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Congenital Heart Disease

HIGH RESOURCE UTILIZATION FOR NON-CARDIAC HOSPITAL ADMISSIONS FOR ADULTS WITH CONGENITAL HEART DISEASE

Poster Contributions

Poster Hall B1

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Session Title: Clinical Data-Driven Outcomes

Abstract Category: 10. Congenital Heart Disease: Adult

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Background: As hospitalizations for adults with congenital heart disease (CHD) are increasing, this study sought to compare costs for common non-cardiac admission diagnoses between adult patients with and without CHD.

Methods: Retrospective review of hospital discharge data from the University HealthSystem Consortium (UHC) from January 2011 through December 2013; UHC collects discharge data from 120 academic institutions and 308 affiliated hospitals. The database was queried for patients with ICD-9 codes for moderate and severe CHD, as defined by the 32nd Bethesda Conference. Patients were stratified by age: Group 1 (18 - 29y) and Group 2 (30 - 39y). Diagnosis, direct cost, length of stay (LOS), ICU admission and mortality rates were compared for the five most common non-cardiac admission diagnoses for non-CHD and CHD patients using t-test and χ^2 test, as appropriate.

Results: The most common non-cardiac admission diagnoses are shown in the Table. Total direct cost, LOS, and ICU admission rate were higher in CHD compared to non-CHD patients for nearly all diagnoses in both groups, with no difference between CHD severity.

Conclusion: Hospital costs for common non-cardiac diagnoses are higher for adults with CHD of at least moderate severity. Long-term survival of CHD patients is increasing and, as our study shows, they utilize a disproportionate amount of medical resources. Further characterization of CHD patient costs will be important to reduce or prevent hospitalizations in these patients.

Table 1. Five most common non-cardiac admission diagnoses and ICD-9 codes with comparisons of costs						
	Group 1 (18 - 29 years)		P	HCCHD (n = 1,606)	P	P (ModCHD vs HCCHD)
	Non-CHD (n = 1,943,600)	ModCHD (n = 5,298)				
Asthma (493.90)						
Number of admissions (%)	137,500 (8.37%)	540 (10.31%)	<0.001	133 (8.28%)	0.903	0.017
Direct costs (mean \pm SD)	7,094 \pm 17,763	19,897 \pm 55,438	<0.001	18,899 \pm 94,891	<0.001	0.945
Length of stay (days)	4.7 \pm 7.68	7.65 \pm 17.35	<0.001	6.36 \pm 8.05	0.013	0.404
ICU admission rate (%)	9.55	37.29	<0.001	34.85	<0.001	0.572
Mortality (%)	0.32	1.11	0.001	2.28	<0.001	0.303
Esophageal reflux (530.81)						
Number of admissions (%)	84,409 (5.14%)	439 (8.38%)	<0.001	134 (8.34%)	<0.001	0.956
Direct costs (mean \pm SD)	9,803 \pm 23,354	27,265 \pm 69,307	<0.001	26,861 \pm 59,616	<0.001	0.951
Length of stay (days)	5.71 \pm 10.63	8.85 \pm 18.10	<0.001	6.79 \pm 10.07	0.240	0.209
ICU admission rate (%)	11.45	37.21	<0.001	45.11	<0.001	0.112
Mortality (%)	0.49	2.51	<0.001	4.48	<0.001	0.239
Urinary tract infection (599.0)						
Number of admissions (%)	53,966 (3.28%)	229 (4.37%)	<0.001	60 (3.74%)	0.309	0.266
Direct costs (mean \pm SD)	15,834 \pm 42,316	41,599 \pm 76,928	<0.001	34,506 \pm 127,678	<0.001	0.329
Length of stay (days)	9.28 \pm 20.34	15.92 \pm 22.01	<0.001	17.15 \pm 31.06	0.003	0.728
ICU admission rate (%)	18.86	51.54	<0.001	46.87	<0.001	0.502
Mortality (%)	1.04	5.68	<0.001	5.00	0.003	0.838
Dehydration (276.51)						
Number of admissions (%)	41,865 (2.55%)	142 (2.71%)	0.450	46 (2.86%)	0.420	0.744
Direct costs (mean \pm SD)	7,631 \pm 17,990	18,018 \pm 52,484	<0.001	32,345 \pm 85,965	<0.001	0.178
Length of stay (days)	5.21 \pm 9.26	9.80 \pm 27.42	<0.001	15.15 \pm 44.69	<0.001	0.338
ICU admission rate (%)	15.18	25.53	<0.001	45.65	<0.001	0.009
Mortality (%)	0.68	2.82	0.010	2.17	0.739	0.771
Acute kidney injury (584.9)						
Number of admissions (%)	37,997 (2.31%)	295 (5.63%)	<0.001	137 (8.53%)	<0.001	<0.001
Direct costs (mean \pm SD)	22,754 \pm 57,125	75,734 \pm 122,268	<0.001	77,390 \pm 162,490	<0.001	0.307
Length of stay (days)	9.88 \pm 16.81	20.57 \pm 25.33	<0.001	20.54 \pm 39.46	<0.001	0.993
ICU admission rate (%)	37.03	69.97	<0.001	66.18	<0.001	0.477
Mortality (%)	4.96	11.19	<0.001	8.76	0.041	0.442
Group 2 (30 - 39 years)						
	Non-CHD (n = 1,531,321)	ModCHD (n = 5,260)	P	HCCHD (n = 974)	P	P (ModCHD vs HCCHD)
Esophageal reflux (530.81)						
Number of admissions (%)	129,129 (8.43%)	605 (11.05%)	<0.001	78 (8.01%)	0.634	0.001
Direct costs (mean \pm SD)	9,803 \pm 20,747	24,445 \pm 57,130	<0.001	20,089 \pm 22,880	<0.001	0.506
Length of stay (days)	5.22 \pm 8.24	8.62 \pm 14.86	<0.001	7.54 \pm 8.11	0.013	0.329
ICU admission rate (%)	12.23	42.31	<0.001	44.16	<0.001	0.630
Mortality (%)	0.56	1.65	<0.001	2.56	0.109	0.906
Asthma (493.90)						
Number of admissions (%)	111,199 (7.26%)	442 (8.40%)	0.001	47 (4.83%)	0.003	<0.001
Direct costs (mean \pm SD)	7,795 \pm 16,478	20,143 \pm 42,343	<0.001	21,510 \pm 63,597	<0.001	0.842
Length of stay (days)	4.73 \pm 8.00	7.28 \pm 9.55	<0.001	6.72 \pm 13.01	0.088	0.713
ICU admission rate (%)	10.52	36.01	<0.001	34.04	<0.001	0.792
Mortality (%)	0.49	1.58	0.003	4.26	0.008	0.469
Hypothyroidism (244.9)						
Number of admissions (%)	70,182 (4.58%)	371 (7.05%)	<0.001	95 (9.75%)	<0.001	0.003
Direct costs (mean \pm SD)	8,570 \pm 22,519	27,671 \pm 98,799	<0.001	34,093 \pm 93,025	<0.001	0.408
Length of stay (days)	5.12 \pm 11.00	9.18 \pm 15.45	<0.001	11.06 \pm 24.06	<0.001	0.352
ICU admission rate (%)	11.99	42.19	<0.001	39.36	<0.001	0.552
Mortality (%)	0.66	3.29	<0.001	4.21	<0.001	0.879
Type 2 diabetes (250.00)						
Number of admissions (%)	66,513 (4.34%)	239 (4.54%)	0.477	44 (4.52%)	0.790	0.975
Direct costs (mean \pm SD)	9,867 \pm 23,810	32,102 \pm 90,780	<0.001	21,120 \pm 55,297	0.002	0.467
Length of stay (days)	5.53 \pm 10.52	10.24 \pm 21.30	<0.001	7.50 \pm 9.39	0.214	0.403
ICU admission rate (%)	14.79	48.52	<0.001	38.64	<0.001	0.227
Mortality (%)	0.98	3.35	<0.001	4.55	0.103	0.964
Acute kidney injury (584.9)						
Number of admissions (%)	53,720 (3.51%)	383 (7.28%)	<0.001	131 (13.45%)	<0.001	<0.001
Direct costs (mean \pm SD)	19,730 \pm 47,828	58,381 \pm 103,039	<0.001	65,834 \pm 136,467	<0.001	0.513
Length of stay (days)	9.40 \pm 17.17	18.58 \pm 28.79	<0.001	20.60 \pm 40.69	<0.001	0.336
ICU admission rate (%)	33.65	60.16	<0.001	56.49	<0.001	0.474
Mortality (%)	5.24	8.36	0.007	9.16	0.045	0.776