RWD152

Hospital Outcomes and Costs for Prostate Cancer Patients With Comorbid Heart Failure by Age Group: An Analysis of the U.S. Nationwide Inpatient Sample

Ryan Thaliffdeen, PharmD,[1,2] Anthony Yu, PharmD,[1,2] Sunkyeong Park, PhD,[3] Chanhyun Park, PhD[1]
[1]University of Texas at Austin, College of Pharmacy; [2]Baylor Scott & White Health; [3]The Catholic University of Korea

Background

- There is a growing prevalence and increased risk of death for patients with comorbid heart failure (HF) and prostate cancer (PC). [1,2]
- Both diseases occur most commonly in a more elderly patient population, leading to a higher degree of overlap between the two.[3]
- Little is known about the association of heart failure with in-hospital outcomes among prostate cancer patients.

Objective

The objective of this study was to estimate in-hospital outcomes and costs associated with HF in patients with PC in the U.S., stratified by age.

Methods

- **Study Design:** Cross-sectional retrospective design
- **Data Source:** Healthcare Cost and Utilization Project Nationwide Inpatient Sample (HCUP-NIS)
- **Population:** Hospitalized men ≥18 with a primary code for prostate cancer (International Classification of Disease, Tenth Edition [ICD-10] code: C61)
- **Time Period:** October 1st, 2015 to December 1st, 2018
- **Outcomes:** In-hospital mortality, length of stay (LOS), and hospital costs per hospitalization
- **Statistical Analysis:**
  - Differences in HF prevalence by covariate were assessed using chi-squared test and t-test
  - Associations of HF with in-hospital mortality, LOS, and hospital costs per hospitalization, were measured using a multivariable logistic regression model, a negative binomial regression model, and a generalized linear regression model with log link and gamma distribution, respectively
  - Subgroup analyses were performed for age groups <65 and ≥65

Baseline Characteristics

Table 1: Baseline Demographics

Characteristics	Overall population (n=41,340) N	%	HF population (n=952) n	%	non-HF population (n=40,388) n	%	p-value
Total n	41,340		952		40,388		
Total weighted N	51,675		1,190		50,485		
Age [mean (SE)] (years)	64.3 (0.05)		73.5 (0.36)		64.1 (0.05)		
Age group in years							
15-64	21,314	51.6	201	21.1	21,113	52.3	<.001
≥65	20,026	48.4	751	78.9	19,275	47.7	
Race/ethnicity							
White	29,164	70.6	598	62.8	28,566	70.7	<.001
Black	6,635	16.1	258	27.1	6,377	15.8	
Hispanic	3,027	7.3	57	6.0	2,970	7.4	
Others	2,514	6.0	39	4.1	2,475	6.1	
Household income							
Lowest ~ 2nd quartile	19,141	46.3	546	57.3	18,595	46.0	<.001
3rd ~ Highest quartile	22,199	53.7	406	42.7	21,793	54.0	
Primary payer							
Government (Medicare/Medicaid)	19,123	46.2	724	76.1	18,399	45.6	<.001
Private including HMO	20,322	49.2	187	19.6	20,135	49.8	
Other (self-pay, charity) and unknown	1,895	4.6	41	4.3	1,854	4.6	

Table 1 Continued: Baseline Demographics

Characteristics	Overall population (n=41,340) N	%	HF population (n=952) n	%	non-HF population (n=40,388) n	%	p-value
Surgical treatment							
Minimally invasive radical prostatectomy	32,004	77.4	399	41.9	31,605	78.3	<.001
Open radical prostatectomy	4,736	11.5	48	5.0	4,688	11.6	<.001
Invasive/imaging procedures	31,889	77.1	454	47.7	31,435	77.8	<.001
Metastatic prostate cancer							
Yes	4,824	11.7	438	46.0	4,386	10.9	<.001
No	36,516	88.3	514	54.0	36,002	89.1	
Elixhauser comorbidity index [mean (SE)]	1.38 (0.01)		3.36 (0.06)		1.34 (0.01)		
Elixhauser comorbidity index							
0-1	25,575	61.9	132	13.9	25,443	63.0	<.001
2-3	12,738	30.8	395	41.5	12,343	30.6	
4-5	2,521	6.1	297	31.2	2,224	5.5	
6-7	446	1.1	118	12.4	328	0.8	
8+	60	0.2	10	1.0	50	0.1	

Results

Figure 1: In-hospital Mortality (%)

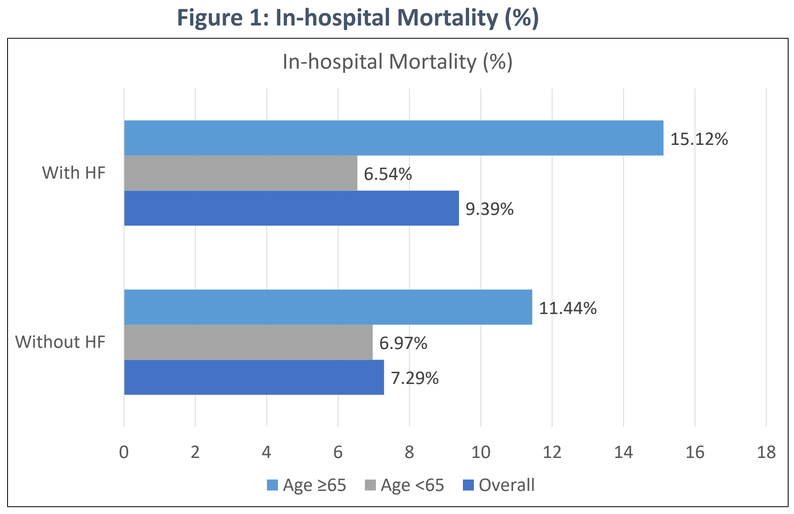


Figure 2: Length of Stay (days)

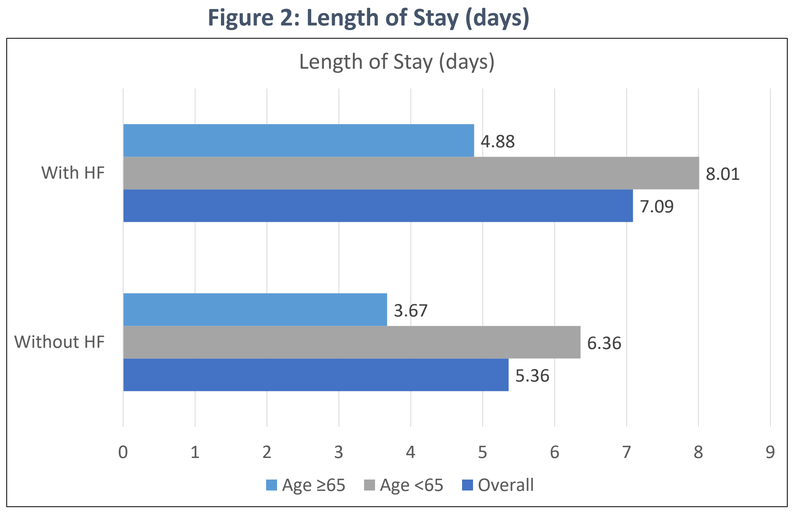
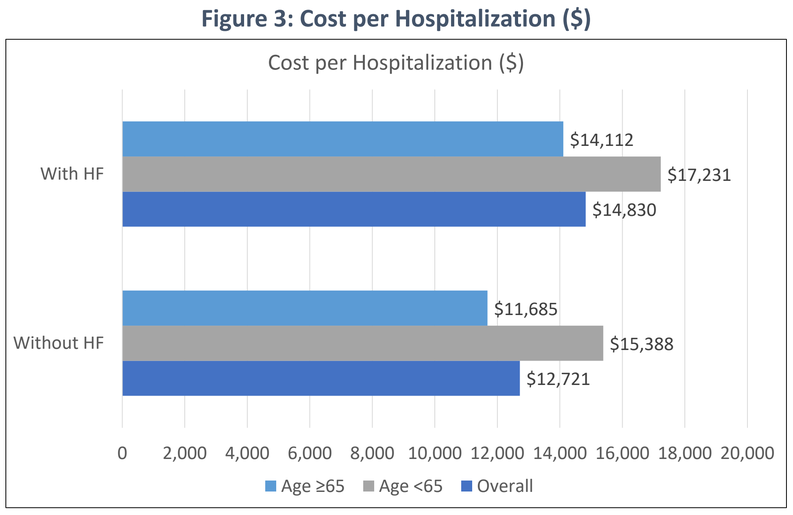


Figure 3: Cost per Hospitalization ($)



- **Baseline characteristics such as age, primary payer, metastatic disease status, and comorbidity index score differed between patients with and without comorbid HF**
- **Overall in-hospital mortality in patients with HF was 2.1% higher than in those without HF**
- **Overall length of stay in patients with HF was 1.73 days longer than in those without HF**
- **Overall costs per hospitalization in patients with HF were $2,110 costlier than in those without HF**

Figure 4: In-hospital Mortality Rate (OR)

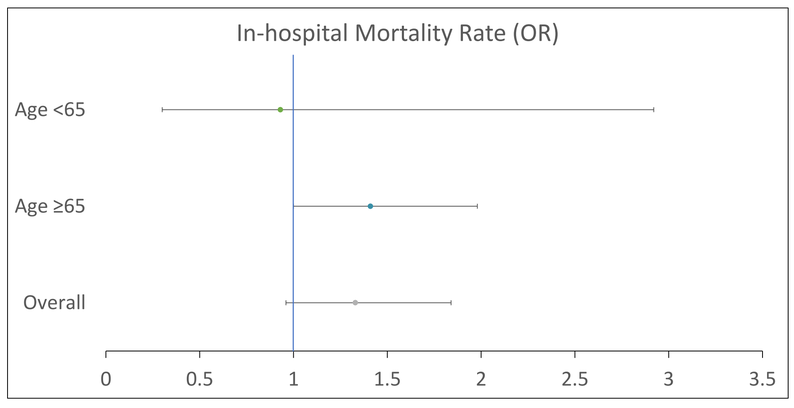


Figure 5: Cost Ratio

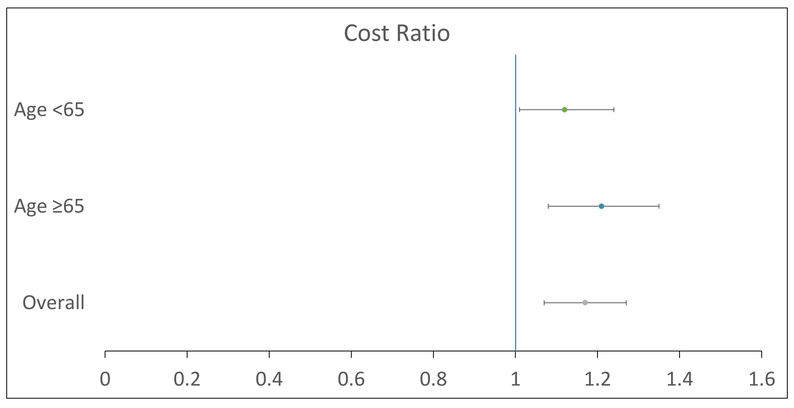
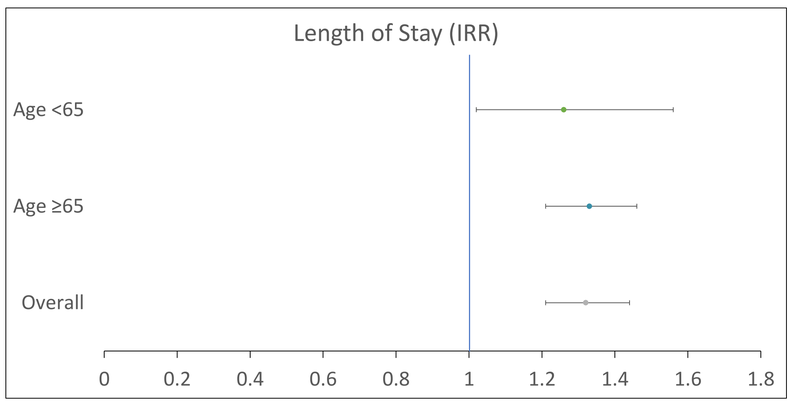


Figure 6: Length of Stay (IRR)



- **PC patients with HF were 1.33 (CI=0.96–1.84) (P=0.085) times more likely to die in-hospital compared to PC patients without HF**
  - **However, in patients ≥65, prostate cancer patients were 1.41 (CI=1.00-1.98) (P=0.047) times more likely to die in-hospital compared to PC patients without HF**
- **PC patients with HF were 1.17 (CI=1.07-1.27) (P=0.001) times more costly compared to PC patients without HF**
- **PC patients with HF had stays 1.32 (CI=1.21–1.44) (P<0.001) times longer compared to PC patients without HF**

Discussion

- In summary, this study found that in an overall population of hospitalized PC patients, comorbid HF is associated with increased LOS and costs.
- Although the risk of mortality was not statistically significant by presence of HF in the overall and <65 populations, PC patients who were ≥65 years old with comorbid HF had statistically significant increases in risk of mortality compared to those without HF.
- These findings suggest that promoting effective management of HF in PC patients, particularly in those aged ≥65, may improve outcomes and decrease inpatient costs.

References

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Contact: chanhyun.park@austin.utexas.edu