



Hospital Admission Volume Predicts 30-Day Readmission in Pulmonary Arterial Hypertension

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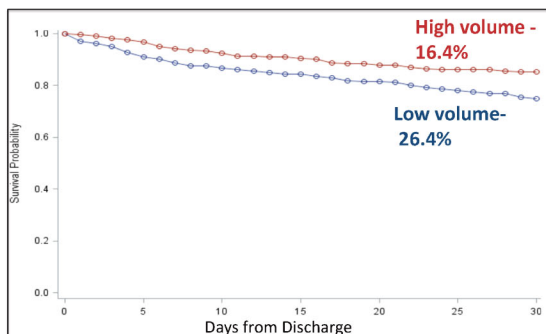


Introduction

Pulmonary arterial hypertension (PAH) is associated with a high risk for adverse outcomes. Recent quality metrics incorporate 30 day all cause readmission rates; little is known about the frequency and predictors of readmission after PAH hospitalization.

Methods

We examined the frequency of 30 day readmission after discharge for index medical hospitalizations for adults ≥ 18 years-old with a principal diagnosis of PAH (ICD-9 416.0) using 2003-2006 California Office of Statewide Health Planning and Development data. Hospitals were defined as high (≥ 20 ; top tertile) or low (< 20) volume based on number of index PAH hospitalizations during the study period. Multivariable logistic regression was performed inclusive of age, sex and univariate predictors of 30 day readmission.



Results

Between 2003 and 2006, there were 704 index PAH hospitalizations in California

- 41 hospitalizations resulted in hospital transfer.
- 9.2% died during the index hospitalization.
- 22.8% of those discharged from the hospital were readmitted within 30 days.
- Predictors of readmission are shown in Table 1.
- Discharge from a hospital with low PAH volume was associated with a greater odds of readmission (26.4% v 16.2%, multivariable OR=1.7, 1.1-2.6).
- Discharge from a low volume hospitals similarly had a higher rate of combined readmission or death (33.4 v 21.8%, OR=1.8, 1.2-2.6, multivariable OR=1.6, 1.1-2.5).

	All	30-day readmission				P value	
		YES		NO			
	Mean/%	SEM	Mean/%	SEM	Mean/%	SEM	
n	602		137		465		
Age, years	53.9	0.7	56.7	1.4	52.8	0.7	0.003
Length of Stay, d	5.5	0.2	6.5	0.5	5.8	0.3	0.02
Male	26.4		29.9		25.4		0.32
Comorbidities, n	2.5	0.1	2.9	0.1	2.2	0.1	0.003
Race	White 22.4		73		72.3		0.007
	Black 11.6		17.5		9.9		
	Other 16		9.5		17.9		
Private insurance	35.6		25.6		38.5		0.009
Cirrhosis	5.3	0.9	3.6	1.6	5.8	1.1	0.39
Conn. tissue disease	8.3	1.1	8	2.3	8.4	1.3	1
Diabetes mellitus	20.3	1.6	27.7	3.8	18.1	1.8	0.02
Coronary disease	12.6	1.4	19	3.4	10.8	1.4	0.02
Heart failure	42	2.0	51.1	4.3	39.4	2.3	0.02
Cong. heart disease	4.7	0.9	5.1	1.9	4.5	1.0	0.82
COPD	15.8	1.5	20.4	3.4	14.4	1.6	0.1
ILD	6	1.0	10.9	2.7	4.5	1.0	0.01
Electrolyte disorder (hyponatremia)	16.9	1.5	24.1	3.7	14.8	1.6	0.01

Conclusions

- Short-term readmission is common after hospitalization for PAH.
- Patients admitted to high volume hospitals have lower rates of 30 day readmission.

Table 2: Characteristics of hospitalizations by volume.

	Hospital Volume		P value
	Low (<20)	High (≥ 20)	
	Mean or %	Mean or %	
Age, years	55.7	49.7	<0.001
Length of Stay, d	6.0	5.9	0.84
Male	24.8	26.9	0.57
Comorbidities, n			<0.001
	0	6.6	11.2
	1	12.7	24.7
	2	22.7	20.2
	3	21.8	16.1
	4+	36.1	27.8
Race			0.27
	White	69.8	74.9
	Black	13.4	9.4
	Other	16.8	15.7
Cirrhosis	5.2	7.2	0.38
HIV	1.1	1.3	1
Connective tissue disease	5.9	13.5	0.002
Obesity	19.1	10.8	0.006
Cancer	2.3	2.2	1
Coronary disease	14.5	9.0	0.05
Heart failure	46.6	39.9	0.12
COPD	19.8	9.9	0.001
Pulmonary embolism	4.1	4.5	0.84
Electrolyte disorder	19.8	17.9	0.6

Table 1: Predictors of 30-day readmission. Other variables assessed and found to be similar ($p > 0.05$) between those who were and were not readmitted: obesity, left-sided valve disease, tricuspid valve disease, syncope, depression, anemia, drug abuse, sarcoidosis, asthma, tobacco use, deep venous thrombosis, pulmonary embolism, cancer, HIV, sleep disorders, hypertension.