



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,¹ (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.² 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.

¹ 81 FR 94058, 94084 (Dec. 22, 2016)

² 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
<i>Demographic Factors</i>						
	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
<i>Diagnosis Factors</i>						
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/Gastrointestinal 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/Developmental 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
HCC069	Acquired Hemolytic Anemia, Including Hemolytic Disease of Newborn	7.92	7.779	7.682	7.655	7.652
HCC070	Sickle Cell Anemia (Hb-SS)	7.92	7.779	7.682	7.655	7.652
HCC071	Thalassemia Major	7.92	7.779	7.682	7.655	7.652
HCC073	Combined and Other Severe Immunodeficiencies	4.883	4.756	4.677	4.672	4.672
HCC074	Disorders of the Immune Mechanism	4.883	4.756	4.677	4.672	4.672
HCC075	Coagulation Defects and Other Specified Hematological Disorders	2.521	2.436	2.375	2.34	2.333
HCC081	Drug Psychosis	3.86	3.632	3.485	3.381	3.362
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
HCC088	Major Depressive and Bipolar Disorders	1.596	1.453	1.351	1.249	1.23
HCC089	Reactive and Unspecified Psychosis, Delusional Disorders	1.596	1.453	1.351	1.249	1.23
HCC090	Personality Disorders	1.08	0.967	0.872	0.765	0.745
HCC094	Anorexia/Bulimia Nervosa	2.572	2.423	2.319	2.256	2.245
HCC096	Prader-Willi, Patau, Edwards, and Autosomal Deletion Syndromes	2.17	2.056	1.979	1.92	1.909
HCC097	Down Syndrome, Fragile X, Other Chromosomal Anomalies, and Congenital Malformation Syndromes	0.804	0.713	0.638	0.559	0.546
HCC102	Autistic Disorder	1.08	0.967	0.872	0.765	0.745
HCC103	Pervasive Developmental Disorders, Except Autistic Disorder	1.08	0.967	0.872	0.765	0.745

HCC or RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
HCC106	Traumatic Complete Lesion Cervical Spinal Cord	10.376	10.232	10.138	10.121	10.12
HCC107	Quadriplegia	10.376	10.232	10.138	10.121	10.12
HCC108	Traumatic Complete Lesion Dorsal Spinal Cord	8.24	8.103	8.014	7.992	7.989
HCC109	Paraplegia	8.24	8.103	8.014	7.992	7.989
HCC110	Spinal Cord Disorders/Injuries	5.345	5.152	5.031	4.995	4.99
HCC111	Amyotrophic Lateral Sclerosis and Other Anterior Horn Cell Disease	2.412	2.204	2.077	2.019	2.011
HCC112	Quadriplegic Cerebral Palsy	0.885	0.755	0.663	0.61	0.6
HCC113	Cerebral Palsy, Except Quadriplegic	0.204	0.119	0.067	0.037	0.033
HCC114	Spina Bifida and Other Brain/Spinal/Nervous System Congenital Anomalies	0.045	0.001	0	0	0
HCC115	Myasthenia Gravis/Myoneural Disorders and Guillain-Barre Syndrome/Inflammatory and Toxic Neuropathy	5.118	4.986	4.903	4.881	4.878
HCC117	Muscular Dystrophy	2.091	1.944	1.857	1.775	1.759
HCC118	Multiple Sclerosis	6.335	6.087	5.926	5.892	5.887
HCC119	Parkinson`s, Huntington`s, and Spinocerebellar Disease, and Other Neurodegenerative Disorders	2.091	1.944	1.857	1.775	1.759
HCC120	Seizure Disorders and Convulsions	1.425	1.286	1.19	1.11	1.096
HCC121	Hydrocephalus	5.579	5.471	5.389	5.356	5.351

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/Tracheostomy 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/Hemiparesis	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
HCC156	Pulmonary Embolism and Deep Vein Thrombosis	3.337	3.192	3.1	3.059	3.053
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
	<i>Interaction Factors</i>					
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/Inflammatory and Toxic Neuropathy	8.941	9.135	9.253	9.364	9.383

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

HCC or RXC No.	Factor	Platinum	Gold	Silver	Bronze	Catastrophic
SEVERE x G03	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
<i>Enrollment Duration Factors</i>						
	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
	Three months of enrollment	0.375	0.325	0.281	0.261	0.259
	Four months of 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
	Ten months of 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
<i>Prescription Drug Factors</i>						
RXC 01	Anti-HIV Agents	6.543	6.050	5.725	5.564	5.539
RXC 02	Anti-Hepatitis C (HCV) Agents	27.133	26.646	26.321	26.429	26.454
RXC 03	Antiarrhythmics	0.118	0.118	0.118	0.118	0.118
RXC 04	Phosphate Binders	0.630	0.630	0.630	0.630	0.630
RXC 05	Inflammatory Bowel Disease Agents	1.929	1.757	1.642	1.482	1.450
RXC 06	Insulin	1.474	1.340	1.204	1.040	1.006
RXC 07	Anti-Diabetic Agents, Except Insulin and Metformin Only	0.522	0.456	0.390	0.305	0.288

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

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
<i>Demographic Factors</i>					
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
<i>Diagnosis Factors</i>					
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 Cancers and Tumors	8.417	8.186	8.020	7.924	7.907
Colorectal, Breast (Age < 50), Kidney, and Other Cancers	3.135	2.955	2.822	2.710	2.689
Breast (Age 50+) and Prostate Cancer, Benign/Uncertain Brain Tumors, and Other Cancers and Tumors	2.885	2.717	2.592	2.484	2.463
Thyroid Cancer, Melanoma, Neurofibromatosis, and Other Cancers and Tumors	1.375	1.241	1.133	1.019	0.998
Pancreas Transplant Status/Complications	21.819	21.658	21.558	21.564	21.567
Diabetes with Acute Complications	2.386	2.091	1.918	1.677	1.632
Diabetes with Chronic Complications	2.386	2.091	1.918	1.677	1.632
Diabetes without Complication	2.386	2.091	1.918	1.677	1.632
Protein-Calorie Malnutrition	11.906	11.824	11.765	11.792	11.798
Mucopolysaccharidosis	7.714	7.478	7.306	7.261	7.255
Lipidoses and Glycogenesis	7.714	7.478	7.306	7.261	7.255
Congenital Metabolic Disorders, Not Elsewhere Classified	7.714	7.478	7.306	7.261	7.255
Amyloidosis, Porphyria, and Other Metabolic Disorders	7.714	7.478	7.306	7.261	7.255
Adrenal, Pituitary, and Other Significant Endocrine Disorders	7.714	7.478	7.306	7.261	7.255
Liver Transplant Status/Complications	21.819	21.658	21.558	21.564	21.567
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, Other/Unspecified	1.889	1.770	1.673	1.593	1.580

Factor	Platinum	Gold	Silver	Bronze	Catastrophic
Acute Liver Failure/Disease, Including Neonatal Hepatitis	11.206	11.063	10.968	10.958	10.961
Intestine Transplant Status/Complications	21.819	21.658	21.558	21.564	21.567
Peritonitis/Gastrointestinal Perforation/Necrotizing Enterocolitis	11.921	11.626	11.429	11.425	11.429
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 Intestinal Malabsorption	2.065	1.951	1.862	1.768	1.750
Inflammatory Bowel 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 Infections/Necrosis	4.115	3.912	3.767	3.698	3.688
Rheumatoid Arthritis and Specified Autoimmune Disorders	3.843	3.626	3.460	3.364	3.349
Systemic Lupus Erythematosus and Other Autoimmune Disorders	1.270	1.147	1.042	0.924	0.901
Osteogenesis Imperfecta and Other Osteodystrophies	1.481	1.371	1.280	1.200	1.186
Congenital/Developmental Skeletal and Connective Tissue Disorders	1.481	1.371	1.280	1.200	1.186
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 Myelofibrosis	13.991	13.855	13.765	13.743	13.740
Aplastic Anemia	13.991	13.855	13.765	13.743	13.740
Acquired Hemolytic Anemia, Including Hemolytic Disease of Newborn	6.898	6.663	6.500	6.415	6.401
Sickle Cell Anemia (Hb-SS)	6.898	6.663	6.500	6.415	6.401
Thalassemia Major	6.898	6.663	6.500	6.415	6.401

Factor	Platinum	Gold	Silver	Bronze	Catastrophic
Combined and Other Severe Immunodeficiencies	6.030	5.877	5.772	5.709	5.698
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, Except Rheumatic	12.093	11.983	11.909	11.882	11.877
Hypoplastic Left Heart Syndrome and Other Severe Congenital Heart Disorders	5.372	5.202	5.055	4.931	4.907
Major Congenital Heart/Circulatory Disorders	1.570	1.473	1.362	1.246	1.226
Atrial and Ventricular Septal Defects, Patent Ductus Arteriosus, and Other Congenital Heart/Circulatory Disorders	1.028	0.940	0.840	0.747	0.732
Specified Heart Arrhythmias	3.614	3.456	3.334	3.259	3.246
Intracranial Hemorrhage	13.443	13.224	13.086	13.068	13.068
Ischemic or Unspecified Stroke	7.273	7.176	7.121	7.127	7.128
Cerebral Aneurysm and Arteriovenous Malformation	3.480	3.298	3.183	3.118	3.104
Hemiplegia/Hemiparesis	4.076	3.983	3.928	3.911	3.911
Monoplegia, Other Paralytic Syndromes	2.828	2.697	2.618	2.584	2.578
Atherosclerosis of the Extremities with Ulceration or Gangrene	11.509	11.269	11.120	11.039	11.030
Vascular Disease with Complications	14.991	14.847	14.751	14.756	14.756
Pulmonary Embolism and Deep Vein Thrombosis	13.120	12.991	12.912	12.936	12.943
Lung Transplant Status/Complications	21.819	21.658	21.558	21.564	21.567
Cystic Fibrosis	19.728	19.372	19.128	19.147	19.155
Chronic Obstructive Pulmonary Disease, Including Bronchiectasis	0.393	0.330	0.247	0.156	0.140
Asthma	0.393	0.330	0.247	0.156	0.140
Fibrosis of Lung and Other Lung Disorders	3.546	3.430	3.334	3.264	3.253

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

Maturity Category	HCC/Description
Extremely Immature	Extremely Immature Newborns, Birthweight < 500 Grams
Extremely Immature	Extremely Immature Newborns, Including Birthweight 500-749 Grams
Extremely Immature	Extremely Immature Newborns, Including Birthweight 750-999 Grams
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	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

Severity Category	HCC
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

Severity Category	HCC
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 Syndrome/Shock
Severity Level 4	Lung, Brain, and Other Severe Cancers, Including Pediatric Acute Lymphoid Leukemia
Severity Level 4	Mucopolysaccharidosis
Severity Level 4	Major Congenital Anomalies of Diaphragm, Abdominal 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

Severity Category	HCC
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
Severity Level 3	Central Nervous System Infections, Except Viral Meningitis
Severity Level 3	Opportunistic Infections
Severity Level 3	Non-Hodgkin`s Lymphomas and Other Cancers and Tumors
Severity Level 3	Colorectal, Breast (Age < 50), Kidney and Other Cancers
Severity Level 3	Breast (Age 50+), Prostate Cancer, Benign/Uncertain Brain Tumors, and Other Cancers and Tumors
Severity Level 3	Lipidoses and Glycogenosis
Severity Level 3	Adrenal, Pituitary, and Other Significant Endocrine 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 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
Severity Level 3	Atrial and Ventricular Septal Defects, Patent Ductus 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

Severity Category	HCC
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 (Lowest)	Chronic Hepatitis
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

Severity Category	HCC
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.³ 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

Risk Adjustment Model	R-Squared Statistic		
	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

³ Winkleman, Ross and Syed Mehmud. "A Comparative Analysis of Claims-Based Tools for Health Risk Assessment." Society of Actuaries. April 2007.