

## Transfer Cases Payment Adjustment under Global Revenue Models

### Introduction

Under the new All-Payer Model, inter-hospital transfers are an area of concern that must be addressed to ensure that revenue appropriately follows the patient when changes to transfer rates occur and that resources are readily available to care for complex cases. As academic medical centers (AMCs) providing quaternary services, Johns Hopkins Hospital and University of Maryland Medical Center play a distinct role in the health care system by handling a large proportion of highly acute cases, accepting regional referrals, and serving as centers for clinical and technological innovation in the State. For global models to be successful in Maryland, different regulatory treatment must be given to specific areas of service at these AMCs that will allow them to function effectively within this new payment structure. Under global models, hospitals are incentivized to lower expenses and volume by taking measures to reduce avoidable utilization and promote care management and quality improvement. This may result in community hospitals transferring complex cases to AMCs in order to get patients the advanced care they need and reduce the high costs associated with those patients. Patients transferred to AMCs are often critically ill patients or patients with highly specialized care not available at the transferring hospitals whose access to care should be ensured. Utilizing AMCs as regional referral centers may improve outcomes for critically ill patients and thus be beneficial to the entire Maryland health system. AMCs must have the capacity to take on a possible influx of complex cases without facing financial penalty under a global model.

Global budgets change financial incentives. Hospitals have reduced incentives to keep highly complex cases that are beyond their capabilities in order to garner revenue. Additionally there is a risk that hospitals could take steps to avoid complex cases altogether. HSCRC has included a number of requirements in global budget agreements to monitor and curb against such outcomes including:

- Review of changes in severity levels or case mix of patients treated, with possible revenue reductions for declines;
- Review of volume declines beyond a specified level; and
- Potential revenue adjustments for shifts of services between hospitals (referred to as the Market Share Adjustment).

While each of these measures will detect overall changes to utilization patterns, the relatively small number of complex cases makes transfers a special category of focus. HSCRC wants to ensure that financial policies are in place early on in the process of global budget implementation in order to respond to potential changing patterns, to support the transfer of patients based on their clinical needs, and to ensure that the receiving entities have the capacity to take on the possible influx of complex cases without facing financial penalty under a global model.

## Objectives/Guiding Principles

The HSCRC staff have collected data to aid in the development of a transfer policy. The following are some basic principles to guide the development and implementation of the Commission's transfer policy.

- The primary consideration is to support the well-being of the transferred patient and to support the provision of the most appropriate treatment. Transfers should occur expressly to serve the best interest of the patient.
- Transfer payment adjustments to the GBR revenues should depend upon corridors to avoid minor adjustments to the GBR revenues.
- The current level and pattern of transfers should be used as the baseline, with subsequent revenue adjustments based on changes in transfer levels from the current level above determined thresholds.
- The Commission should regularly monitor hospitals for changes in transfer patterns for both financial and quality implications.
- The charge for increased transfers should be at a fixed predetermined level. The level should be low enough so that it does not pose a barrier to transfers yet high enough to provide for average incremental resource needs of a complex transferred patient.
- Significant changes in the case mix of transfers should be addressed in the review of the AMC annual budgets.
- Unique circumstances such as changing clinical protocols, ambulance patterns, or other altered circumstances should be evaluated on a hospital-specific basis.
- As transfers are a special subcategory of market share, HSCRC should take into account any adjustments made for transfers when making a market share adjustment.

## Data Collection

HSCRC staff proposes defining transfers as same or next day admissions, meaning the discharge date of the initial admission or emergency "admission" must be the same day or the next day as the admission date of the second admission to the AMC. The subgroup recommended to expand the definition from same day to next day to include transfers that are admitted after midnight based on the validation results of same day transfers.

HSCRC staff has collected data to aid in the evaluation of transfer cases. Initially, staff focused on the transfer-in/transfer-out recorded in the HSCRC case mix data, representing inpatient-to-inpatient transfers. However, this data has never been used for reimbursement in Maryland and did not prove to be accurate.

- There was confusion regarding whether a patient was being transferred from the emergency room or from the inpatient setting. This may be attributable to the increasing numbers of observation cases.
- Referrals were recorded as transfers in this data. There were sometimes multi-day gaps between the transfer out and the transfer in.

- The record of transfers-out did not align with the record of transfers-in.

In order to overcome these problems, HSCRC staff has used the master patient index (MPI) provided from Chesapeake Regional Information System for our Patients (CRISP) to track patient flow from one hospital to another. In doing so, patients were tracked with direct transfers from emergency room settings as well as inpatient settings. HSCRC staff will request that selected hospitals review this data to ensure that transfers are being properly identified.

#### **DATA VALIDATION RESULTS INCOMPLETE DRAFT**

The table below provides results from the process of reconciling transfer-out records of transferring hospitals with transfer-in reducers of AMCs based on data provided to HSCRC as of 10/01/2014. In general, the information received from transferring hospitals validate the measurement counts (Table 1). On the other hand, AMCs indicated that they have found additional transfer cases that were not included in the HSCRC transfer case list (Table 2). Some of these additional transfer cases sent by the University of Maryland Medical Center (UMMC) do not have CRISP ID (3% of transfer cases identified by HSCRC), which was further analyzed in partnership with CRISP.

**Table 1: Validation Results from Referring Hospitals**

ID	Sending Hospital Name	Total Number of Included Cases	Total Number of Cases Disagreed	Percent Disagree	Total Number of Additional Transfers Sent	Total Number of Additional Transfers met the Inclusion Criteria	Percent Additional	Total Number of Additional Transfers Send - Inpatient	CRISP ID NOT FOUND- Inpatient	Additional Transfers that met the Inclusion Criteria from Inpatient	Total Number of Additional Transfers Send - Outpatient	CRISP ID NOT FOUND- Outpatient	Additional Transfers that met the Inclusion Criteria from Outpatient
210012	SINAI	237	55	23%	0	0	0%	0					
210033	CARROLL COUNTY	511	23	5%	0	0	0%	0					
210005	FREDERICK MEMORIAL	398	15	4%	0	0	0%	0					
210051	DOCTORS COMMUNITY	153	4	3%	0	0	0%	0					
210035	CHARLES REGIONAL	38	0	0%	1186	0	0%	13		0	1173	0	0
210043	BALTIMORE WASHINGTON MEDICAL CENTER	127	0	0%	776	0	0%	37	3	0	725	11	0
210049	UPPER CHESAPEAKE HEALTH	137	0	0%	659	0	0%	90		0	569	0	0
210006	HARFORD	44	0	0%	389	0	0%	37	0	0	352	0	0
210030	CHESTERTOWN	28	0	0%	252	2	0%	5		0	247	0	2
210010	DORCHESTER	20	0	0%	247	1	0%	5		0	242	0	1
210037	EASTON	82	0	0%	239	1	0%	26	1	0	213	1	1
210063	UM ST. JOSEPH	50	0	0%	111	0	0%	10	2	0	99	1	0
210038	UMMC MIDTOWN	42	0	0%	78	0	0%	19		0	59	0	0
210008	MERCY	283											
210015	FRANKLIN SQUARE	419											
210018	MONTGOMERY GENERAL	59											
210024	UNION MEMORIAL	215											
210028	ST. MARY	79											
210034	HARBOR	299											
210044	G.B.M.C.	224											
210056	GOOD SAMARITAN HOSPITAL	375											
210058	REHAB & ORTHO	10											
210062	SOUTHERN MARYLAND	95											
210088	QUEEN ANNE'S EMERGENCY CENTER	69											
218992	UNIVERSITY OF MD SHOCK TRAUMA												
<b>Total</b>		<b>3,994</b>	<b>97</b>	<b>2%</b>	<b>3937</b>	<b>4</b>	<b>0%</b>	<b>242</b>	<b>6</b>	<b>0</b>	<b>3679</b>	<b>13</b>	<b>4</b>

Receiving Hospital Name	University of Maryland and MIEMS	Johns Hopkins University
Total Number of Included Cases	4,569	3,102
Total Number of Cases Disagreed	0	
Percent Disagree	0%	
Additional Cases Send	1,387	
Missing EID	126	
Previous Visit more than 1 day	1,222	
Same System	13	
Not From ED	2	
Total Number of Additional Transfers	0	
Percent Additional	0%	

### Transfer Case Exclusions

Certain types of cases have been excluded from the transfer analysis. Each exclusion and the rationale are discussed below:

- Categorical cases were excluded, because these cases are already being handled under a different global budget review mechanism. See Appendix A. for a detailed definition of categorical cases.
- Non-Maryland resident transfer cases have been excluded. This may require additional evaluation for hospitals located near the State's borders.
- MDC 5 (cardiology and cardiac surgery) cases have been excluded. There are alternative competitors for this care, and the HSCRC staff have focused on those categories where the special resources of an AMC resulted in the transfer.
- Psychiatric transfer cases (based on the receiving institution's recorded APR-DRG of 740,750-760) have been excluded as this is a category where there are a number of institutions providing the service.
- Rehab cases have been excluded (APR\_DRG 860, 980-989) based on the planned nature of these transfers.

In addition, transfers within the same hospital or hospital system were excluded from the analysis. Transfers within the same hospital are under the same global budget. Transfers within a hospital system may reflect resource planning approaches and specialization. While global budgets may be adjusted for these transfers, it should occur under a different process.

### Transfer Monitoring Categories

To monitor out-of-state transfers, particularly for border hospitals, and to evaluate the possibility of unintended consequences of the transfer policy, the following additional categories will be closely monitored:

1. Transfers that are excluded from payment adjustments
2. Transfers to out-of-state providers
3. Levels of ED Diversion
4. Case mix intensity of transfer cases
5. Length of stay of transfer cases in sending and receiving hospitals

## Transfer Payment Measures

HSCRC staff proposes the following measurement for the payment adjustments:

### *AMC GBR Transfer Adjustments*

On a quarterly basis, AMC GBR budgets are adjusted by the increase or decrease in transfer cases net of population adjustment weighted by the average adjusted cost per transfer case. The average adjusted cost is calculated as the base year average charge \*Price Update\*Variable Cost Factor. The adjustments are done separately for patient transferred from inpatient setting and from emergency departments based on the recommendations from the sub-workgroup. Table 3 below provides the calculation for FY 2015 GBR adjustments using FY2014 transfer rates.

<b>Table 3: Average Adjusted Transfer Cost for Rate Year 2016 GBR adjustments</b>		
<b>Price Update (FY 2015)</b>	A	2.41%
<b>VCF</b>	B	50%
<b>Transfers From ED</b>		
Average Charge of Transfer Cases in FY 2014	C	\$25,164
Average Transfer Case Adjustment	$D = C * (1 + A) * B$	\$12,885
<b>Transfers From Inpatient</b>		
Average Charge of Transfer Cases in FY 2014	H	\$50,398
Average Transfer Case Adjustment	$I = H * (1 + A) * B$	\$25,806

### Average Adjusted Transfer Cost for Rate Year 2016

### *Sending Hospital GBR Transfer Adjustments*

Sending hospital transfer rates will be monitored on a quarterly basis and the GBR revenues will be reduced on an annual basis by the increase in transfer cases weighted by the average adjusted cost per transfer case. The average adjusted cost for these adjustments will be determined according to the formula stated in AMC adjustment section above. If cumulative payment adjustments to the AMCs exceed 5% of the base year transfer charges, HSCRC staff may adjust the transferring hospital GBR budgets during the course of the fiscal year. Otherwise, transfer adjustments will be implemented on an annual basis. For hospitals with increases above a 10% threshold and with at least

10 additional transfers, those cases above the 10% threshold will be charged to the budget of the sending GBR hospital, thereby reducing the GBR revenue for the preceding year for that hospital. If the net amount of transfers for the entire State does not exceed an increase of 5% of the base transfers, then no reductions will be made for transfers below a 10% threshold. If the net transfer amount exceeds an increase of 5%, then the excess over 5% will be deducted on a per case basis for those hospitals with increases in transfer cases between 5% and 10%. Table 4 below illustrates the sample calculation for sending hospitals.

**Table 4: Example GBR Transfer Payment Adjustment Calculation for Sending Hospitals**

<b>Statewide Average Cost of Transfers</b>					
From ED	A	\$	12,885	From Table 3	
From Inpatient	B	\$	25,806	From Table 3	
<b>Base Year Transfer Case Count for Hospital A (Sending Hospital)</b>					
From ED	C		100		
From Inpatient	D		100		
Total	E= C+D		200		
<b>Current Year Transfer Case Count for Hospital A</b>					
From ED	F		120		
From Inpatient	G		110		
Total	H=F+G		230		
<b>Transfer Case Growth</b>			I=H-E	30	If >=10 then calculate the costs
<b>Base Year Total Transfer Cost</b>					
From ED	J=A*C	\$	1,288,523		
From Inpatient	K=B*D	\$	2,580,634		
Total	L=J+K	\$	3,869,156		
<b>Current Year Total Transfer Cost</b>					
From ED	M=A*F	\$	1,546,227		
From Inpatient	N=B*G	\$	2,838,697		
Total	O=M+N	\$	4,384,924		
<b>Transfer Cost Growth (\$)</b>			P=O-L	\$	515,768
<b>10% Transfer Cost Growth Threshold</b>			R=L*10%	\$	386,916
<b>GBR transfer Payment Adjustment</b>			S=P-R	\$	(128,852)
<b>If State transfer Cost Growth&gt;5%</b>					
<b>5% Transfer Cost Threshold</b>			T=L*5%	\$	193,458
<b>GBR transfer Payment Adjustment</b>			U=P-T	\$	(322,310)

The trends in transfers will be monitored using monthly case mix data submissions and the CRISP MPI. The adjustments will start with October-December 2014 period. Table 4 provides the schedule for adjustments for rate year 2016, 2017 and 2018 time periods.

Table 5: GBR Transfer Adjustment Schedules

AMC Quarterly Adjustments				Sending Hospital Annual Adjustments			
Measurement Period	Baseline	Transfer Analysis Complete	Budget Adjustment (+/-)	Measurement Period	Baseline	Transfer Analysis Complete	Budget Adjustment
Oct-Dec 2014	Oct-Dec 2013	Mar-15	FY 15 GBR	Oct-Dec 2014	Oct-Dec 2013		FY 16 GBR
Jan-Mar 2015	Jan-Mar 2013	Jun-15	FY 16 GBR				
Apr-Jun 2015	Apr-Jun 2014	Sep-15	FY 16 GBR				
July-Sep 2015	July-Sep 2014	Dec-15	FY 16 GBR	CY 15	CY 14	Mar-15	FY 17 GBR
Oct-Dec 2015	Oct-Dec 2014	Mar-16	FY 16 GBR				
Jan-Mar 2016	Jan-Mar 2015	Jun-16	FY 17 GBR				
Apr-Jun 2016	Apr-Jun 2015	Sep-16	FY 17 GBR				
July-Sep 2016	July-Sep 2015	Dec-16	FY 17 GBR				
Oct-Dec 2016	Oct-Dec 2015	Mar-17	FY 17 GBR	CY 16	CY 15	Mar-16	FY 18 GBR

## Appendix: Data Analysis Results

Table 6: Same Day Transfers Exclusions , FY 2014							
	Receiving Hospital				Total	Percent Total	AMC Percent
	UMMS	MIEMSS	JHH	Non-AMC			
<b>Total Same Day Transfers</b>	8,306	2,770	7,364	34,339	52,779	100%	35%
<b>Transfer Exclusions</b>							
<b>1. Same Hospital</b>	571	270	1367	11289	13,497	26%	-
<b>2. Same System</b>	2925	847	1514	6241	11,527	22%	-
<b>3. Non-Resident</b>	202	123	199	809	1,333	3%	-
<b>4. MDC 5</b>	716	23	650	2304	3,693	7%	<b>38%</b>
<b>5. Rehab</b>	0	0	7	1924	1,931	4%	<b>0%</b>
<b>6. Psych</b>	634	1	228	4017	4,880	9%	<b>18%</b>
<b>7. Categorical Exclusions</b>	27	0	12	127	166	0%	<b>23%</b>
<b>Same Day Transfers Included in the Analysis</b>	3,231	1,506	3,387	7,628	15,752	<b>30%</b>	<b>52%</b>

Counts are mutually exclusive in hierarchical order as displayed in the table. \*Burn cases at Johns Hopkins Bayview Hospital.

Table 7: Same Day Transfers by Source FY 2014									
Receiving Hospital	Number of Transfers			Average Charge			Total Charge		
	Source		All	Source		All	Source		All
	From ED	From Inpatient		From ED	From Inpatient		From ED	From Inpatient	
UMMS	1,718	1,513	3,231	\$26,473	\$45,861	\$35,552	\$45,481,296	\$69,387,963	\$114,869,259
MIEMSS	1,216	290	1,506	\$28,175	\$73,843	\$36,969	\$34,260,354	\$21,414,370	\$55,674,723
JHH	2,272	1115	3,387	\$22,563	\$50,457	\$31,745	\$51,262,129	\$56,259,273	\$107,521,401
<b>Total</b>	5,206	2,918	8,124	\$25,164	\$50,398	\$34,228	\$131,003,778	\$147,061,605	\$278,065,383
<b>Non-AMC</b>	5,345	2,283	7,628	\$11,024	\$18,083	\$13,137	\$58,922,148	\$41,283,694	\$100,205,842

Table 8: AMC Transfers DRGS with 10 or more Cases

APR DRG Code	APR DRG NAME	Total charges			Average Age
		N	Mean	Sum	
720	Septicemia & disseminated infections	0	\$0	\$0	0
53	Seizure	208	\$13,206	\$2,746,835	24.79
55	Head trauma w coma >1 hr or hemorrhage	176	\$14,517	\$2,554,978	56.11
21	Craniotomy except for trauma	170	\$83,861	\$14,256,431	51.99
141	Asthma	169	\$8,595	\$1,452,570	6.73
45	CVA & precerebral occlusion w infarct	166	\$21,513	\$3,571,178	59.37
254	Other digestive system diagnoses	156	\$11,147	\$1,738,913	35.46
44	Intracranial hemorrhage	135	\$24,682	\$3,332,061	61.01
315	Shoulder, upper arm & forearm procedures	128	\$19,585	\$2,506,823	26.88
4	ECMO or tracheostomy w long term mechanical ventilation w extensive procedure	120	\$262,106	\$31,452,765	50.42
58	Other disorders of nervous system	119	\$13,616	\$1,620,281	49.63
710	Infectious & parasitic diseases including HIV w O.R. procedure	119	\$119,116	\$14,174,807	54.39
313	Knee & lower leg procedures except foot	116	\$36,511	\$4,235,256	44.29
279	Hepatic coma & other major acute liver disorders	114	\$27,739	\$3,162,203	51.29
139	Other pneumonia	108	\$14,058	\$1,518,261	26.55
383	Cellulitis & other bacterial skin infections	105	\$11,047	\$1,159,896	33.14
721	Post-operative, post-traumatic, other device infections	101	\$17,301	\$1,747,388	46.34
347	Other back & neck disorders, fractures & injuries	93	\$12,485	\$1,161,095	59.08
282	Disorders of pancreas except malignancy	90	\$13,235	\$1,191,168	44.82
308	Hip & femur procedures for trauma except joint replacement	88	\$36,678	\$3,227,659	56.28
221	Major small & large bowel procedures	86	\$55,876	\$4,805,329	49.06
466	Malfunction, reaction, complic of genitourinary device or proc	83	\$21,342	\$1,771,390	50.86
284	Disorders of gallbladder & biliary tract	78	\$13,029	\$1,016,225	54.9
92	Facial bone procedures except major cranial/facial bone procedures	76	\$24,451	\$1,858,278	35.82
690	Acute leukemia	74	\$104,607	\$7,740,882	52.72
861	Signs, symptoms & other factors influencing health status	73	\$11,662	\$851,354	34.6
420	Diabetes	72	\$9,832	\$707,886	22.11
130	Respiratory system diagnosis w ventilator support 96+ hours	68	\$79,287	\$5,391,528	45.49
5	Tracheostomy w long term mechanical ventilation w/o extensive procedure	66	\$169,374	\$11,178,706	55.62
247	Intestinal obstruction	66	\$11,393	\$751,921	53.27
660	Major hematologic/immunologic diag exc sickle cell crisis & coagul	65	\$49,892	\$3,242,972	46.31
133	Pulmonary edema & respiratory failure	64	\$36,562	\$2,339,988	42.39
143	Other respiratory diagnoses except signs, symptoms & minor diagnoses	63	\$23,723	\$1,494,562	43.87

Table 8: AMC Transfers DRGS with 10 or more Cases

APR DRG Code	APR DRG NAME	Total charges			Average Age
		N	Mean	Sum	
813	Other complications of treatment	63	\$12,508	\$787,999	50.14
252	Malfunction, reaction & complication of GI device or procedure	62	\$17,874	\$1,108,169	50.4
283	Other disorders of the liver	61	\$17,719	\$1,080,840	48.66
351	Other musculoskeletal system & connective tissue diagnoses	61	\$10,780	\$657,550	40.87
281	Malignancy of hepatobiliary system & pancreas	59	\$21,494	\$1,268,162	61.19
138	Bronchiolitis & RSV pneumonia	58	\$11,589	\$672,182	1.79
662	Sickle cell anemia crisis	58	\$16,084	\$932,888	25.76
812	Poisoning of medicinal agents	58	\$10,875	\$630,729	22.19
711	Post-op, post-trauma, other device infections w O.R. procedure	56	\$56,729	\$3,176,822	53.61
248	Major gastrointestinal & peritoneal infections	53	\$19,831	\$1,051,050	44.06
463	Kidney & urinary tract infections	53	\$10,466	\$554,712	42.53
41	Nervous system malignancy	52	\$20,199	\$1,050,363	57.83
566	Other antepartum diagnoses	52	\$12,014	\$624,738	26.81
460	Renal failure	51	\$34,194	\$1,743,876	55.57
280	Alcoholic liver disease	50	\$24,102	\$1,205,082	53.16
791	O.R. procedure for other complications of treatment	49	\$41,892	\$2,052,688	56
342	Fractures & dislocations except femur, pelvis & back	48	\$9,017	\$432,798	43.31
225	Appendectomy	47	\$16,686	\$784,233	13.47
930	Multiple significant trauma w/o O.R. procedure	47	\$18,527	\$870,780	53.89
317	Tendon, muscle & other soft tissue procedures	46	\$60,051	\$2,762,347	44.65
54	Migraine & other headaches	45	\$7,305	\$328,717	35.71
115	Other ear, nose, mouth, throat & cranial/facial diagnoses	45	\$11,811	\$531,510	33.49
121	Other respiratory & chest procedures	45	\$55,303	\$2,488,656	50.67
253	Other & unspecified gastrointestinal hemorrhage	45	\$13,929	\$626,820	58.47
844	Partial thickness burns w or w/o skin graft	45	\$4,532	\$203,922	3.47
241	Peptic ulcer & gastritis	44	\$18,624	\$819,449	49.11
384	Contusion, open wound & other trauma to skin & subcutaneous tissue	44	\$8,204	\$360,984	35.36
113	Infections of upper respiratory tract	43	\$6,495	\$279,297	18.35
22	Ventricular shunt procedures	42	\$52,554	\$2,207,265	33.79
82	Eye disorders except major infections	42	\$10,181	\$427,598	41.48
346	Connective tissue disorders	42	\$31,436	\$1,320,314	49.55

Table 8: AMC Transfers DRGs with 10 or more Cases

APR DRG Code	APR DRG NAME	Total charges			Average Age
		N	Mean	Sum	
691	Lymphoma, myeloma & non-acute leukemia	41	\$44,529	\$1,825,676	56.41
57	Concussion, closed skull Fx nos,uncomplicated intracranial injury, coma < 1 hr or no coma	40	\$8,633	\$345,306	28.45
663	Other anemia & disorders of blood & blood-forming organs	40	\$9,822	\$392,883	27.9
301	Hip joint replacement	39	\$55,642	\$2,170,047	67.95
135	Major chest & respiratory trauma	38	\$14,077	\$534,944	65.45
245	Inflammatory bowel disease	38	\$19,777	\$751,513	29.47
249	Non-bacterial gastroenteritis, nausea & vomiting	38	\$10,128	\$384,858	34.37
344	Osteomyelitis, septic arthritis & other musculoskeletal infections	38	\$28,683	\$1,089,950	47.13
912	Musculoskeletal & other procedures for multiple significant trauma	38	\$59,225	\$2,250,559	46.87
20	Craniotomy for trauma	37	\$49,633	\$1,836,428	56.86
23	Spinal procedures	37	\$72,891	\$2,696,980	59
48	Peripheral, cranial & autonomic nerve disorders	37	\$17,722	\$655,728	45.32
951	Moderately extensive procedure unrelated to principal diagnosis	37	\$66,105	\$2,445,891	50.32
137	Major respiratory infections & inflammations	37	\$29,814	\$1,103,126	40.22
724	Other infectious & parasitic diseases	37	\$23,307	\$862,342	43.35
42	Degenerative nervous system disorders exc mult sclerosis	36	\$37,565	\$1,352,347	54.5
134	Pulmonary embolism	36	\$23,795	\$856,624	49.06
240	Digestive malignancy	36	\$17,968	\$646,844	60.97
561	Postpartum & post abortion diagnoses w/o procedure	36	\$3,332	\$119,947	27.97
98	Other ear, nose, mouth & throat procedures	34	\$16,642	\$565,843	40.97
114	Dental & oral diseases & injuries	34	\$9,195	\$312,636	40.5
136	Respiratory malignancy	34	\$29,671	\$1,008,822	64.21
321	Cervical spinal fusion & other back/neck proc exc disc excis/decomp	34	\$62,146	\$2,112,950	60.59
723	Viral illness	34	\$15,565	\$529,193	25.38
52	Nontraumatic stupor & coma	33	\$49,099	\$1,620,273	52.61
24	Extracranial vascular procedures	32	\$60,245	\$1,927,833	55.91
950	Extensive procedure unrelated to principal diagnosis	32	\$84,876	\$2,716,044	50.41
220	Major stomach, esophageal & duodenal procedures	32	\$56,937	\$1,821,982	56.28
251	Abdominal pain	31	\$7,419	\$229,980	38.68
144	Respiratory signs, symptoms & minor diagnoses	30	\$16,279	\$488,361	36.5

Table 8: AMC Transfers DRGS with 10 or more Cases

APR DRG Code	APR DRG NAME	Total charges			Average Age
		N	Mean	Sum	
243	Other esophageal disorders	30	\$10,179	\$305,357	38.1
263	Laparoscopic cholecystectomy	30	\$21,101	\$633,037	43.07
309	Hip & femur procedures for non-trauma except joint replacement	30	\$69,911	\$2,097,340	40.97
364	Other skin, subcutaneous tissue & related procedures	30	\$20,356	\$610,687	39.73
468	Other kidney & urinary tract diagnoses, signs & symptoms	29	\$15,700	\$455,296	49.31
229	Other digestive system & abdominal procedures	28	\$43,209	\$1,209,854	47.79
244	Diverticulitis & diverticulosis	27	\$15,112	\$408,024	68.74
304	Dorsal & lumbar fusion proc except for curvature of back	27	\$109,778	\$2,964,002	56.44
314	Foot & toe procedures	26	\$36,545	\$950,166	43.62
890	HIV w multiple major HIV related conditions	26	\$49,270	\$1,281,032	46.62
260	Major pancreas, liver & shunt procedures	25	\$75,308	\$1,882,691	47.84
424	Other endocrine disorders	25	\$17,592	\$439,812	51.24
425	Electrolyte disorders except hypovolemia related	25	\$20,505	\$512,619	46.32
722	Fever	25	\$9,298	\$232,455	38.96
305	Amputation of lower limb except toes	23	\$53,569	\$1,232,098	51.83
385	Other skin, subcutaneous tissue & breast disorders	23	\$7,479	\$172,024	33.96
43	Multiple sclerosis & other demyelinating diseases	22	\$27,760	\$610,730	45.36
56	Brain contusion/laceration & complicated skull Fx, coma < 1 hr or no coma	22	\$9,746	\$214,420	40.55
816	Toxic effects of non-medicinal substances	22	\$18,386	\$404,483	33.41
343	Musculoskeletal malignancy & pathol fracture d/t musckel malig	21	\$34,393	\$722,251	42.57
633	Neonate birthwt >2499g w major anomaly	21	\$51,696	\$1,085,612	0
661	Coagulation & platelet disorders	21	\$31,537	\$662,284	41
815	Other injury, poisoning & toxic effect diagnoses	21	\$25,420	\$533,819	18.43
634	Neonate, birthwt >2499g w resp dist synd/oth maj resp cond	21	\$54,095	\$1,136,005	0
26	Other nervous system & related procedures	20	\$37,781	\$755,610	47.75
50	Non-bacterial infections of nervous system exc viral meningitis	20	\$36,460	\$729,195	49.95
775	Alcohol abuse & dependence	19	\$11,216	\$213,105	43.63
49	Bacterial & tuberculous infections of nervous system	18	\$29,768	\$535,828	48.33
422	Hypovolemia & related electrolyte disorders	18	\$11,777	\$211,981	51.44
443	Kidney & urinary tract procedures for nonmalignancy	18	\$32,797	\$590,349	51.39
631	Neonate birthwt >2499g w other major procedure	18	\$85,544	\$1,539,793	0

Table 8: AMC Transfers DRGS with 10 or more Cases

APR DRG Code	APR DRG NAME	Total charges			Average Age
		N	Mean	Sum	
120	Major respiratory & chest procedures	17	\$89,852	\$1,527,488	45.24
224	Peritoneal adhesiolysis	17	\$32,881	\$558,972	41.12
560	Vaginal delivery	17	\$23,410	\$397,962	24.47
640	Neonate birthwt >2499g, normal newborn or neonate w other problem	17	\$4,148	\$70,508	0
228	Inguinal, femoral & umbilical hernia procedures	16	\$22,794	\$364,710	27.31
312	Skin graft, except hand, for musculoskeletal & connective tissue diagnoses	16	\$91,708	\$1,467,326	45
320	Other musculoskeletal system & connective tissue procedures	16	\$49,655	\$794,482	50.19
349	Malfunction, reaction, complic of orthopedic device or procedure	16	\$26,234	\$419,745	58.19
140	Chronic obstructive pulmonary disease	15	\$10,785	\$161,780	66.53
142	Interstitial lung disease	15	\$23,020	\$345,294	57.87
223	Other small & large bowel procedures	15	\$46,177	\$692,660	29.33
341	Fracture of pelvis or dislocation of hip	15	\$10,430	\$156,452	58.4
540	Cesarean delivery	15	\$27,199	\$407,991	28.53
911	Extensive abdominal/thoracic procedures for mult significant trauma	15	\$100,263	\$1,503,940	33
70	Orbital procedures	14	\$20,028	\$280,394	44.5
262	Cholecystectomy except laparoscopic	14	\$45,902	\$642,627	66
340	Fracture of femur	14	\$8,823	\$123,525	31.79
380	Skin ulcers	14	\$23,798	\$333,167	58.14
423	Inborn errors of metabolism	14	\$23,125	\$323,751	20
681	Other O.R. procedures for lymphatic/hematopoietic/other neoplasms	14	\$67,501	\$945,010	58.57
694	Lymphatic & other malignancies & neoplasms of uncertain behavior	14	\$27,793	\$389,095	55.43
40	Spinal disorders & injuries	13	\$18,247	\$237,212	60
47	Transient ischemia	13	\$9,162	\$119,112	54.23
952	Nonextensive procedure unrelated to principal diagnosis	13	\$32,407	\$421,289	58.08
222	Other stomach, esophageal & duodenal procedures	12	\$30,657	\$367,882	4.42
401	Pituitary & adrenal procedures	12	\$54,971	\$659,657	48.92
461	Kidney & urinary tract malignancy	12	\$12,078	\$144,936	67.75
892	HIV w major HIV related condition	12	\$15,473	\$185,676	41.5
80	Acute major eye infections	11	\$16,008	\$176,086	46.36

Table 8: AMC Transfers DRGS with 10 or more Cases

APR DRG Code	APR DRG NAME	Total charges			Average Age
		N	Mean	Sum	
421	Malnutrition, failure to thrive & other nutritional disorders	11	\$13,870	\$152,573	16.18
447	Other kidney, urinary tract & related procedures	11	\$60,732	\$668,052	47.18
465	Urinary stones & acquired upper urinary tract obstruction	11	\$8,440	\$92,837	42.45
513	Uterine & adnexa procedures for non-malignancy except leiomyoma	11	\$21,029	\$231,319	37.18
773	Opioid abuse & dependence	11	\$5,288	\$58,173	41.91
46	Nonspecific CVA & precerebral occlusion w/o infarct	10	\$7,424	\$74,240	47.8
51	Viral meningitis	10	\$13,044	\$130,442	20.9
131	Cystic fibrosis - pulmonary disease	10	\$12,182	\$121,824	20.9
532	Menstrual & other female reproductive system disorders	10	\$15,058	\$150,580	42.4

Table 9: Transfers to AMCs by Sending Hospital , FY2014								
Sending Hospital		Receiving Hospital						All
		UMMS		MIEMSS		JHH		
		Source		Source		Source		
		ED	INPT	ED	INPT	ED	INPT	
Provider ID	HOSPITALNAME							
210033	CARROLL COUNTY	110	76	170	13	137	43	549
210011	ST. AGNES	114	82	126	19	121	41	503
210005	FREDERICK MEMORIAL	69	110	53	12	99	91	434
210019	PENINSULA REGIONAL	53	58	73	10	163	62	419
210015	FRANKLIN SQUARE	125	75	44	24	101	47	416
210023	ANNE ARUNDEL	42	73	57	18	132	74	396
210001	MERITUS	118	75	69	19	67	36	384
210056	GOOD SAMARITAN	105	56	72	17	79	37	366
210034	HARBOR	76	65	63	<10	65	23	298
210008	MERCY	82	51	21	<10	92	24	279
210013	BON SECOURS	97	44	72	<10	36	20	274
210040	NORTHWEST	70	52	29	<10	69	31	257
210048	HOWARD COUNTY	92	54	88	12	0	0	246
210012	SINAI	41	55	13	14	76	43	242
210044	G.B.M.C.	27	37	26	<10	70	67	235
210039	CALVERT	69	44	18	10	61	22	224
210024	UNION MEMORIAL	56	27	27	<10	59	19	196
210055	LAUREL REGIONAL	47	47	34	<10	20	12	169
210049	UPPER CHESAPEAKE HEALTH	0	0	0	0	130	32	162
210043	BALTIMORE WASHINGTON MEDICAL CENTER	0	0	0	0	107	53	160
210051	DOCTORS COMMUNITY	23	66	23	<10	13	22	156
210057	SHADY GROVE	11	53	15	<10	29	37	153
210027	WESTERN MARYLAND HEALTH SYSTEM	15	27	11	<10	52	23	134
210062	SOUTHERN MARYLAND	23	36	15	<10	30	17	128
210061	ATLANTIC GENERAL	24	41	16	<10	29	<10	125
210003	PRINCE GEORGE	37	45	10	<10	10	16	124
210028	STO MARY	33	20	<10	<10	32	12	109
210032	UNION HOSPITAL OF CECIL COUNT	22	30	<10	<10	27	14	107
210004	HOLY CROSS	10	27	<10	<10	19	24	90
210002	UNIVERSITY OF MARYLAND	0	0	0	0	52	38	90
210037	EASTON	0	0	0	0	68	22	90
210016	WASHINGTON ADVENTIST	24	34	<10	<10	<10	12	86
210088	QUEEN ANNES	24	0	24	0	20	0	68
210009	JOHNS HOPKINS	38	11	<10	<10	0	0	59
210018	MONTGOMERY GENERAL	<10	10	<10	0	30	<10	57
210063	UM STO JOSEPH	0	0	0	0	26	24	50
210006	HARFORD	0	0	0	0	34	16	50
210035	CHARLES REGIONAL	0	0	0	0	27	17	44
210038	UMMC MIDTOWN	0	0	0	0	27	12	39
210029	HOPKINS BAYVIEW MED CTR	17	10	<10	<10	0	0	32
210030	CHESTERTOWN	0	0	0	0	30	<10	32
210060	FTO WASHINGTON	<10	<10	<10	<10	<10	<10	31
210022	SUBURBAN	<10	<10	<10	0	0	0	19
210010	DORCHESTER	0	0	0	0	12	<10	15
210017	GARRETT COUNTY	0	<10	0	<10	<10	<10	<10
210058	REHAB & ORTHO	0	0	0	0	0	<10	<10
210045	MCCREADY	<10	0	<10	0	<10	0	<10
210333	BOWIE HEALTH	<10	0	<10	0	<10	0	<10
<b>Total</b>		<b>1,608</b>	<b>1,437</b>	<b>1,046</b>	<b>277</b>	<b>2,135</b>	<b>1,072</b>	<b>7,575</b>

Table 11 : CY 2014 Jan-Oct Year to Date Transfer Trends by Sending Hospital

		CY13 YTD	CY 14 YTD	Annual Change	Annual Change
				Count	%
210017	GARRETT COUNTY	<10	11	<10	<10
210009	JOHNS HOPKINS	31	43	12	39%
210030	CHESTERTOWN	23	31	8	35%
210028	ST. MARY	65	87	22	34%
210043	BALTIMORE WASHINGTON MEDICAL CENTER	99	131	32	32%
210032	UNION HOSPITAL OF CECIL COUNT	73	92	19	26%
210063	UM ST. JOSEPH	35	41	6	17%
210048	HOWARD COUNTY	168	194	26	15%
210011	ST. AGNES	335	373	38	11%
210002	UNIVERSITY OF MARYLAND	66	73	7	11%
210001	MERITUS	261	283	22	8%
210039	CALVERT	150	161	11	7%
210037	EASTON	73	78	5	7%
210040	NORTHWEST	181	193	12	7%
210049	UPPER CHESAPEAKE HEALTH	111	115	4	4%
210035	CHARLES REGIONAL	32	33	1	3%
210019	PENINSULA REGIONAL	311	315	4	1%
210006	HARFORD	37	37	0	0%
210038	UMMC MIDTOWN	27	27	0	0%
210023	ANNE ARUNDEL	320	315	-5	-2%
210033	CARROLL COUNTY	411	400	-11	-3%
210005	FREDERICK MEMORIAL	327	318	-9	-3%
210044	G.B.M.C.	178	172	-6	-3%
210012	SINAI	182	174	-8	-4%
210015	FRANKLIN SQUARE	314	300	-14	-4%
210034	HARBOR	233	222	-11	-5%
210057	SHADY GROVE	122	116	-6	-5%
210013	BON SECOURS	226	214	-12	-5%
210029	HOPKINS BAYVIEW MED CTR	25	23	-2	-8%
210010	DORCHESTER	12	11	-1	-8%
210062	SOUTHERN MARYLAND	76	69	-7	-9%
210088	QUEEN ANNES	58	52	-6	-10%
210055	LAUREL REGIONAL	120	106	-14	-12%
210060	FT. WASHINGTON	23	20	-3	-13%
210022	SUBURBAN	15	13	-2	-13%
210027	WESTERN MARYLAND HEALTH SYSTEM	104	90	-14	-13%
210051	DOCTORS COMMUNITY	121	104	-17	-14%

Table 11 : CY 2014 Jan-Oct Year to Date Transfer Trends by Sending Hospital

		CY13 YTD	CY 14 YTD	Annual Change	Annual Change
				Count	%
210018	MONTGOMERY GENERAL	64	52	-12	-19%
210024	UNION MEMORIAL	169	136	-33	-20%
210003	PRINCE GEORGE	95	76	-19	-20%
210016	WASHINGTON ADVENTIST	76	60	-16	-21%
210008	MERCY	224	176	-48	-21%
210056	GOOD SAMARITAN	295	223	-72	-24%
210061	ATLANTIC GENERAL	125	85	-40	-32%
210004	HOLY CROSS	93	63	-30	-32%
210045	MCCREADY	<10	<10	-3	-38%
210058	REHAB & ORTHO	<10	<10	-4	-57%
210333	BOWIE HEALTH	<10	<10	-8	-100%

Table 12: Charges by Category of Service				
	Total charges			Age in years
	N	Mean	Sum	Average Age
<b>CATEGORY</b>				
Neurology	1074	18761.14	20149459.8	47.36
Gastroenterology	1003	16314.74	16363682.1	46.55
General Surgery	771	55033.75	42431022.5	46.23
Pulmonary	682	24086.34	16426886.3	28.14
Orthopedic Surgery	577	44363.02	25597460.2	44.48
Infectious Disease	535	30741.22	16446552.6	43.87
Oncology	382	41858.75	15990043.1	56.75
Neurological Surgery	299	70649.46	21124189.3	50.9
General Medicine	239	12274.26	2933549.17	22.53
Nephrology	221	21631.87	4780643.51	49.52
Orthopedics	186	12331.26	2293614.84	52.82
Hematology	184	28429.49	5231026.78	35.22
Ventilator Support	173	231775.07	40097086.8	52.73
Trauma	140	37399.33	5235906.47	52.49
ENT Surgery	127	23320.08	2961649.91	36.02
Neonatology	116	103463.45	12001760.5	0
Injuries/complic. of prior care	112	25363.27	2840686.59	52.71
Rheumatology	103	19202.57	1977864.23	44.41
Other Obstetrics	99	8545.28	845982.6	26.95
Otolaryngology	94	8923.61	838819.24	28.56
Endocrinology	93	17642.32	1640736.21	41.11
Dermatology	92	10132.26	932167.7	38.37
Diabetes	73	9702.1	708253.23	22.1
Spinal Surgery	69	66642.43	4598327.78	59.7
Urological Surgery	64	41095.44	2630108.46	48.33
Thoracic Surgery	62	64776.51	4016143.49	49.18
Ophthalmology	54	11881.39	641595.12	41.96
HIV	49	33264.77	1629973.93	43.2
Substance Abuse	45	8620.78	387934.99	43.69
Dental	34	9195.16	312635.56	40.5
Obstetrics/Delivery	34	25359	862206.05	26.79
Gynecological Surg	24	18461.21	443069.11	38
Ophthalmologic Surg	20	22991.79	459835.84	36.8
Endocrinology Surgery	18	50997.64	917957.43	54.72
Gynecology	18	13751.71	247530.78	41.83
Urology	17	11143.33	189436.68	42.53
Newborn	17	4147.51	70507.62	0
Ungroupable	3	1739.3	5217.9	43.67
Invasive Cardiology	1	22308.03	22308.03	73
Cardiology	1	185497.89	185497.89	40

Table 13: AMC Transfers by Product Line Trends

	YTD			
	CY13	CY 14	Annual Change	Annual Change %
Hematology	128	150	22	17%
Substance Abuse	34	39	5	15%
Ventilator Support	117	132	15	13%
Pulmonary	436	488	52	12%
Neonatology	88	96	8	9%
General Surgery	576	613	37	6%
General Medicine	166	171	5	3%
Diabetes	61	62	1	2%
Endocrinology	76	76	0	0%
Urological Surgery	45	45	0	0%
Neurological Surgery	230	225	-5	-2%
Thoracic Surgery	43	42	-1	-2%
Nephrology	174	168	-6	-3%
Gastroenterology	761	728	-33	-4%
Trauma	111	105	-6	-5%
Orthopedic Surgery	438	413	-25	-6%
Infectious Disease	388	362	-26	-7%
Gynecology	14	13	-1	-7%
Urology	14	13	-1	-7%
Oncology	286	265	-21	-7%
Neurology	822	744	-78	-9%
Spinal Surgery	56	49	-7	-13%
Other Obstetrics	90	78	-12	-13%
Newborn	13	11	-2	-15%
Injuries/complic. of prior care	97	79	-18	-19%
Gynecological Surg	21	17	-4	-19%
HIV	47	37	-10	-21%
Endocrinology Surgery	9	7	-2	-22%
Obstetrics/Delivery	29	22	-7	-24%
Orthopedics	166	123	-43	-26%
ENT Surgery	114	84	-30	-26%
Rheumatology	81	54	-27	-33%
Dermatology	96	61	-35	-36%
Otolaryngology	100	59	-41	-41%
Ophthalmology	60	32	-28	-47%
Ophthalmologic Surg	25	11	-14	-56%
Dental	60	21	-39	-65%
Cardiology	1	0	-1	-100%
Invasive Cardiology	0	3	3	0%
Psychiatry	0	0	0	0%
Ungroupable	2	3	1	50%

## Appendix A. Categorical Cases Definitions

### 1. Categorical Case Exclusions

- 1.1. Solid Organ Transplants APR DRGS = 001, 002, 003, 006 or 440  
(any procedure = 5280, 5282 or 5283 or any procedure = 5280, 5282, 5283, 4100, 4101, 4102, 4103, 4104, 4105, 4106, 4107, 4108 or 3751 Heart Transplantation 4109 or 336 or 3350 , 3351, 3352, 5569, 5561, 5281, 5051, or 5059)
- 1.2. Melodysplastic - Any Diagnosis = 2387 for Johns Hopkins Oncology Center
- 1.3. JHU Pediatric Burn Cases (Age < 18) - 3rd Degree Burns
- 1.4. Johns Hopkins and University Oncology Center
  - 1.4.1. Transplant Cases (Reserve Flag = 1)
  - 1.4.2. Research Cases (Reserve Flag = 2)
  - 1.4.3. Hematological Cases (Reserve Flag = 3)
  - 1.4.4. Transfer in Cases (Reserve Flag = 4)