ORIGINAL ARTICLES

Social Risk Factors Impact Hospital Readmission and Outpatient Appointment Adherence for Children with Congenital Heart Disease

Abigail C. Demianczyk, PhD[1], Shashank P. Behere, MD[2,3], Deepika Thacker, MD[2,3], Maia Noeder, PhD[1,3], Emily A. Delaplane, MSW[4], Christian Pizarro, MD[2,3], and Erica Sood, PhD[1,2,3]

Objective To examine the relations of individual and cumulative social risk factors to hospitalization outcomes and adherence to outpatient cardiology appointments within the first 2 years of life for congenital heart disease survivors.

Study design Data were extracted for 219 patients who underwent infant cardiac surgery with cardiopulmonary bypass. Cumulative social risk was dichotomized into high social risk (≥2 risk factors; n = 103) versus low social risk (≤1 risk factor; n = 116). The risk of morbidity by procedure was assigned from 1 to 5 (Society of Thoracic Surgeons and European Association for Cardio-Thoracic Surgery Morbidity Scores and Categories). Two-way ANOVAs examined the effects of social risk and morbidity risk on length of first surgical hospitalization, number of readmissions and readmission days, subsequent cardiac surgical interventions, and adherence to outpatient cardiology appointments.

Results An interaction between social risk and morbidity risk was identified for number of readmission days, $F(4, 209) = 3.07$, $P = .02$, $\eta^2 = .06$. Pairwise comparisons demonstrated that, among those patients with the lowest risk of morbidity by procedure (morbidity scores of 1 and 2), patients at high social risk had more readmission days than patients at low social risk (morbidity score 1: 16.63 ± 34.41 days vs 3.02 ± 7.13 days; morbidity score 2: 27.68 ± 52.11 days vs 2.20 ± 4.43 days). High social risk also predicted significantly worse adherence to cardiology appointments.

Conclusions Cumulative social risk impacts readmission days for patients with congenital heart disease with a low risk of morbidity by procedure. Social risk assessment can identify families who may benefit from social/behavioral interventions to optimize discharge readiness, congenital heart disease home management, and long-term outcomes. *(J Pediatr 2019;205:35-40).*

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Congenital heart disease (CHD) is the most common birth defect, impacting 9 per 1000 live births.[1] With decreasing mortality related to advances in surgical and perioperative care,[2,3] the focus is shifting from how long children with CHD are living to how well they are living. Although cardiac surgery and hospitalization are medically necessary for many children with CHD,[4] the burden of prolonged hospital stays and frequent readmissions can impact child and family quality of life,[5] while also increasing costs.[6] Prolonged hospital stays and readmissions additionally increase risk for hospital-acquired infection and negatively impact mid-term and long-term neurodevelopmental outcomes.[7,8] In recognition of these issues and in preparation for value-based care, cardiac centers are working to prevent delays in discharge and unplanned readmissions by identifying barriers and risk factors while optimizing discharge readiness and outpatient care.

Social determinants of health are well-described in the literature. Studies have shown relationships between individual social risk factors (eg, race/ethnicity or socioeconomic status) and mortality among infants with CHD.[9-14] Social risk factors also predict morbidity in adult cardiac patients,[15] but few studies have investigated these relationships in a sample of young children with CHD. This study aimed to examine the relationships of individual and cumulative social risk factors to hospitalization data (length of first surgical hospitalization, number of readmissions

CHD Congenital heart disease

From the [1]Division of Behavioral Health; [2]Nemours Cardiac Center, Nemours/Alfred I. duPont Hospital for Children, Wilmington, DE; [3]Department of Pediatrics, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA; and [4]Department of Patient and Family Services, Nemours/Alfred I. duPont Hospital for Children, Wilmington, DE

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and readmission days, and subsequent cardiac surgical interventions) and adherence to outpatient cardiology appointments within the first 2 years of life after cardiac surgery for CHD.

Methods

Retrospective chart reviews for sociodemographic and clinical characteristics were conducted for patients with CHD who underwent cardiac surgery with cardiopulmonary bypass in the first year of life at the Nemours Cardiac Center between January 2009 and September 2013 (n = 335); 116 of these patients were excluded from analyses for having received cardiac outpatient care at an outside facility precluding evaluation of adherence to appointments and hospital readmissions (n = 69), mortality within the first 2 years of life (n = 31), heart transplantation (n = 6), discharge from hospital to a long-term care facility (n = 5), or lack of cardiac outpatient care in the first year of life without sufficient information to determine whether the patient had transferred care to another facility (n = 5), resulting in a total sample of 219 participants. Patients who experienced loss of care after the first year of life or long gaps in care were included in these analyses. This retrospective study was reviewed and approved by the Nemours Institutional Review Board with waiver of the requirement for obtaining informed consent/parental permission.

Six social risk factors that have previously been shown to impact rates of mortality, morbidity, and/or access to and use of specialty care within CHD or other pediatric patient populations were examined.[9-14,16-26] These include child race/ethnicity (minority = 1; nonminority = 0), regional poverty level using patient zip code (percentage of families living below the federal poverty level; ≥40% = 1; <40% = 0), primary medical insurance (Medicaid/Children's Health Insurance Program = 1; private/military = 0), maternal age at time of birth (<21 years = 1; ≥21 years = 0), primary parental language (non-English = 1; English = 0), and distance to cardiac outpatient clinic (measured distance between hospital/satellite clinic and patient zip code; ≥25 miles = 1; < 25 miles = 0). A cumulative social risk variable ranging from 0 to 6 was calculated from number of social risk factors present. Participants were then stratified into high and low social risk groups based on the median number of social risk factors for this sample (≥2 social risk factors = 1, 47% of sample); ≤1 social risk factors = 0, 53% of sample).

Patients were stratified into groups based on the risk of morbidity associated with their initial and/or definitive cardiac surgery using the empiric Morbidity Scores and Categories proposed by Jacobs et al from the Society of Thoracic Surgeons Congenital Heart Surgery Database.[27] Surgical procedures were given a value between 1 and 5 based on the associated rate of major complications and the average postoperative length of stay, with higher scores indicating a greater risk of morbidity. For patients who required pulmonary artery banding before undergoing definitive repair for an otherwise uncomplicated ventricular septal defect, the morbidity score for their definitive repair was recorded. For any other patient with >1 cardiac surgery in the first year of life, the morbidity score for their first surgery was counted.

Hospitalization data examined for this study were length of first surgical hospitalization, number of unplanned and total readmissions, total readmission days, and number of subsequent cardiac surgical interventions after the first surgery from birth to 24 months of age. Unplanned readmissions were defined as admissions to the cardiac floor or cardiac intensive care unit for any reason other than a scheduled procedure or surgery (eg, illness, cardiac-specific complications). In-hospital monitoring after cardiac catheterization was not included as a readmission or part of hospital readmission days unless the hospitalization lasted >24 hours. Admissions and surgeries clearly related to other medical conditions (eg, cleft palate repair) were also not included.

Adherence to outpatient cardiology appointments was measured by calculating the average number of days between suggested and actual return dates for all cardiology appointments from birth to 12 months of age and from 12 to 24 months of age. Patients who returned early or on the suggested return date were recorded as having 0 days between actual and suggested return appointments. Days between suggested and actual return dates were not calculated or included in analyses if suggested return was not documented in the cardiology note or if patients were readmitted before suggested return. Higher values for this measure indicated poorer adherence.

Statistical Analyses

Independent sample *t* tests were conducted to examine mean differences in hospitalization and outpatient appointment adherence for patients with and without each social risk factor. To examine the effects of cumulative social risk and surgical morbidity risk, 2-way ANOVAs were conducted for each hospitalization outcome and outpatient appointment adherence. Follow-up analyses of simple main effects for social risk, as well as simple main effects and pairwise comparisons for surgical morbidity risk, were conducted for any significant interactions.

Results

The number of patients meeting each social risk factor was as follows: racial/ethnic minority, n = 89 (40.6%); high regional poverty level, n = 26 (11.9%); primary Medicaid insurance, n = 122 (55.7%); maternal age <21 years at time of birth, n = 15 (6.8%); primarily non-English speaking, n = 11 (5.0%); and living ≥25 miles from outpatient cardiac care, n = 57 (26.0%). High social risk was categorized as having ≥2 individual social risk factors, criteria met by 103 participants (47.0%). Risk of morbidity by procedure was as follows: morbidity score of 1, n = 76 (34.7%); morbidity score of 2, n = 43 (19.6%); morbidity score of 3, n = 45 (20.5%); morbidity score of 4, n = 37 (16.9%); and morbidity score of 5, n = 18 (8.2%). There were no significant differences between social risk groups for prevalence of premature birth, confirmed or suspected genetic abnormality, single ventricle anatomy, or age at first surgery (all $P > .05$) (**Table I**).

Means, SDs, and statistics for all independent sample *t* tests are reported in **Table II** (available at www.jpeds.com). Child

Table I. Patient characteristics

	Low social risk n (%)	High social risk n (%)	Total sample N (%)
Clinical characteristic			
Premature birth	15 (12.9%)	12 (11.7%)	27 (12.3%)
Confirmed/suspected genetic condition	37 (31.9%)	32 (31.1%)	69 (31.5%)
Single ventricle anatomy	19 (16.4%)	13 (12.6%)	32 (14.6%)
Neonatal surgery	54 (46.6%)	40 (38.8%)	94 (42.9%)
Admissions and interventions			
≥1 Unplanned readmissions	43 (37.1%)	54 (52.4%)	97 (44.3%)
≥1 Total readmissions	61 (52.6%)	66 (64.1%)	127 (58.0%)
>1 Cardiac surgical interventions	38 (32.8%)	41 (39.8%)	79 (36.1%)

racial/ethnic minority status was associated with more unplanned readmissions in the first 2 years of life (M = 1.58, SD = 2.12 vs M = 1.04, SD = 1.89), $t(216) = -1.98$, $P = .05$. Primary Medicaid insurance was associated with a greater number of hospital readmissions (M = 2.14, SD = 2.49 vs M = 1.51, SD = 2.15), $t(216) = -1.99$, $P = .05$, and hospital readmission days (M = 22.91, SD = 39.36 vs M = 12.71, SD = 22.78), $t(217) = -2.27$, $P = .02$, during the first 2 years of life. Child racial/ethnic minority status was associated with worse adherence to cardiac outpatient care in the first year of life (M = 12.87, SD = 26.14 vs M = 6.35, SD = 14.43), $t(216) = -2.36$, $P = .02$, and primary Medicaid insurance (M = 40.09, SD = 85.81 vs M = 13.41, SD = 47.51), $t(206) = -2.67$, $P = .01$, and living in a high poverty area (M = 57.85, SD = 115.31 vs M = 24.94, SD = 65.48), $t(206) = -2.02$, $P = .04$, were associated with worse adherence to outpatient care in the second year of life.

A statistically significant interaction was found between social risk and surgical morbidity risk on total days spent in the hospital during readmissions in the first 2 years of life, $F(4, 209) = 3.07$, $P = .02$, partial $\eta^2 = 0.06$. Results are displayed in the **Figure**. A follow-up analysis of the simple main effects of social risk at each level of surgical morbidity risk was performed. For individuals with a morbidity score of 1, $F(1, 209) = 3.95$, $P < .05$, partial $\eta^2 = 0.02$, and 2, $F(1, 209) = 7.17$, $P = .01$, partial $\eta^2 = 0.03$; the mean number of hospital readmission days was significantly higher for individuals with high social risk (morbidity score of 1, 16.63 ± 34.41 days; morbidity score of 2, 27.68 ± 52.11 days) than low social risk (morbidity score of 1, 3.02 ± 7.13 days; morbidity score of 2, 2.20 ± 4.43 days). The interaction between social risk and surgical morbidity risk trended toward significance for number of subsequent cardiac surgical interventions in the first 2 years of life ($P = .07$), but power was limited owing to the small sample size. There were no other significant interactions (results and estimated marginal means are reported in **Table III**).

Because interaction effects between social risk and surgical morbidity risk were not significant for other hospitalization-related outcomes, analyses of main effects were performed. Statistically significant main effects of surgical morbidity risk were found for total length of stay during first surgical hospitalization, $F(4, 209) = 4.23$, $P = .03$, partial $\eta^2 = 0.08$; unplanned readmissions, $F(4, 208) = 2.68$, $P = .03$, partial $\eta^2 = 0.05$; total readmissions, $F(4, 209) = 7.49$, $P < .01$, partial $\eta^2 = 0.13$; and subsequent cardiac surgical interventions, $F(4, 209) = 31.27$, $P < .01$, partial $\eta^2 = 0.37$, such that higher surgical morbidity risk was associated with longer lengths of stay, more readmissions, and more subsequent cardiac surgical interventions. All pairwise comparisons were run and the estimated marginal means and significant differences are reported in **Table IV**. There were no significant main effects of social risk for hospitalization outcomes.

There were no significant interactions between social risk and surgical morbidity risk for adherence to outpatient cardiology appointments, but there was a significant main effect of social risk. Specifically, a statistically significant main effect

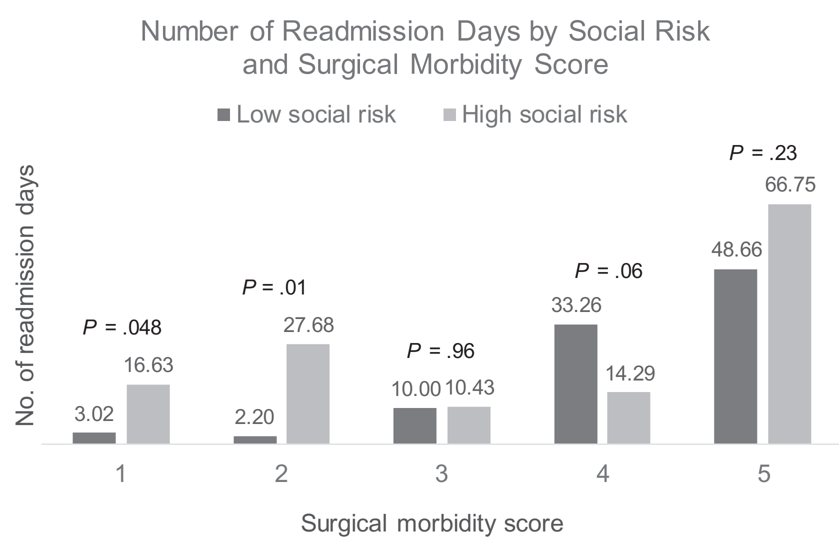

Figure. Significant interactions between social risk and surgical morbidity score for readmission days.

Table III. Estimated marginal means for social risk by surgical morbidity score interactions

	Statistics	Social risk level	Morbidity one	Morbidity two	Morbidity three	Morbidity four	Morbidity five
	F, P, η^2		M (SE)	M (SE)	M (SE)	M (SE)	M (SE)
Surgical length of stay	F = 1.23, P = .34	Low	15.76 (6.03)	18.33 (9.98)	22.83 (6.94)	44.83 (8.06)	60.17 (15.77)
	η^2 = 0.02	High	20.40 (6.53)	30.71 (7.30)	44.93 (10.33)	32.57 (10.33)	51.00 (11.15)
Unplanned readmissions	F = 1.56, P = .19	Low	0.54 (0.30)	0.53 (0.50)	1.00 (0.35)	1.52 (0.40)	2.83 (0.79)
	η^2 = 0.03	High	1.44 (0.33)	1.86 (0.37)	1.14 (0.52)	0.93 (0.52)	2.58 (0.56)
Total readmissions	F = 1.64, P = .16	Low	0.76 (0.34)	0.80 (0.56)	1.42 (0.39)	2.91 (0.46)	4.00 (0.89)
	η^2 = 0.03	High	1.83 (0.39)	2.07 (0.41)	1.71 (0.58)	1.93 (0.58)	4.67 (0.63)
Readmission days	**F = 3.07, P = .02**	Low	**3.02 (4.65)**	**2.20 (7.68)**	10.00 (5.34)	33.26 (6.20)	48.67 (12.14)
	η^2 = 0.06	High	**16.63 (5.03)**	**27.68 (5.62)**	10.43 (7.95)	14.29 (7.95)	66.75 (8.59)
Surgical interventions	F = 2.20, P = .07	Low	0.15 (0.11)	0.07 (0.18)	0.39 (0.13)	1.39 (0.14)	1.67 (0.28)
	η^2 = 0.04	High	0.11 (0.12)	0.39 (0.13)	0.64 (0.18)	0.93 (0.18)	2.08 (0.20)
Adherence 0-12 mo	F = 0.90, P = .47	Low	8.26 (3.12)	1.39 (5.15)	5.11 (3.58)	5.72 (4.16)	0.60 (8.15)
	η^2 = 0.02	High	16.11 (3.37)	16.57 (3.77)	7.76 (5.33)	4.65 (5.33)	9.38 (6.02)
Adherence 12-24 mo	F = 0.41, P = .80	Low	12.14 (11.67)	40.21 (18.33)	4.58 (12.96)	20.01 (14.80)	4.43 (28.98)
	η^2 = 0.01	High	50.05 (12.36)	62.56 (14.20)	12.28 (18.97)	55.70 (19.69)	10.27 (20.49)

Higher adherence values indicate greater average delay in outpatient care.
Statistically significant results in bold.

of social risk was found for average delay in outpatient care during the first year of life, $F(1, 208) = 4.43$, $P = .04$, partial $\eta^2 = 0.02$, such that high social risk was associated with poorer adherence to outpatient follow-up compared with the low-risk group. There were no other significant main effects of social risk, and no significant main effects of surgical morbidity risk. All results and estimated marginal means are reported in **Table IV**.

Discussion

Social determinants of health are well-described in relation to CHD mortality,[9-14] but far less explored with regard to morbidity, despite most patients with CHD surviving through childhood and adolescence. This study highlights the importance of understanding the impact of both individual and cumulative social risk factors on a variety of CHD outcomes across the spectrum of care. Those patients at low risk of morbidity by procedure but high social risk had an average of 13-25 additional readmission days and thousands of dollars of added medical costs[6] during the first 2 years of life compared with those with similarly low morbidity risk and low social risk. This finding is consistent with that of Lasa et al, who demonstrated a higher prevalence of readmission and cardiac reintervention for minority pediatric patients with low surgical complexity CHD when compared with nonminority patients of similar surgical complexity.[12] Many hospital-based psychosocial supports and intervention programs focus on those patients considered to be at greatest risk for poor outcomes based on surgical morbidity and/or mortality risk (eg, single ventricle, shunt dependent) and their families. The present study results highlight the need for increased psychosocial supports for patients and families with multiple social risk factors, even when undergoing procedures at low risk for surgical morbidity, because they may actually yield a greater impact on hospital readmissions while also substantially reducing health care costs.

The current results indicate that both individual and cumulative social risk factors are associated with poorer adherence to outpatient appointments during the first and second years of life, regardless of risk of morbidity by procedure. Efforts to promote adherence to outpatient cardiac care after heart surgery for patients with social risk factors are crucial, because prior research has demonstrated that a history of ≥1 missed outpatient cardiology appointments is associated with a future loss to cardiac care later in life.[28]

When considered together, these results support the need for enhanced psychosocial supports for families of children with CHD to improve outcomes. These supports could include implementation of universal psychosocial screening, ongoing psychosocial monitoring and support from CHD diagnosis through home management, and referral to community-based services (ie, Nurse-Family Partnership, Early Head Start) that have demonstrated positive impacts on socioeconomic status, family environment, and child developmental and behavioral outcomes.[29-32] Although cumulative social risk was a strong predictor of outcomes, current results demonstrate that even a single social risk factor can be associated with poorer outcomes. Therefore, psychosocial screening tools, such as the Psychosocial Assessment Tool 2.0,[33] should be used to assess a family's individual risk factors as well as overall level of social risk.[34] An increased social work and psychology presence within inpatient and outpatient cardiology settings is needed to match the level of psychosocial support afforded to other critical and chronic illness populations, such as pediatric cancer.[35] Psychosocial standards of care based on empirical evidence are also needed to direct services and supports.

Patients who underwent cardiac surgery at Nemours but attended outpatient cardiology appointments with an outside provider owing to a variety of factors (eg, nonpar insurance, far distance to hospital or regional satellite clinic) were excluded from this study. It is possible that these patients differed in important ways from those included in the study, thereby impacting the generalizability of these results. Included patients were followed at both the main hospital as well as regional satellite clinics, but data are not available about ease of scheduling or cardiologist availability. Schedule restrictions could result in slight delays in outpatient appointments

Table IV. Simple main effects of surgical morbidity and social risk with post hoc probing

	Surgical morbidity							SR		
	Stats	M1	M2	M3	M4	M5	Sig. Diff.	Stats	Low SR	High SR
	F, *P*, η^2	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)		*F*, *p*, η^2	M (SE)	M (SE)
Surgical length of stay	**F = 4.23, P = .03, η^2 = 0.08**	18.08 (4.45)	24.52 (6.18)	33.88 (6.22)	38.70 (6.22)	55.58 (9.66)	5 vs 1	F = 0.34, P = .56, η^2 < 0.01	32.38 (4.46)	35.92 (4.17)
Unplanned readmissions	**F = 2.68, P = .03, η^2 = 0.05**	0.99 (0.23)	1.20 (0.31)	1.07 (0.31)	1.23 (0.33)	2.71 (0.49)	5 vs 1, 3	F = 0.99, P = .32, η^2 = 0.01	1.29 (0.22)	1.59 (0.21)
Total readmissions	**F = 7.49, P < .01, η^2 = 0.13**	1.29 (0.25)	1.44 (0.35)	1.57 (0.35)	2.42 (0.37)	4.33 (0.55)	5 vs 1-4	F = 1.81, P = .18, η^2 = 0.01	1.98 (0.25)	2.44 (0.24)
Readmission days	**F = 9.59, P < .01, η^2 = 0.16**	9.83 (3.42)	14.94 (4.76)	10.21 (4.79)	23.77 (5.04)	57.71 (7.46)	5 vs 1-4	F = 2.70, P = .10, η^2 = 0.01	19.43 (3.44)	27.15 (3.21)
Surgical interventions	**F = 31.27, P < .01, η^2 = 0.37**	0.13 (0.8)	0.23 (0.11)	0.52 (0.11)	1.16 (0.12)	1.88 (0.17)	5 vs 1-4, 4 vs 1-3	F = 0.87, P = .35, η^2 < 0.01	0.73 (0.08)	0.83 (0.69)
Adherence 0-12 mo	F = 1.11, P = .36, η^2 = 0.02	12.18 (2.29)	8.98 (3.19)	6.44 (3.21)	5.18 (3.38)	4.99 (5.06)	–	**F = 4.43, P = .04, η^2 = 0.02**	4.21 (2.31)	10.89 (2.18)
Adherence 12-24 m0	F = 2.25, P = .07, η^2 = 0.04	31.10 (8.50)	51.39 (11.59)	8.43 (11.49)	37.86 (12.32)	7.35 (17.75)	–	F = 3.72, P = .06, η^2 = 0.02	16.27 (8.25)	38.17 (7.80)

M1-M5, Morbidity Scores 1-5; *Sig. Diff.*, significant group differences; *SR*, social risk.
Higher adherence values indicate greater average delay in outpatient care.
Statistically significant results in bold.

at satellite clinics compared with the main hospital, depending on the cardiologist's schedule.

The development of hospital-based services and interventions as well as referral to community-based programs that target families at high social risk may help to decrease health disparities for patients with CHD. Future research should include patients from multiple centers within diverse settings where social risk profiles or the impact of social risk may vary (eg, region of the US, primarily urban vs rural setting, single payer vs private insurance market) and should record when a particular readmission was attributable to one or more social risk factors. ■

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Table II. Outcomes for individual social risk factors

	Racial/ethnic minority		Medicaid insurance		High poverty area		Maternal age <21 y		Non-English speaking		>25 Miles from outpatient	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Surgical length of stay	30.34 (45.20)	27.63 (35.83)	30.81 (41.35)	26.11 (37.88)	22.27 (21.50)	29.60 (41.65)	16.67 (13.72)	29.62 (40.98)	14.73 (12.24)	29.47 (40.65)	31.95 (37.49)	27.60 (40.67)
	$t = -0.49$, $P = .62$		$t = -0.87$, $P = .39$		$t = 0.88$, $P = .38$		$t = 1.22$, $P = .23$		$t = 1.20$, $P = .23$		$t = -0.71$, $P = .48$	
Unplanned readmissions	**1.58 (2.12)**	**1.04 (1.89)**	1.49 (2.09)	0.97 (1.85)	0.88 (1.53)	1.31 (2.05)	1.50 (1.83)	1.24 (2.01)	2.00 (2.31)	1.22 (1.98)	1.16 (2.04)	1.29 (1.98)
	$t = -1.98$, $P = .05$		$t = -1.92$, $P = .06$		$t = 1.01$, $P = .31$		$t = -0.47$, $P = .64$		$t = -1.21$, $P = .23$		$t = 0.42$, $P = .68$	
Total readmissions	2.17 (2.53)	1.65 (2.23)	**2.14 (2.49)**	**1.51 (2.15)**	1.62 (2.47)	1.89 (2.35)	2.00 (2.30)	1.85 (2.37)	2.09 (2.21)	1.85 (2.38)	1.75 (2.16)	1.90 (2.44)
	$t = -1.61$, $P = .11$		**$t = -1.99$, $P = .05$**		$t = 0.56$, $P = .58$		$t = -0.24$, $P = .81$		$t = -0.33$, $P = .74$		$t = 0.39$, $P = .70$	
Readmission days	22.46 (36.99)	15.61 (30.52)	**22.91 (39.36)**	**12.71 (22.78)**	15.42 (33.66)	18.79 (33.42)	11.33 (18.80)	18.91 (34.18)	19.64 (31.16)	18.33 (33.57)	21.82 (40.83)	17.19 (30.39)
	$t = -1.50$, $P = .14$		**$t = -2.27$, $P = .02$**		$t = 0.48$, $P = .63$		$t = 0.85$, $P = .40$		$t = -0.13$, $P = .90$		$t = -0.90$, $P = .37$	
Surgical interventions	0.56 (0.87)	0.56 (0.89)	0.65 (0.98)	0.45 (0.74)	0.54 (0.76)	0.56 (0.90)	0.73 (1.16)	0.55 (0.86)	0.27 (0.47)	0.58 (0.90)	0.60 (0.75)	0.55 (0.93)
	$t = -0.02$, $P = .99$		$t = -1.62$, $P = .11$		$t = 0.14$, $P = .89$		$t = -0.78$, $P = .44$		$t = 1.11$, $P = .27$		$t = -0.35$, $P = .73$	
Adherence 0-12 mo	**12.87 (26.14)**	**6.35 (14.43)**	11.04 (23.44)	6.41 (14.94)	11.05 (25.68)	8.70 (19.40)	10.79 (19.25)	8.85 (20.30)	3.76 (3.87)	9.26 (20.68)	11.36 (22.82)	8.14 (19.19)
	$t = -2.36$, $P = .02$		$t = -1.69$, $P = .09$		$t = -0.56$, $P = .58$		$t = -0.36$, $P = .72$		$t = 0.88$, $P = .38$		$t = -1.03$, $P = .30$	
Adherence 12-24 mo	40.08 (88.45)	20.52 (58.80)	**40.09 (85.81)**	**13.41 (47.51)**	**57.85 (115.31)**	**24.94 (65.48)**	42.32 (102.28)	27.49 (70.55)	32.23 (49.79)	28.21 (73.85)	30.98 (77.71)	27.48 (71.00)
	$t = -1.92$, $P = .06$		**$t = -2.67$, $P = .01$**		**$t = -2.02$, $P = .04$**		$t = -0.71$, $P = .48$		$t = -0.18$, $P = .86$		$t = -0.31$, $P = .76$	

Higher adherence values indicate greater average delay in outpatient care.
Significant results in bold.