

Validating the Newly Reported ASA Score - A Novel Heart Failure Risk Stratification Score in Patients on Palliative Inotropic Therapy

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Introduction

- Heart failure – leading cause of morbidity and mortality in older adults in the USA
- Prevalence – 6.5 million (NHANES 2011-2014); 10% Advanced HF
- By 2030, > 8 million adults will have HF (46% increase)
- Incidence – about 1 million new cases annually
- Cost \$30.7 billion (2012 estimate)
- By 2030 - \$69.7 billion
- Inotropic therapy currently indicated in low output failure with end organ dysfunction and decreases HF symptoms
- Retrospective analyses and registry data suggest possible increased mortality with long term use
- Milrinone favored over dobutamine as former can be used with beta blockers
- Cardiac related mortality while on milrinone thought to be due to arrhythmias
- Patients who are not surgical or assist device candidates are often discharged on inotropes
- Relative lack of studies and mortality/risk prediction models about long term inotropy.
- Recent study from two HF centers in NJ – 199 patients on long term milrinone for median duration of 154 days had 0% mortality.

Derivation Cohort

- The ASA score is a novel HF risk stratification score to predict mortality in patients receiving long term inotropes
- Three component Score**
 - Age > 60 years [1 point]
 - Serum Na < 135 mg/dL [1 point]
 - ACE/ARB intolerance [1 point]
- Significant survival discrimination between low, medium and high scoring patients on inotropes

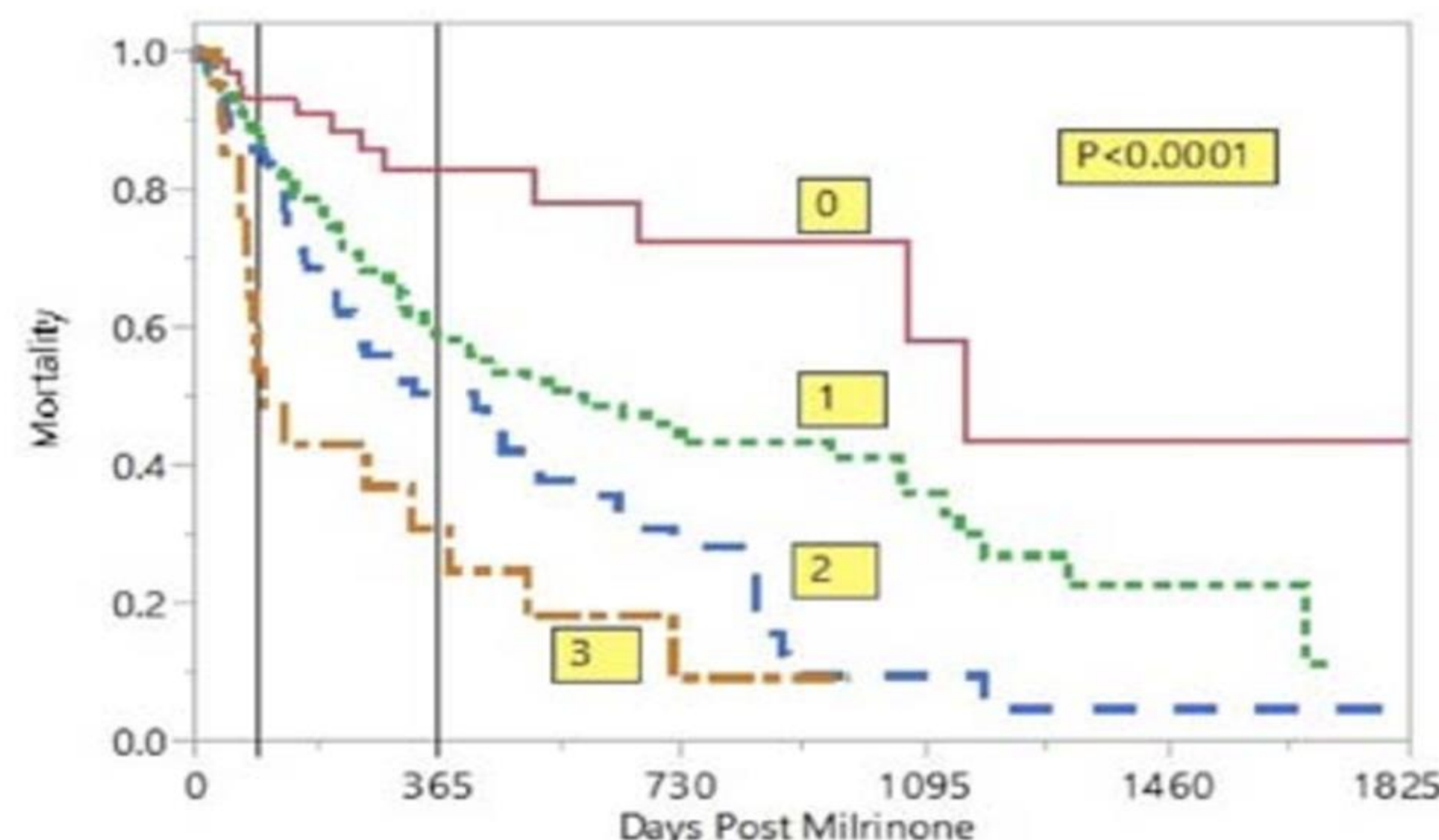


Figure 1: Derivation Cohort Survival Kaplan-Meier Curve

Disclosures

No financial or professional disclosures.

Results

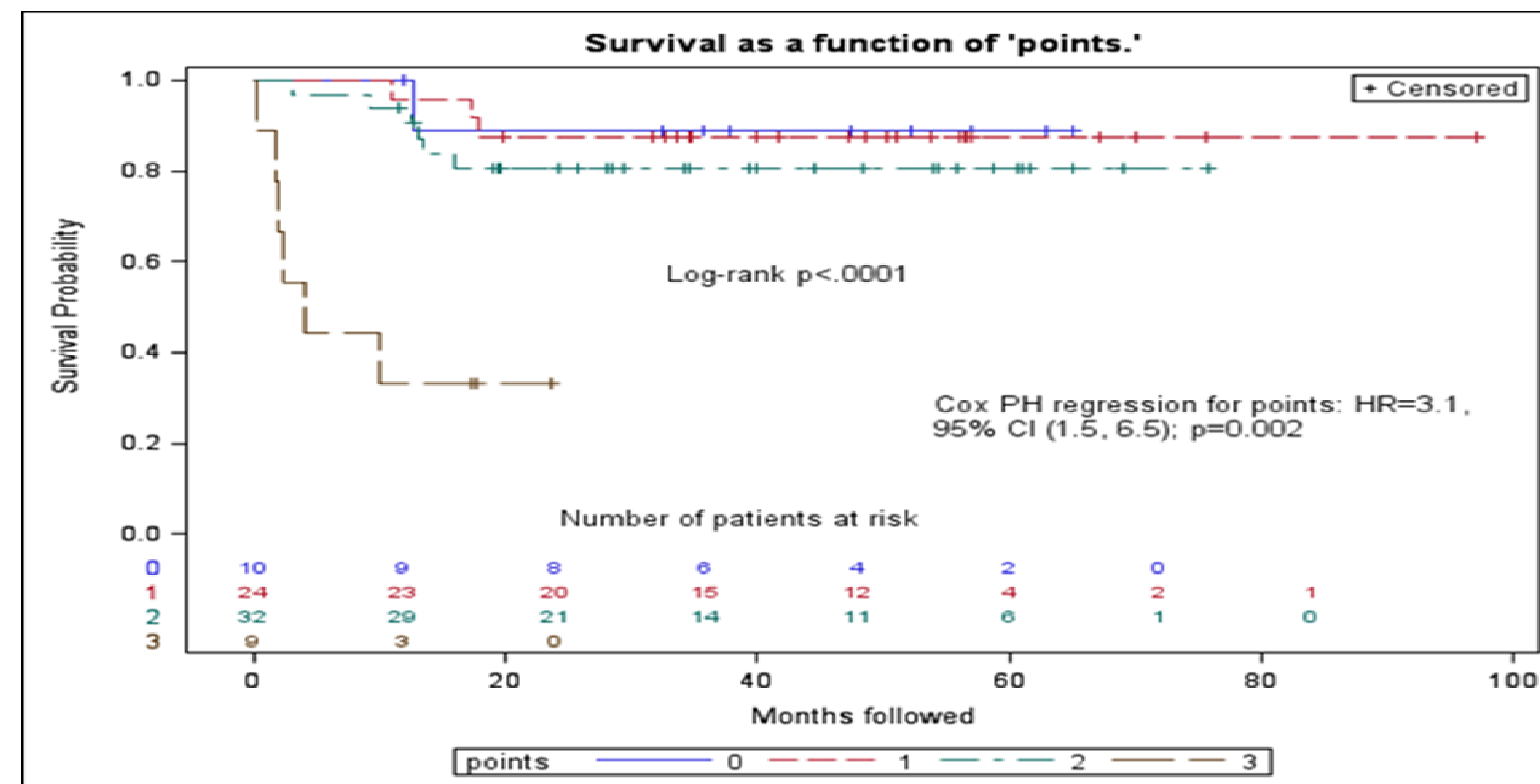


Figure 2: Validation Cohort Survival Kaplan-Meier Curve

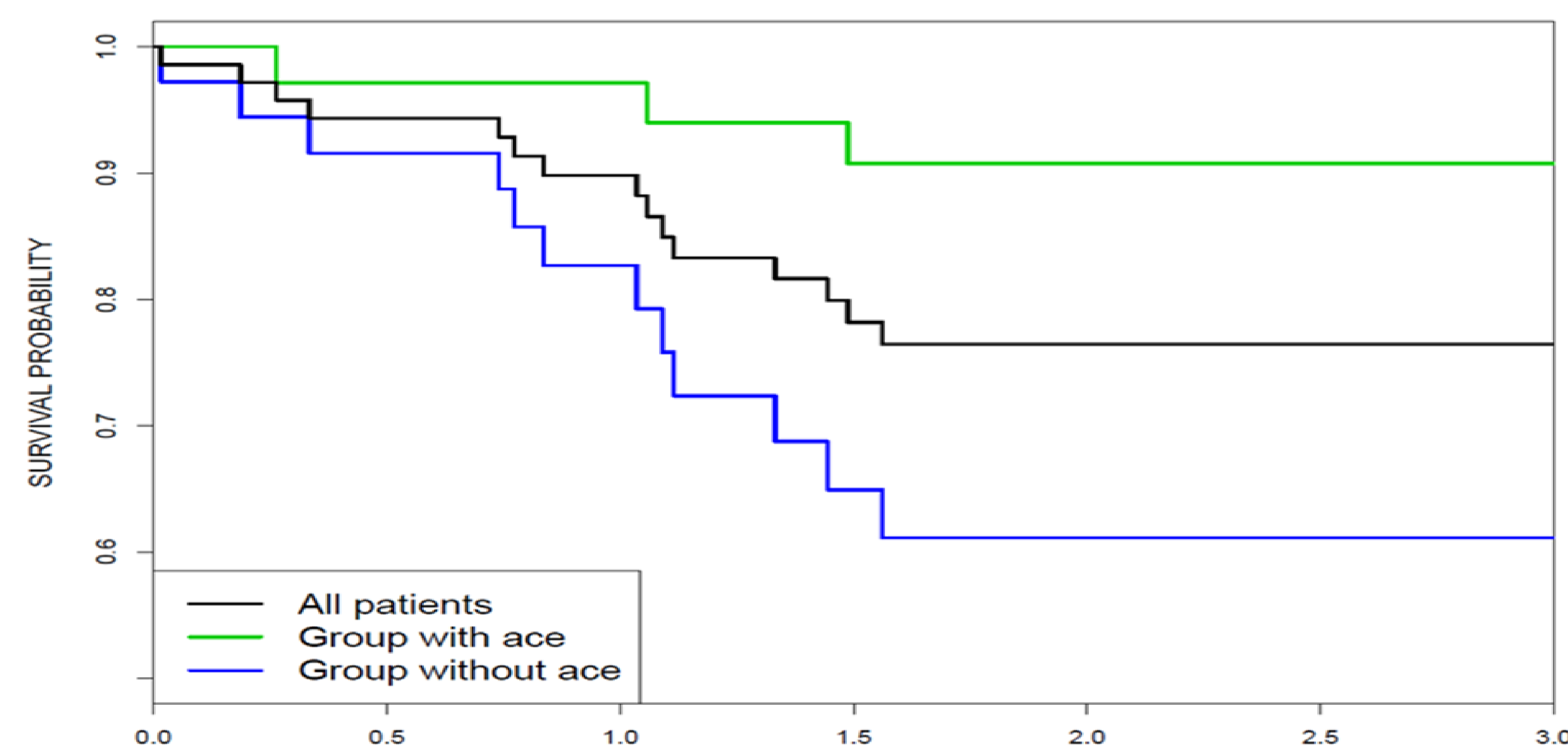


Figure 3: ACEi/ARB Intolerance Survival Analysis

Methods

- Reviewed records of patients discharged on palliative inotropic therapy who were not candidates for LVAD transplant
- Inclusion criteria: NYHA-IV, ACC-D, inotrope initiation on index admission
- ASA scored calculated on each patient
- A total of 75 patient from 2009-2017 were met
- 75% male, median age 64, 75% white
- All patients had an ICD, BiV-ICD at time of discharge
- ASA score calculated and survival after index discharge was assessed
- Each component of the ASA score was correlated with survival by Cox-regression analysis

Results (continued)

Table 1: Derivation Cohort Survival at 90 days and 1 year

ASA Score	90 Day Survival	1 year survival
0	92.5%	81.9%
1	87.8	57.4%
2	85%	49.2%
3	59.2%	30.8%

- Each component of the ASA score was statistically significant, with ACEi/ARB correlating most with all cause mortality at 1 year (HR = 6.92, p=0.003)
- A maximum ASA score of 3 conferred a HR = 3.1, 95% CI [1.5, 6.5], p = 0.002, correlating with significantly increased mortality in that subgroup.

Discussion

- In a subgroup of patients who are started on long term / palliative inotropes, all factors of ASA model were identified via Cox proportional Hazards modeling as strongly correlating with increased mortality.
- Patients with the maximum ASA score of 3 who were inotrope dependent had much quicker functional decline and more rapid mortality compared to patients with lower ASA scores.
- With the rising prevalence of HD, more patients are expected to become inotrope dependent irrespective of surgical candidacy or goal directed medical therapy
- The ASA score may be able to identify patients who become palliative inotrope dependent with the poorest prognosis.

Conclusion

- The ASA score is a simple three-component scoring system that stratifies patients by low, medium, or high risk of death from chronic inotropic therapy
- Our analysis suggests that this score is a reliable way to assess mortality risk inpatients on palliative inotropic infusions
- This score may help guide the conversation with high scoring patients on palliative inotropes regarding goals of care and potentially about the continued utility of implanted EP devices while on palliative inotropes

References

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