Drug Fact			
Anti-HIV Agents	6.543	6.050	5.725	5.564	5.539
Anti-Hepatitis C (HCV) Agents	27.133	26.646	26.321	26.429	26.454
Antiarrhythmics	0.118	0.118	0.118	0.118	0.118
Phosphate Binders	0.630	0.630	0.630	0.630	0.630
Inflammatory Bowel Disease Agents	1.929	1.757	1.642	1.482	1.450
Insulin	1.474	1.340	1.204	1.040	1.006
Anti-Diabetic Agents, Except Insulin and Metformin Only	0.522	0.456	0.390	0.305	0.288
	Severe illness x HCC group G03 (G03 is HCC Group 3 which includes the following HCCs in the musculoskeletal disease category: 54, 55)  One month of enrollment Two months of enrollment Four months of enrollment Five months of enrollment Six months of enrollment Six months of enrollment Seven months of enrollment Eight months of enrollment  Eight months of enrollment  Anti-HIV Agents Anti-Hepatitis C (HCV) Agents Anti-Hepatitis C (HCV) Agents Antiarrhythmics Phosphate Binders Inflammatory Bowel Disease Agents Insulin Anti-Diabetic Agents, Except Insulin and	Severe illness x HCC group G03 (G03 is HCC Group 3 which includes the following HCCs in the musculoskeletal disease category: 54, 55)   Enrollment I  One month of enrollment	Severe illness x HCC group G03 (G03 is HCC Group 3 which includes the following HCCs in the musculoskeletal disease category: 54, 55)         2.012         2.120           Enrollment Duration Factors of Enrollment Duration	Severe illness x HCC group G03 (G03 is HCC Group 3 which includes the following HCCs in the musculoskeletal disease category: 54, 55)   Enrollment Duration Factors	Severe illness x HCC group G03 (G03 is HCC Group 3 which includes the following HCCs in the musculoskeletal disease category: 54, 55)

HCC or						
RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
	Multiple Sclerosis	16 972	16 102	15 752	15 744	15 740
RXC 08	Agents	16.873	16.192	15.753	15.744	15.748
	Immune Suppressants	10.184	9.639	9.293	9.303	9.317
RXC 09	and Immunomodulators	10.164	9.039	9.293	9.303	9.317
RXC 10	Cystic Fibrosis Agents	12.467	12.153	11.967	12.058	12.081
	Additional effect for					
RXC 01	enrollees with RXC 01	2.352	2.403	2.468	2.731	2.782
X	(Anti-HIV Agents) and	2.332	2.103	2.100	2.731	2.702
HCC001	HCC 001 (HIV/AIDS)					
	Additional effect for					
	enrollees with RXC 02					
	(Anti-Hepatitis C					
	(HCV) Agents) and					
	(HCC 037_1 (Chronic Viral Hepatitis C) or	1.894	2.102	2.238	2.305	2.314
RXC 02	036 (Cirrhosis of Liver)	1.094	2.102	2.236	2.303	2.314
X	or 035 (End-Stage					
HCC037	Liver Disease) or 034					
_1, 036,	(Liver Transplant					
035, 034	Status/Complications))					
	Additional effect for					
	enrollees with RxC 03					
RXC 03	(Antiarrhythmics) and	0.000	0.000	0.000	0.000	0.000
X	HCC 142 (Specified					
HCC142	Heart Arrhythmias)					
	Additional effect for					
	enrollees with RxC 04					
	(Phosphate Binders)					
	and (HCC 184 (End					
	Stage Renal Disease) or					
	183 (Kidney Transplant	0.000	0.000	0.000	0.000	0.000
RXC 04	Status) or 187 (Chronic					
X	Kidney Disease, Stage					
HCC184,	5) or 188 (Chronic					
183, 187,	Kidney Disease, Severe					
188	Stage 4))					

HCC or						
RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
RXC 05 x HCC048, 041	Additional effect for enrollees with RxC 05 (Inflammatory Bowel Disease Agents) and (HCC 048 (Inflammatory Bowel Disease) or 041 (Intestine Transplant Status/Complications))	-1.160	-1.072	-0.990	-0.895	-0.877
RXC 06 x HCC018, 019, 020, 021	Additional effect for enrollees with RxC 06 (Insulin) and (HCC 018 (Pancreas Transplant Status/Complications) or 019 (Diabetes with Acute Complications) or 020 (Diabetes with Chronic Complications) or 021 (Diabetes without Complication))	0.366	0.333	0.390	0.472	0.489
RXC 07 x HCC018, 019, 020, 021	Additional effect for enrollees with RxC 07 (Anti-Diabetic Agents, Except Insulin and Metformin Only) and (HCC 018 (Pancreas Transplant Status/Complications) or 019 (Diabetes with Acute Complications) or 020 (Diabetes with Chronic Complications) or 021 (Diabetes without Complication))	-0.203	-0.188	-0.154	-0.143	-0.144
RXC 08 x HCC118	Additional effect for enrollees with RxC 08 (Multiple Sclerosis Agents) and HCC 118 (Multiple Sclerosis)	-3.597	-3.174	-2.905	-2.769	-2.743

HCC or						
RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
RXC 09 x HCC056 or 057 and 048 or 041	Additional effect for enrollees with RxC 09 (Immune Suppressants and Immunomodulators) and (HCC 048 (Inflammatory Bowel Disease) or 041 (Intestine Transplant Status/Complications)) and (HCC 056 (Rheumatoid Arthritis and Specified Autoimmune Disorders) or 057 (Systemic Lupus Erythematosus and Other Autoimmune Disorders))	-0.170	-0.165	-0.156	-0.184	-0.186
RXC 09 x HCC056	Additional effect for enrollees with RxC 09 (Immune Suppressants and Immunomodulators) and HCC 056 (Rheumatoid Arthritis and Specified Autoimmune Disorders)	-2.426	-2.192	-2.033	-1.916	-1.900
RXC 09 x HCC057	Additional effect for enrollees with RxC 09 (Immune Suppressants and Immunomodulators) and HCC 057 (Systemic Lupus Erythematosus and Other Autoimmune Disorders)	-0.558	-0.403	-0.291	-0.155	-0.131

HCC or						
RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
RXC 09 x HCC048, 041	Additional effect for enrollees with RxC 09 (Immune Suppressants and Immunomodulators) and (HCC 048 (Inflammatory Bowel Disease) or 041 (Intestine Transplant Status/Complications))	0.982	1.231	1.372	1.541	1.567
RXC 10 x HCC159, 158	Additional effect for enrollees with RxC 10 (Cystic Fibrosis Agents) and (HCC 159 (Cystic Fibrosis) or 158 (Lung Transplant Status/Complications))	21.871	22.075	22.178	22.186	22.183
RXC 11 x HCC036, 035, 034	Additional effect for enrollees with RxC 11 (Ammonia Detoxicants) and (HCC 036 (Cirrhosis of Liver) or 035 (End- Stage Liver Disease) or 034 (Liver Transplant Status/Complications))	0.012	0.012	0.012	0.012	0.012
RXC 12 x HCC130, 129, 128	Additional effect for enrollees with RxC 12 (Diuretics, Loop and Select Potassium- Sparing) and (HCC 130 (Congestive Heart Failure) or 129 (Heart Transplant) or 128 (Heart Assistive Device/Artificial Heart))	0.012	0.012	0.012	0.012	0.012

**TABLE 2: HHS HCCs in the Severity Illness Indicator Variable** 

Description						
Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock						
Peritonitis/Gastrointestinal Perforation/Necrotizing Enter colitis						
Seizure Disorders and Convulsions						
Non-Traumatic Coma, Brain Compression/Anoxic Damage						
Respirator Dependence/Tracheostomy Status						
Respiratory Arrest						
Cardio-Respiratory Failure and Shock, Including Respiratory Distress						
Syndromes						
Pulmonary Embolism and Deep Vein Thrombosis						

TABLE 3: Final Child Risk Adjustment Model Factors for 2018 Benefit Year

Factor	Platinum	Gold	Silver	Bronze	Catastrophic			
Demographic Factors								
Age 2-4, Male	0.208	0.151	0.086	0.032	0.023			
Age 5-9, Male	0.143	0.101	0.053	0.013	0.007			
Age 10-14, Male	0.203	0.158	0.101	0.057	0.051			
Age 15-20, Male	0.270	0.218	0.157	0.103	0.094			
Age 2-4, Female	0.164	0.114	0.058	0.018	0.011			
Age 5-9, Female	0.114	0.078	0.037	0.007	0.004			
Age 10-14, Female	0.193	0.150	0.099	0.061	0.055			
Age 15-20, Female	0.309	0.249	0.177	0.111	0.100			
		Diagnosis Fac	tors					
HIV/AIDS	4.854	4.445	4.177	4.071	4.056			
Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock	13.733	13.577	13.488	13.499	13.505			
Central Nervous System Infections, Except Viral Meningitis	8.613	8.451	8.347	8.348	8.349			
Viral or Unspecified Meningitis	3.100	2.908	2.793	2.682	2.665			
Opportunistic Infections	17.297	17.238	17.198	17.188	17.185			
Metastatic Cancer	30.780	30.563	30.402	30.391	30.391			
Lung, Brain, and Other Severe Cancers, Including Pediatric Acute Lymphoid Leukemia	10.591	10.355	10.183	10.110	10.098			

Factor	Platinum	Gold	Silver	Bronze	Catastrophic
Non-Hodgkin`s					
Lymphomas and Other	8.417	8.186	8.020	7.924	7.907
Cancers and Tumors					
Colorectal, Breast (Age <					
50), Kidney, and Other	3.135	2.955	2.822	2.710	2.689
Cancers					
Breast (Age 50+) and					
Prostate Cancer,					
Benign/Uncertain Brain	2.885	2.717	2.592	2.484	2.463
Tumors, and Other					
Cancers and Tumors					
Thyroid Cancer,					
Melanoma,	1.375	1.241	1.133	1.019	0.998
Neurofibromatosis, and	1.373	1.241	1.133	1.019	0.996
Other Cancers and Tumors					
Pancreas Transplant	21.819	21.658	21.558	21.564	21.567
Status/Complications	21.019	21.038	21.336	21.304	21.307
Diabetes with Acute	2.386	2.091	1.918	1.677	1.632
Complications	2.380	2.091	1.918	1.077	1.032
Diabetes with Chronic	2.386	2.091	1.918	1 677	1.632
Complications	2.380	2.091	1.918	1.677	1.032
Diabetes without	2.386	2.091	1.918	1.677	1.632
Complication	2.360	2.091	1.916	1.077	1.032
Protein-Calorie	11.906	11.824	11.765	11.792	11.798
Malnutrition	11.900	11.624	11.703	11.792	11.790
Mucopolysaccharidosis	7.714	7.478	7.306	7.261	7.255
Lipidoses and	7.714	7.478	7.306	7.261	7.255
Glycogenosis	7.714	7.470	7.500	7.201	7.233
Congenital Metabolic					
Disorders, Not Elsewhere	7.714	7.478	7.306	7.261	7.255
Classified					
Amyloidosis, Porphyria,					
and Other Metabolic	7.714	7.478	7.306	7.261	7.255
Disorders					
Adrenal, Pituitary, and					
Other Significant	7.714	7.478	7.306	7.261	7.255
Endocrine Disorders					
Liver Transplant	21.819	21.658	21.558	21.564	21.567
Status/Complications	21.019	21.036	21.556	21.304	21.507
End-Stage Liver Disease	11.273	11.122	11.037	11.030	11.032
Cirrhosis of Liver	7.345	7.217	7.127	7.086	7.080
Chronic Viral Hepatitis C	4.896	4.753	4.644	4.602	4.598
Chronic Hepatitis,	1 000	1.770	1 672	1.502	1 500
Other/Unspecified	1.889	1.770	1.673	1.593	1.580

Factor	Platinum	Gold	Silver	Bronze	Catastrophic
Acute Liver					
Failure/Disease, Including	11.206	11.063	10.968	10.958	10.961
Neonatal Hepatitis					
Intestine Transplant	21.819	21.658	21.558	21.564	21.567
Status/Complications	21.01)	21.036	21.556	21.304	21.307
Peritonitis/Gastrointestinal					
Perforation/Necrotizing	11.921	11.626	11.429	11.425	11.429
Enterocolitis					
Intestinal Obstruction	4.457	4.256	4.115	4.024	4.009
Chronic Pancreatitis	10.319	10.106	9.975	9.968	9.971
Acute Pancreatitis/Other					
Pancreatic Disorders and	2.065	1.951	1.862	1.768	1.750
Intestinal Malabsorption					
Inflammatory Bowel	6 244	<b>5</b> 909	5.666	5 550	5.540
Disease	6.244	5.898	5.666	5.558	5.540
Necrotizing Fasciitis	4.115	3.912	3.767	3.698	3.688
Bone/Joint/Muscle	4.115	3.912	3.767	3.698	3.688
Infections/Necrosis	4.113	3.912	3.707	3.098	3.000
Rheumatoid Arthritis and					
Specified Autoimmune	3.843	3.626	3.460	3.364	3.349
Disorders					
Systemic Lupus					
Erythematosus and Other	1.270	1.147	1.042	0.924	0.901
Autoimmune Disorders					
Osteogenesis Imperfecta					
and Other	1.481	1.371	1.280	1.200	1.186
Osteodystrophies					
Congenital/Developmental					
Skeletal and Connective	1.481	1.371	1.280	1.200	1.186
Tissue Disorders					
Cleft Lip/Cleft Palate	1.498	1.322	1.194	1.077	1.056
Hemophilia	52.236	51.792	51.486	51.446	51.443
Myelodysplastic					
Syndromes and	13.991	13.855	13.765	13.743	13.740
Myelofibrosis					
Aplastic Anemia	13.991	13.855	13.765	13.743	13.740
Acquired Hemolytic					
Anemia, Including	6.898	6.663	6.500	6.415	6.401
Hemolytic Disease of	0.070	0.003	0.500	0.413	0.401
Newborn					
Sickle Cell Anemia (Hb-	6.898	6.663	6.500	6.415	6.401
SS)	0.070	0.003	0.300	0.413	0.401
Thalassemia Major	6.898	6.663	6.500	6.415	6.401

Factor	Platinum	Gold	Silver	Bronze	Catastrophic
Combined and Other Severe	6.030	5.877	5.772	5.709	5.698
Immunodeficiencies Disorders of the Immune Mechanism	6.030	5.877	5.772	5.709	5.698
Coagulation Defects and Other Specified Hematological Disorders	4.389	4.272	4.178	4.106	4.093
Drug Psychosis	5.458	5.225	5.078	5.011	5.002
Drug Dependence	5.458	5.225	5.078	5.011	5.002
Schizophrenia	4.858	4.509	4.284	4.169	4.154
Major Depressive and Bipolar Disorders	1.853	1.658	1.509	1.341	1.309
Reactive and Unspecified Psychosis, Delusional Disorders	1.770	1.585	1.441	1.273	1.241
Personality Disorders	0.705	0.603	0.501	0.365	0.340
Anorexia/Bulimia Nervosa	2.961	2.779	2.649	2.582	2.570
Prader-Willi, Patau, Edwards, and Autosomal Deletion Syndromes	3.017	2.841	2.739	2.702	2.697
Down Syndrome, Fragile X, Other Chromosomal Anomalies, and Congenital Malformation Syndromes	1.759	1.604	1.499	1.411	1.396
Autistic Disorder	1.614	1.457	1.329	1.179	1.150
Pervasive Developmental Disorders, Except Autistic Disorder	0.773	0.668	0.559	0.408	0.380
Traumatic Complete Lesion Cervical Spinal Cord	12.132	12.057	12.014	12.073	12.085
Quadriplegia	12.132	12.057	12.014	12.073	12.085
Traumatic Complete Lesion Dorsal Spinal Cord	11.144	11.017	10.935	10.945	10.949
Paraplegia	11.144	11.017	10.935	10.945	10.949
Spinal Cord Disorders/Injuries	4.007	3.809	3.675	3.587	3.570
Amyotrophic Lateral Sclerosis and Other Anterior Horn Cell Disease	7.875	7.672	7.529	7.461	7.448
Quadriplegic Cerebral Palsy	3.383	3.167	3.045	3.050	3.055

Factor	Platinum	Gold	Silver	Bronze	Catastrophic
Cerebral Palsy, Except Quadriplegic	0.811	0.657	0.557	0.473	0.457
Spina Bifida and Other Brain/Spinal/Nervous System Congenital Anomalies	1.233	1.110	1.024	0.952	0.940
Myasthenia Gravis/Myoneural Disorders and Guillain- Barre Syndrome/Inflammatory and Toxic Neuropathy	8.872	8.717	8.609	8.575	8.570
Muscular Dystrophy	2.892	2.721	2.611	2.527	2.513
Multiple Sclerosis	8.237	7.930	7.720	7.668	7.660
Parkinson's, Huntington's, and Spinocerebellar Disease, and Other Neurodegenerative Disorders	2.892	2.721	2.611	2.527	2.513
Seizure Disorders and Convulsions	1.890	1.739	1.615	1.480	1.455
Hydrocephalus	4.372	4.263	4.192	4.175	4.174
Non-Traumatic Coma, and Brain Compression/Anoxic Damage	6.184	6.064	5.980	5.937	5.928
Respirator Dependence/Tracheostomy Status	32.469	32.362	32.302	32.414	32.437
Respiratory Arrest	10.996	10.799	10.685	10.673	10.674
Cardio-Respiratory Failure and Shock, Including Respiratory Distress Syndromes	10.996	10.799	10.685	10.673	10.674
Heart Assistive Device/Artificial Heart	21.819	21.658	21.558	21.564	21.567
Heart Transplant	21.819	21.658	21.558	21.564	21.567
Congestive Heart Failure	5.988	5.895	5.820	5.772	5.763
Acute Myocardial Infarction	5.987	5.863	5.789	5.783	5.780
Unstable Angina and Other Acute Ischemic Heart Disease	4.397	4.326	4.283	4.283	4.280

Factor	Platinum	Gold	Silver	Bronze	Catastrophic
Heart					
Infection/Inflammation,	12.093	11.983	11.909	11.882	11.877
Except Rheumatic					
Hypoplastic Left Heart					
Syndrome and Other	5.372	5.202	5.055	4.931	4.907
Severe Congenital Heart	3.372	3.202	3.033	4.931	4.907
Disorders					
Major Congenital					
Heart/Circulatory	1.570	1.473	1.362	1.246	1.226
Disorders					
Atrial and Ventricular					
Septal Defects, Patent					
Ductus Arteriosus, and	1.028	0.940	0.840	0.747	0.732
Other Congenital	1.026	0.740	0.040	0.747	0.732
Heart/Circulatory					
Disorders					
Specified Heart	3.614	3.456	3.334	3.259	3.246
Arrhythmias					
Intracranial Hemorrhage	13.443	13.224	13.086	13.068	13.068
Ischemic or Unspecified	7.273	7.176	7.121	7.127	7.128
Stroke	7.273	7.170	7.121	7.127	7.120
Cerebral Aneurysm and					
Arteriovenous	3.480	3.298	3.183	3.118	3.104
Malformation					
Hemiplegia/Hemiparesis	4.076	3.983	3.928	3.911	3.911
Monoplegia, Other	2.828	2.697	2.618	2.584	2.578
Paralytic Syndromes	2.020	2.071	2.010	2.301	2.370
Atherosclerosis of the					
Extremities with	11.509	11.269	11.120	11.039	11.030
Ulceration or Gangrene					
Vascular Disease with	14.991	14.847	14.751	14.756	14.756
Complications					
Pulmonary Embolism and	13.120	12.991	12.912	12.936	12.943
Deep Vein Thrombosis					
Lung Transplant	21.819	21.658	21.558	21.564	21.567
Status/Complications					
Cystic Fibrosis	19.728	19.372	19.128	19.147	19.155
Chronic Obstructive	0.205	6.222	0.21-	0.45	
Pulmonary Disease,	0.393	0.330	0.247	0.156	0.140
Including Bronchiectasis					0.115
Asthma	0.393	0.330	0.247	0.156	0.140
Fibrosis of Lung and Other	3.546	3.430	3.334	3.264	3.253
Lung Disorders		21.00			3.200

Factor	Platinum	Gold	Silver	Bronze	Catastrophic
Aspiration and Specified Bacterial Pneumonias and Other Severe Lung Infections	8.866	8.817	8.781	8.805	8.809
Kidney Transplant Status	13.541	13.254	13.074	13.063	13.064
End Stage Renal Disease	34.719	34.612	34.545	34.624	34.638
Chronic Kidney Disease, Stage 5	2.485	2.350	2.249	2.141	2.122
Chronic Kidney Disease, Severe (Stage 4)	2.485	2.350	2.249	2.141	2.122
Ectopic and Molar Pregnancy, Except with Renal Failure, Shock, or Embolism	1.049	0.895	0.770	0.575	0.534
Miscarriage with Complications	1.049	0.895	0.770	0.575	0.534
Miscarriage with No or Minor Complications	1.049	0.895	0.770	0.575	0.534
Completed Pregnancy With Major Complications	2.958	2.557	2.362	2.146	2.125
Completed Pregnancy With Complications	2.958	2.557	2.362	2.146	2.125
Completed Pregnancy with No or Minor Complications	2.958	2.557	2.362	2.146	2.125
Chronic Ulcer of Skin, Except Pressure	1.930	1.840	1.758	1.691	1.678
Hip Fractures and Pathological Vertebral or Humerus Fractures	5.578	5.337	5.157	5.055	5.038
Pathological Fractures, Except of Vertebrae, Hip, or Humerus	1.414	1.291	1.172	1.043	1.016
Stem Cell, Including Bone Marrow, Transplant Status/Complications	21.819	21.658	21.558	21.564	21.567
Artificial Openings for Feeding or Elimination	12.486	12.386	12.336	12.435	12.456
Amputation Status, Lower Limb/Amputation Complications	7.323	7.082	6.934	6.834	6.819

TABLE 4: Final Infant Risk Adjustment Model Factors for 2018 Benefit Year

Group	Platinum	Gold	Silver	Bronze	Catastrophic
Extremely Immature *					•
Severity Level 5 (Highest)	289.835	288.586	287.667	287.601	287.606
Extremely Immature * Severity Level 4	172.007	170.782	169.887	169.783	169.779
Extremely Immature * Severity Level 3	40.417	39.422	38.675	38.447	38.420
Extremely Immature * Severity Level 2	40.417	39.422	38.675	38.447	38.420
Extremely Immature * Severity Level 1 (Lowest)	40.417	39.422	38.675	38.447	38.420
Immature *Severity Level 5 (Highest)	167.075	165.835	164.923	164.855	164.863
Immature *Severity Level 4	77.989	76.760	75.861	75.769	75.770
Immature *Severity Level 3	40.417	39.422	38.675	38.447	38.420
Immature *Severity Level 2	26.405	25.381	24.629	24.387	24.354
Immature *Severity Level 1 (Lowest)	26.405	25.381	24.629	24.387	24.354
Premature/Multiples * Severity Level 5 (Highest)	127.684	126.492	125.632	125.512	125.512
Premature/Multiples * Severity Level 4	29.235	28.078	27.249	27.046	27.029
Premature/Multiples * Severity Level 3	15.200	14.298	13.640	13.266	13.207
Premature/Multiples * Severity Level 2	8.356	7.620	7.067	6.546	6.445
Premature/Multiples * Severity Level 1 (Lowest)	5.669	5.121	4.621	4.059	3.953
Term *Severity Level 5 (Highest)	105.354	104.247	103.430	103.226	103.206
Term *Severity Level 4	15.436	14.549	13.910	13.477	13.410
Term *Severity Level 3	5.972	5.406	4.916	4.345	4.227
Term *Severity Level 2	3.621	3.185	2.746	2.123	1.997

Group	Platinum	Gold	Silver	Bronze	Catastrophic
Term *Severity Level 1 (Lowest)	1.592	1.361	0.971	0.454	0.375
Age1 *Severity Level 5 (Highest)	51.022	50.386	49.916	49.797	49.783
Age1 *Severity Level 4	8.832	8.365	8.008	7.769	7.731
Age1 *Severity Level 3	3.122	2.834	2.560	2.300	2.259
Age1 *Severity Level 2	1.984	1.756	1.514	1.240	1.192
Age1 *Severity Level 1 (Lowest)	0.531	0.437	0.290	0.189	0.174
Age 0 Male	0.588	0.543	0.526	0.482	0.466
Age 1 Male	0.137	0.121	0.110	0.086	0.080

**TABLE 5: HHS HCCs Included in Infant Model Maturity Categories** 

<b>Maturity Category</b>	HCC/Description			
Extremely Immature	Extremely Immature Newborns, Birthweight < 500 Grams			
Extremely Immature	Extremely Immature Newborns, Including Birthweight 500-749 Grams			
Extremely Immature	Extremely Immature Newhorns, Including Birthweight 750-999			
Immature	Premature Newborns, Including Birthweight 1000-1499 Grams			
Immature	Premature Newborns, Including Birthweight 1500-1999 Grams			
Premature/Multiples	Premature Newborns, Including Birthweight 2000-2499 Grams			
Premature/Multiples	re/Multiples Other Premature, Low Birthweight, Malnourished, or Multiple Birth Newborns			
Term	Term or Post-Term Singleton Newborn, Normal or High Birthweight			
Age 1	All age 1 infants			

**TABLE 6: HHS HCCs Included in Infant Model Severity Categories** 

<b>Severity Category</b>	НСС
Severity Level	
5(Highest)	Metastatic Cancer
Severity Level 5	Pancreas Transplant Status/Complications
Severity Level 5	Liver Transplant Status/Complications
Severity Level 5	End-Stage Liver Disease
Severity Level 5	Intestine Transplant Status/Complications

<b>Severity Category</b>	нсс				
Severity Level 5	Peritonitis/Gastrointestinal Perforation/Necrotizing				
	Enterocolitis				
Severity Level 5	Respirator Dependence/Tracheostomy Status				
Severity Level 5	Heart Assistive Device/Artificial Heart				
Severity Level 5	Heart Transplant				
Severity Level 5	Congestive Heart Failure				
Severity Level 5	Hypoplastic Left Heart Syndrome and Other Severe				
	Congenital Heart Disorders				
Severity Level 5	Lung Transplant Status/Complications				
Severity Level 5	Kidney Transplant Status				
Severity Level 5	End Stage Renal Disease				
Severity Level 5	Stem Cell, Including Bone Marrow, Transplant				
	Status/Complications				
Severity Level 4	Septicemia, Sepsis, Systemic Inflammatory Response				
Severity Level 4	Syndrome/Shock				
Severity Level 4	Lung, Brain, and Other Severe Cancers, Including Pediatric				
Severity Level 4	Acute Lymphoid Leukemia				
Severity Level 4	Mucopolysaccharidosis				
Severity Level 4	Major Congenital Anomalies of Diaphragm, Abdominal				
Severity Level 4	Wall, and Esophagus, Age < 2				
Severity Level 4	Myelodysplastic Syndromes and Myelofibrosis				
Severity Level 4	Aplastic Anemia				
Severity Level 4	Combined and Other Severe Immunodeficiencies				
Severity Level 4	Traumatic Complete Lesion Cervical Spinal Cord				
Severity Level 4	Quadriplegia				
Severity Level 4	Amyotrophic Lateral Sclerosis and Other Anterior Horn				
	Cell Disease				
Severity Level 4	Quadriplegic Cerebral Palsy				
Severity Level 4	Myasthenia Gravis/Myoneural Disorders and Guillain-				
	Barre Syndrome/Inflammatory and Toxic Neuropathy				
Severity Level 4	Non-Traumatic Coma, Brain Compression/Anoxic Damage				
Severity Level 4	Respiratory Arrest				
Severity Level 4	Cardio-Respiratory Failure and Shock, Including				
	Respiratory Distress Syndromes				
Severity Level 4	Acute Myocardial Infarction				
Severity Level 4	Heart Infection/Inflammation, Except Rheumatic				
Severity Level 4	Major Congenital Heart/Circulatory Disorders				
Severity Level 4	Intracranial Hemorrhage				
Severity Level 4	Ischemic or Unspecified Stroke				
Severity Level 4	Vascular Disease with Complications				
Severity Level 4	Pulmonary Embolism and Deep Vein Thrombosis				
Severity Level 4	Aspiration and Specified Bacterial Pneumonias and Other				
	Severe Lung Infections				
Severity Level 4	Chronic Kidney Disease, Stage 5				

<b>Severity Category</b>	нсс				
Severity Level 4	Hip Fractures and Pathological Vertebral or Humerus				
	Fractures				
Severity Level 4	Artificial Openings for Feeding or Elimination				
Severity Level 3	HIV/AIDS				
C12	Central Nervous System Infections, Except Viral				
Severity Level 3	Meningitis				
Severity Level 3	Opportunistic Infections				
Coverity Level 2	Non-Hodgkin`s Lymphomas and Other Cancers and				
Severity Level 3	Tumors				
Severity Level 3	Colorectal, Breast (Age < 50), Kidney and Other Cancers				
Coverity Level 2	Breast (Age 50+), Prostate Cancer, Benign/Uncertain Brain				
Severity Level 3	Tumors, and Other Cancers and Tumors				
Severity Level 3	Lipidoses and Glycogenosis				
Savarity Laval 2	Adrenal, Pituitary, and Other Significant Endocrine				
Severity Level 3	Disorders				
Severity Level 3	Acute Liver Failure/Disease, Including Neonatal Hepatitis				
Severity Level 3	Intestinal Obstruction				
Severity Level 3	Necrotizing Fasciitis				
Severity Level 3	Bone/Joint/Muscle Infections/Necrosis				
Severity Level 3	Osteogenesis Imperfecta and Other Osteodystrophies				
Severity Level 3	Cleft Lip/Cleft Palate				
Severity Level 3	Hemophilia				
Severity Level 3	Disorders of the Immune Mechanism				
Severity Level 3	Coagulation Defects and Other Specified Hematological Disorders				
Severity Level 3	Prader-Willi, Patau, Edwards, and Autosomal Deletion				
G : I 12	Syndromes				
Severity Level 3	Traumatic Complete Lesion Dorsal Spinal Cord				
Severity Level 3	Paraplegia				
Severity Level 3	Spinal Cord Disorders/Injuries				
Severity Level 3	Cerebral Palsy, Except Quadriplegic				
Severity Level 3	Muscular Dystrophy				
Severity Level 3	Parkinson's, Huntington's, and Spinocerebellar Disease, and Other Neurodegenerative Disorders				
Severity Level 3	Hydrocephalus				
Severity Level 3	Unstable Angina and Other Acute Ischemic Heart Disease				
Ť	Atrial and Ventricular Septal Defects, Patent Ductus				
Severity Level 3	Arteriosus, and Other Congenital Heart/Circulatory				
	Disorders				
Severity Level 3	Specified Heart Arrhythmias				
Severity Level 3	Cerebral Aneurysm and Arteriovenous Malformation				
Severity Level 3	Hemiplegia/Hemiparesis				
Severity Level 3	Cystic Fibrosis				
Severity Level 3	Fibrosis of Lung and Other Lung Disorders				

<b>Severity Category</b>	НСС				
Severity Level 3	Pathological Fractures, Except of Vertebrae, Hip, or				
	Humerus				
Severity Level 2	Viral or Unspecified Meningitis				
Severity Level 2	Thyroid, Melanoma, Neurofibromatosis, and Other Cancers and Tumors				
Severity Level 2	Diabetes with Acute Complications				
Severity Level 2	Diabetes with Chronic Complications				
Severity Level 2	Diabetes without Complication				
Severity Level 2	Protein-Calorie Malnutrition				
Severity Level 2	Congenital Metabolic Disorders, Not Elsewhere Classified				
Severity Level 2	Amyloidosis, Porphyria, and Other Metabolic Disorders				
Severity Level 2	Cirrhosis of Liver				
Severity Level 2	Chronic Pancreatitis				
Severity Level 2	Inflammatory Bowel Disease				
Severity Level 2	Rheumatoid Arthritis and Specified Autoimmune Disorders				
Severity Level 2	Systemic Lupus Erythematosus and Other Autoimmune Disorders				
Severity Level 2	Congenital/Developmental Skeletal and Connective Tissue Disorders				
Severity Level 2	Acquired Hemolytic Anemia, Including Hemolytic Disease of Newborn				
Severity Level 2	Sickle Cell Anemia (Hb-SS)				
Severity Level 2	Drug Psychosis				
Severity Level 2	Drug Dependence				
Severity Level 2	Down Syndrome, Fragile X, Other Chromosomal Anomalies, and Congenital Malformation Syndromes				
Severity Level 2	Spina Bifida and Other Brain/Spinal/Nervous System Congenital Anomalies				
Severity Level 2	Seizure Disorders and Convulsions				
Severity Level 2	Monoplegia, Other Paralytic Syndromes				
Severity Level 2	Atherosclerosis of the Extremities with Ulceration or Gangrene				
Severity Level 2	Chronic Obstructive Pulmonary Disease, Including Bronchiectasis				
Severity Level 2	Chronic Ulcer of Skin, Except Pressure				
Severity Level 1	Chronic Hepatitis				
(Lowest)					
Severity Level 1	Acute Pancreatitis/Other Pancreatic Disorders and Intestinal Malabsorption				
Severity Level 1	Thalassemia Major				
Severity Level 1	Autistic Disorder				
Severity Level 1	Pervasive Developmental Disorders, Except Autistic Disorder				
Severity Level 1	Multiple Sclerosis				

<b>Severity Category</b>	НСС
Severity Level 1	Asthma
Severity Level 1	Chronic Kidney Disease, Severe (Stage 4)
Severity Level 1	Amputation Status, Lower Limb/Amputation Complications
Severity Level 1	No Severity HCCs

To evaluate the model's performance, we examined its R-squared. The R-squared statistic, which calculates the percentage of individual variation explained by a model, measures the predictive accuracy of the model overall. For each of the HHS risk adjustment models, the R-squared statistic is in the range of published estimates for concurrent risk adjustment models.<sup>3</sup> Because the final coefficients are blended from separately solved models based on MarketScan® 2013, 2014, and 2015 data, we are publishing the R-squared statistic for each model and year separately to note their statistical validity. The R-squared statistic for each model is shown below in Table 7.

**TABLE 7: R-Squared Statistic for HHS Risk Adjustment Models** 

	R-Squared Statistic		
Risk Adjustment Model	2013	2014	2015
Platinum Adult	0.4100	0.4084	0.4161
Platinum Child	0.3117	0.3072	0.3363
Platinum Infant	0.3394	0.3263	0.3326
Gold Adult	0.4057	0.4037	0.4113
Gold Child	0.3074	0.3023	0.3318
Gold Infant	0.3375	0.3243	0.3306
Silver Adult	0.4025	0.4001	0.4077
Silver Child	0.3037	0.2984	0.3281
Silver Infant	0.3365	0.3231	0.3295
Bronze Adult	0.4001	0.3974	0.4052
Bronze Child	0.3004	0.2948	0.3247
Bronze Infant	0.3362	0.3228	0.3293
Catastrophic Adult	0.3995	0.3968	0.4046
Catastrophic Child	0.2997	0.2940	0.3239
Catastrophic Infant	0.3362	0.3227	0.3292

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<sup>&</sup>lt;sup>3</sup> Winkleman, Ross and Syed Mehmud. "A Comparative Analysis of Claims-Based Tools for Health Risk Assessment." Society of Actuaries. April 2007.