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# 2003-2012 Inpatient Mortality and Cost of Transjugular Intrahepatic Portosystemic Shunt in Budd-Chiari Syndrome in the US

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## Introduction

- In 2009, the American Association for the Study of Liver Diseases deemed Budd-Chiari Syndrome (BCS) an indication for Transjugular Intrahepatic Portosystemic Shunt (TIPS) procedures.
- Studies on BCS patients who have undergone TIPS have been limited by sample size due to a low incidence of 0.13 - 0.36 per million.
- Our study seeks to better understand the value of TIPS procedures provided to BCS patients.

## Methods

- National estimates of inpatient mortality in the US are available through the National Inpatient Sample (NIS) from the Health Cost and Utilization Project (HCUP).
- A discharge-weighted national estimate of 605 TIPS procedures performed in BCS patients NIS from 2003 – 2012 using International Classification of Diseases-9 (ICD-9) procedural code 39.1 and diagnostic code 453.1.
- Multivariate analysis, bivariate logistic regression, analysis of variance (ANOVA), post-hoc Tukey tests, and independent sample T-tests were used for statistical analyses in SPSS.

## Results

- Demographics
  - Age: 45.1 ± 17.1 years
    - Younger than general TIPS<sup>1</sup>
  - 54.8% female
- Mortality: 6.3% overall
  - Lower than general TIPS<sup>1,2</sup>

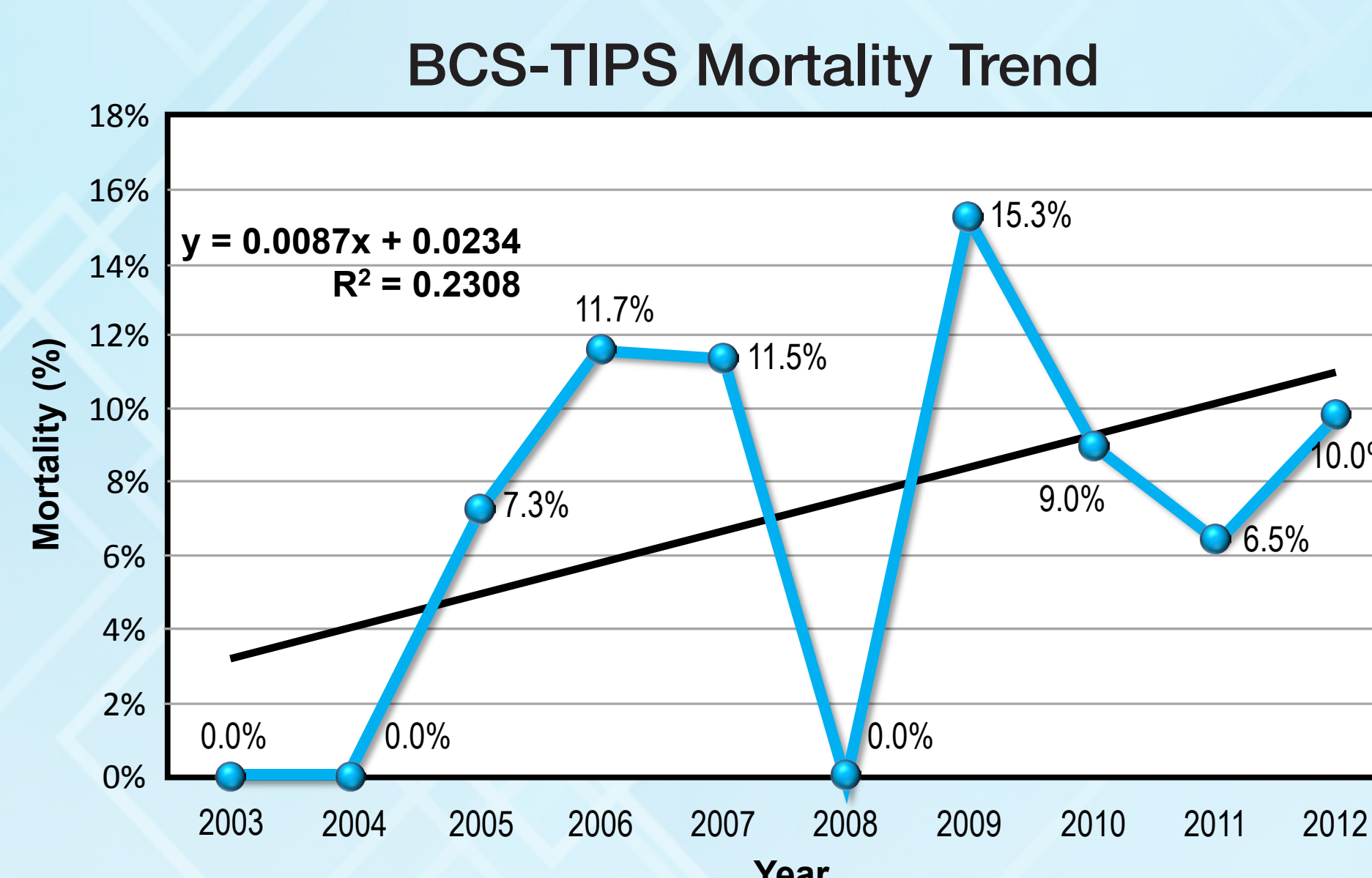


Figure 1. Inpatient mortality had a slightly positive trend ( $m=0.0087$ ) with a poor fit ( $R^2 = 0.2308$ ), with a peak of 15.3% in 2009.

Table 1. Top 3 Diagnoses and Comorbidities with the Highest Odds of Inpatient Mortality

Category	Factor	OR	P-value
Dx (Reference: No Dx)	Acute necrosis of liver (570)	12.261	<0.0005
	Complications of transplanted liver (Begin 1987) (996.82)	5.700	0.003
	Ascites NEC (Begin 2007) (789.59)	2.885	0.002
Comorbidities (Reference: No comorbidity)	Drug abuse	16.912	<0.0005
	Peripheral vascular disorder	16.001	<0.0005
	Coagulopathy	7.443	<0.0005

- Cost: ~\$4.5 million annually
  - Mean: \$75,039 ± \$93,579

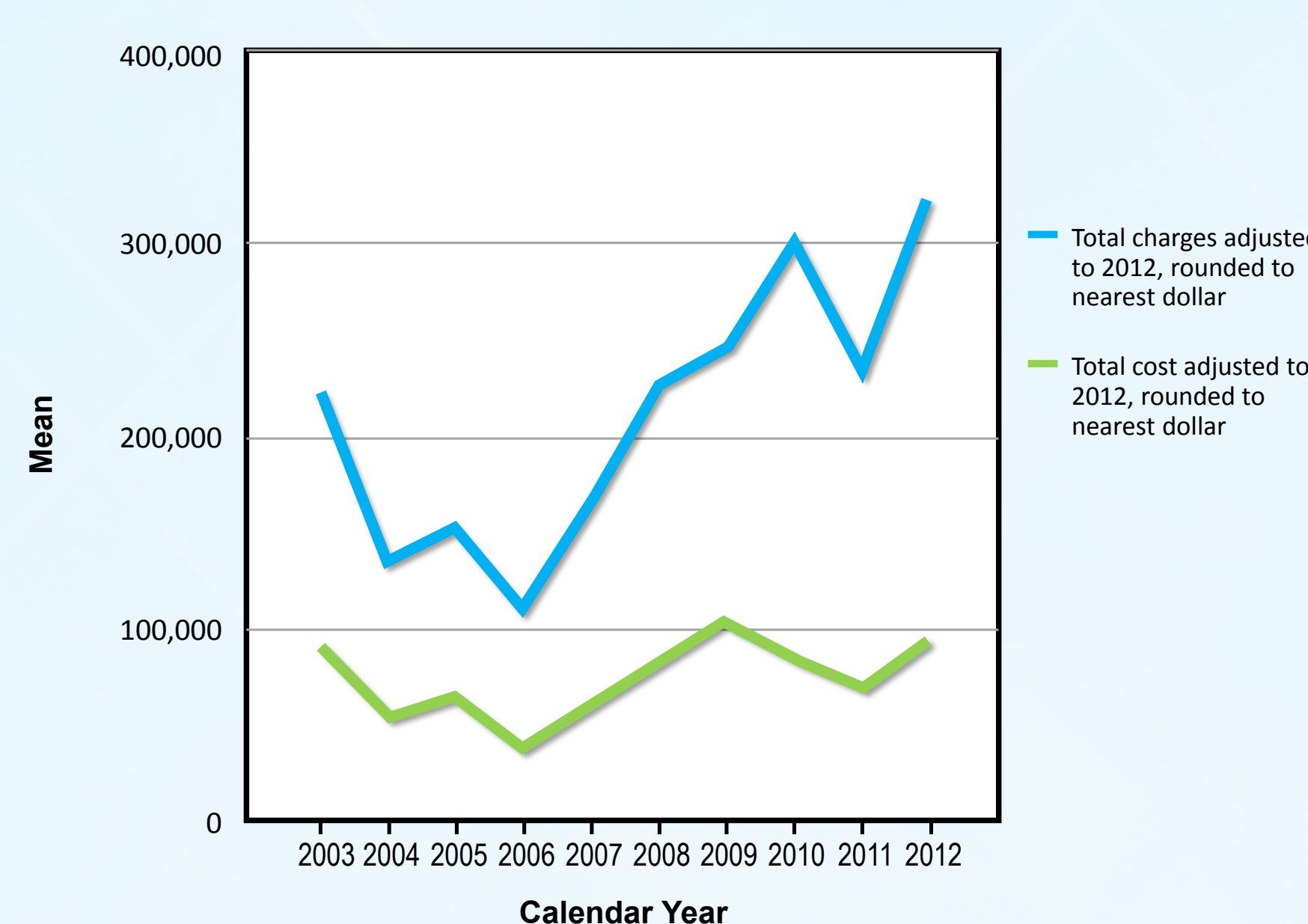


Figure 2. Inpatient costs and charges increased over time.

Table 2. Top 3 Diagnoses and Comorbidities with the Highest Costs.

Category	Factor	Cost Increase (\$)	P-value
Dx (Reference: BCS) ANOVA p <0.0005	Complications of transplanted liver (Begin 1987) (996.82)	\$120,456	<0.0005
	TB of limb bones - unspc (0.15.50)	\$104,866	0.005
	Erythema infectiosum (0.57.0)	\$97,186	0.002
Comorbidities (Reference: No comorbidity)	Peripheral vascular disorders	\$175,507	<0.0005
	Pulmonary circulation disorders	\$141,543	<0.0005
	Weight loss	\$86,882	0.001

## Discussion

- Demographics with higher odds of mortality include age > 70 years old, male, Asian and Pacific Islander, and Medicare & self-pay.
- Teaching hospitals had a lower odds of mortality.
- Transfers from acute care hospitals had a higher mortality and cost.
- Though liver transplant is ultimately the cure for BCS3, patients continue to have poor outcomes from complications at a high cost.

## Conclusions

- Overall, there is a significantly lower inpatient mortality for TIPS in BCS patients when compared to general TIPS procedures (high value).
- Both inpatient mortality and cost have increased over time, decreasing the value of TIPS for BCS patients; special precaution should be given to patients with the highest risks.

### REFERENCES:

1. Lee EW, Kuei A, Saab S, et al. Nationwide trends and predictors of inpatient mortality in 83884 transjugular intrahepatic portosystemic shunt. *World journal of gastroenterology*. 2016;22(25):5780.
2. Kuei A, Lee EW, Saab S, et al. Inpatient Cost Assessment of Transjugular Intrahepatic Portosystemic Shunt in the USA from 2001 to 2012. *Digestive Diseases and Sciences*. 2016(10):2838.
3. Liu L, Qi XS, Zhao Y, Chen H, Meng XC, Han GH. Budd- Chiari syndrome: current perspectives and controversies. *European review for medical and pharmacological sciences*. 2016;20(15):3273.

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