Supplementary Online Content

Makkar RR, Yoon S-H, Leon MB, et al. Association between transcatheter aortic valve replacement for bicuspid vs tricuspid aortic stenosis and mortality or stroke. *JAMA*. doi:10.1001/jama.2019.7108

This supplementary material has been provided by the authors to give readers additional information about their work.

Appendix

Statistical Analysis

Continuous variables were presented as mean with standard deviation (SD) or median with interquartile range (IQR) and were compared between groups using the two-sample t-tests or Wilcoxon rank sums tests. Categorical variables were given as frequencies and percentages and were compared using chi-square tests or Fisher's exact tests with two-tailed. 30-day and 1-year adverse event rates were based on Kaplan-Meier estimates and all comparisons were made using the log-rank test.

It was anticipated that bicuspid and tricuspid AS patients would have significantly different baseline and procedural characteristics.[24] To avoid confounding due to these differences, propensity score–based matching was utilized. Propensity-scores were calculated using a logistic regression model based on 25 relevant baseline patient characteristics (covariates) with aortic valve type (bicuspid or tricuspid AS) as the dependent variable. The covariates were age, gender (male), body mass index, access site, prior percutaneous coronary intervention (PCI), prior coronary artery bypass graft surgery (CABG), prior stroke, carotid stenosis, peripheral arterial disease, hypertension, diabetes, chronic lung disease, immunocompromise, porcelain aorta, atrial fibrillation, creatinine, haemoglobin, estimated glomerular filtration ratio (GFR), aortic valve mean gradient, left ventricular ejection fraction, mitral regurgitation, tricuspid regurgitation, New York Heart Association (NYHA) functional class III/IV, five meter walk test, and Kansas City Cardiomyopathy Questionnaire (KCCQ) overall summary score. Missing baseline values were imputed using the Markov Chain Monte Carlo method prior to modelling. Bicuspid AS patients were matched one-to-one to tricuspid AS patients using a greedy matching strategy with calliper of 0.01, producing two patient cohorts (n = 2691 for each group). Balance between the groups was assessed by calculating standardized differences for which a difference of less than 0.10 was considered to indicate good balance. There were missing data for less than 3% of the patients for the baseline variables. There were greater percentages of missing data for carotid stenosis (21.3%), myocardial infarction (17.0%), Five meter walk test (23.6%) and KCCQ-OS (7.8%). The percentages of missing data for other variables were shown in the eTable 1.

This study is based on the ongoing registry which continuously enrolled all patients undergoing commercial TAVR in the United States. At any given time, only a fraction of the patients in the TVT registry have reached the 1-year end-point. Consequently, of the 92262 patients enrolled in our study, 23631 TAVRs (bicuspid, n=880 of 2921 and tricuspid, n=22751 of 81485) were performed in the preceding year and have not reached the 1-year endpoint. This registry is a national registry in which clinical follow-up is not mandated, and therefore, a fraction of patients who have reached the 1-year endpoint are not followed after the index procedure. To overcome these limitations, we linked data between the study cohort and Centers for Medicare and Medicaid Services (CMS), based on the high concordance in the mortality and other events using claims data as compared to clinician-triggered adjudication.[25] The coprimary endpoints analyses were performed using the CMS-linked data available from 2015 through 2017, including 32346 patients

(bicuspid AS, n=836 and tricuspid AS, n=31510). The patient follow up ended on November 2018. In addition, coprimary endpoints were assessed in the propensity matched cohort created in patients who had CMS data available for linkage (784 pairs of patients) as well as those who had CMS-linkage and completed 1-year endpoint (469 pairs of patients).

We performed Cox regression model using stepwise selection with entry/stay criteria 0.1/0.1 to assess the adjusted hazard ratio of bicuspid vs tricuspid patients on coprimary endpoints. The candidate covariates were identical to those used in the propensity-score matching analysis. We used Kolmogorov-type supremum test for all the covariates in the Cox model and no violations were found. All *P* values were 2-sided and $P < .05$ was considered significant for all tests. No adjustment for multiple testing was undertaken. Because of the potential for type 1 error due to multiple comparisons, findings of analyses for secondary endpoints should be interpreted as exploratory. All statistical analyses were performed using SAS version 9.4 (SAS Institute Inc., Cary, NC). We used SAS Proc MI for multiple imputation, Proc Phreg for cox regression model, and Proc logistics for propensity score calculation.

Definition of hostile chest and porcelain aorta.

Hostile Chest – S#4182

Indicate if the patient has a medical condition that precludes an open chest procedure and that is documented in the medical record. This can include any of the following or other reasons that make redo operation through sternotomy or right anterior thoracotomy prohibitively hazardous:

1. Evidence of abnormal chest wall anatomy due to severe kyphoscoliosis or other skeletal abnormalities (including thoracoplasty, Potts' disease, sternal bone destruction, evidence of indetectable plane between posterior sternal table and important mediastinal structures)

2. Complications from prior surgery

3. Prior radiation involving the mediastinum/thoracic, or evidence of severe radiation damage (e.g., skin burns, bone destruction, muscle loss, lung fibrosis or esophageal stricture)

4. History of multiple recurrent pleural effusions causing internal adhesions.

5. Chronic, ongoing open skin defects or extremely severe soft tissue atrophy.

6. Complete absence of reconstructive options based on plastic surgeon consult.

Porcelain Aorta – S#5045

Indicate if the patient has a porcelain aorta as documented by findings on a chest x-ray, CT scan, fluoroscopy at the time of cardiac catheterization or noted during previous cardiothoracic surgery.

Supporting Definitions:

A porcelain aorta is defined as "severe atherosclerosis of the aorta, calcification may be severe and diffuse, causing an eggshell appearance seen on chest x-ray or CT".

Source: ACCF/AHA/AATS/ACR/ASA/SCA/SCAI/SIR/STS/SVM Guidelines for the Diagnosis and Management of Patients With Thoracic Aortic Disease (JACC, 2010; 55:27-129)

eTable 1. Missing Baseline Characteristic Values

Characteristic	% Missing Value
Age	0.01
Body mass index, kg/m^2	0.44
Male	0.02
Prior PCI	0.23
Prior CABG	0.19
Prior stroke	0.15
Carotid stenosis	21.29
Peripheral vascular disease	0.2
Hypertension	0.14
Diabetes mellitus	0.2
Chronic lung disease	0.63
Immunocompromise Present	0.22
Porcelain aorta	0.22
Atrial fibrillation/flutter	0.21
Hemoglobin	0.38
Creatinine	0.39
Estimated GFR, mL/min/1.73 m^2	0.41
Myocardial Infarction	17.04
Tricuspid Insufficiency	0.82
Average mean gradient, mm Hg	1.22
LVEF	0.66
Approach	0.04
Five meter walk test	23.59
KCCQ	7.81
NYHA III/IV	0.81

CABG = coronary artery bypass graft; GFR = glomerular filtration rate; KCCQ = Kansas City Cardiomyopathy Questionnaire; LVEF = left ventricular ejection fraction; NYHA = New York Heart Association; PCI = percutaneous coronary intervention

eTable 2. Procedural Characteristics and In-Hospital Outcomes in Unadjusted Cohort

Characteristic	Bicuspid AS (n = 2726)	Tricuspid AS (n = 79096)	Absolute difference (95% CI)	*P* Value
Procedure status				
Elective	90.3	91.7	1.4 (0.2 to 2.5)	.01
Urgent	9.3	8.1	1.2 (0.1 to 2.4)	.02
Emergent	0.3	0.2	0.1 (0.1 to 0.3)	.16
Salvage	0.1	0.0	0.1 (-0.1 to 0.2)	.10
Cardiopulmonary bypass	1.4	0.6	0.9 (0.4 to 1.3)	<0.001
Access site				
Transfemoral	93.7	94.3	0.6 (-1.6 to 0.3)	.17
Transapical	1.7	1.5	0.1 (-0.4 to 0.6)	.61
Transaortic	1.0	1.0	0.1 (-0.5 to 0.3)	.77
Subclavian	1.7	1.4	0.3 (-0.2 to 0.8)	.18
Prosthesis size				
20 mm	2.7	3.6	1.0 (0.3 to 1.6)	.009
23 mm	22.9	33.6	10.7 (9.1 to 12.3)	<.001
26 mm	39.0	41.0	2.0 (0.2 to 3.9)	.03
29 mm	35.5	21.8	13.7 (11.9 to 15.5)	<.0001
Implant success	99.0	99.3	0.3 (-0.7 to 0.1)	.09
Device success	96.5	97.4	0.9 (0.2 to 1.7)	.002
Conversion to open heart surgery	0.9	0.4	0.5 (0.1 to 0.8)	.0003
Annulus rupture	0.3	0.1	0.2 (0.0 to 0.4)	.02
Ventricular rupture	0.1	0.1	0.0 (-0.1 to 0.1)	>. 99

Device embolization to left ventricle	0.1	0.0	0.1 (-0.1 to 0.2)	.02
Coronary occlusion	0.1	0.0	0.1 (-0.1 to 0.2)	.03
Other	0.3	0.2	0.2 (-0.1 to 0.4)	.16
Procedure complications				
Annular dissection	0.3	0.2	0.1 (-0.1 to 0.4)	.08
Aortic dissection	0.3	0.1	0.1 (-0.1 to 0.3)	.13
Coronary compression or obstruction	0.4	0.1	0.3 (0.0 to 0.5)	.002
Device embolization to aorta	0.0	0.1	0.1 (0.0 to 0.1)	.41
Device embolization to left ventricle	0.1	0.0	0.1 (-0.1 to 0.2)	.05
Perforation	0.9	0.9	0.0 (-0.4 to 0.4)	.98
Need for second valve	0.4	0.3	0.2 (-0.1 to 0.4)	.12
In-hospital event				
Death	1.7	1.5	0.1 (-0.4 to 0.6)	.64
Stroke	2.1	1.4	0.6 (0.0 to 1.2)	.01
Death or stroke	3.4	2.8	0.6 (-0.1 to 1.3)	.08
Myocardial infarction	0.3	0.2	0.1 (-0.1 to 0.4)	.09
Life-threatening bleeding	0.0	0.0		--
Major vascular complication	0.8	1.0	0.2 (-0.6 to 0.2)	.31
New requirement for dialysis	0.4	0.5	0.1 (-0.3 to 0.2)	.63
New permanent pacemaker	7.2	7.6	0.4 (-1.4 to 0.6)	.42
New-onset atrial fibrillation	1.7	1.8	0.2 (-0.7 to 0.4)	.54

Abbreviations: AS, aortic valve stenosis.

eTable 3. 30-Day and 1-Year Clinical Outcomes in Unadjusted Cohort

	Bicuspid AS (n = 2726)	Tricuspid AS (n = 79096)	Hazard Ratio (95% CI)	Absolute Difference (95% CI)	Log-rank *P* Value
At 30 days					
Mortality	65 (2.5)	1887 (2.5)	1.01 (0.79 to 1.30)	0.03 (0.02 to 0.04)	.91
Stroke	64 (2.4)	1506 (2.0)	1.25 (0.97 to 1.60)	0.46 (0.46 to 0.47)	.08
Mortality or stroke	115 (4.4)	3150 (4.1)	1.07 (0.89 to 1.29)	0.27 (0.26 to 0.27)	.45
Aortic valve re-intervention	10 (0.4)	366 (0.5)	0.80 (0.43 to 1.49)	0.09 (0.09 to 0.09)	.48
New pacemaker	236 (9.0)	6994 (9.1)	0.99 (0.87 to 1.12)	0.1 (0.09 to 0.11)	.83
Valve related readmissions	15 (0.6)	457 (0.6)	0.97 (0.58 to 1.62)	0.02 (0.02 to 0.03)	.91
At 1 year					
Mortality	171 (10.4)	7167 (14.4)	0.75 (0.65 to 0.87)	3.97 (3.95 to 3.99)	.00
Stroke	76 (3.4)	2200 (3.7)	1.04 (0.83 to 1.31)	0.29 (0.28 to 0.30)	.72
Mortality or stroke	228 (12.8)	8749 (16.7)	0.81 (0.71 to 0.93)	3.95 (3.93 to 3.96)	.002
Aortic valve re-intervention	14 (0.7)	451 (0.7)	0.92 (0.54 to 1.57)	0.01 (0.0 to 0.01)	.77
New pacemaker	247 (9.8)	7489 (10.3)	0.97 (0.85 to 1.10)	0.42 (0.41 to 0.43)	.62
Valve related readmissions	28 (1.5)	922 (1.7)	0.93 (0.64 to 1.36)	0.2 (0.2 to 0.21)	.72

Abbreviations: AS, aortic valve stenosis; CI, confidence interval.

eTable 4. Adjusted Hazard Ratios for Adverse Outcomes of TAVR in Bicuspid AS Compared With Tricuspid AS

Outcomes	Hazard ratio (95% CI)	95% CI	*P* Value
30-day mortality			
Unadjusted	1.01	0.79 to 1.30	.91
Multivariate adjusted	1.23	0.84 to 1.81	.28
Propensity score matching	1.04	0.74 to 1.47	.82
1-year mortality			
Unadjusted	0.75	0.65 to 0.87	< .001
Multivariate adjusted	1.01	0.83 to 1.23	.93
Propensity score matching	0.90	0.73 to 1.10	.31
30-day stroke			
Unadjusted	1.25	0.97 to 1.60	.08
Multivariate adjusted	1.47	1.12 to 1.93	.0056
Propensity score matching	1.57	1.06 to 2.33	.02
1-year stroke			
Unadjusted	1.04	0.83 to 1.31	.72
Multivariate adjusted	1.23	0.94 to 1.62	.14
Propensity score matching	1.28	0.91 to 1.79	.16

Abbreviations: CI, confidence interval.

eTable 5. Adjusted Hazard Ratios for 30 Days Mortality of TAVR in Bicuspid AS Compared With Tricuspid AS

Variable	Hazard ratio	95% CI	*P* Value
Age	1.02	1.01 to 1.03	< .0001
Body mass index, kg/m^2	0.97	0.96 to 0.98	< .0001
Hypertension	0.77	0.62 to 0.96	.0175
Estimated GFR per 10 units, mL/min/1.73m^2	0.92	0.90 to 0.95	< .0001
Atrial fibrillation/flutter	1.25	1.09 to 1.42	.0008
Chronic lung disease	1.39	1.22 to 1.59	< .0001
Porcelain aorta	1.93	1.50 to 2.50	< .0001
Hemoglobin level, g/dL	0.92	0.89 to 0.96	< .0001
KCCQ-OS score	0.99	0.99 to 0.99	< .0001
Five meter walk test, s	1.01	1.00 to 1.01	.0017
Ejection fraction, %	0.99	0.99 to 1.00	.007
Moderate or severe mitral insufficiency	1.23	1.07 to 1.41	.0027
Transfemoral access	0.43	0.35 to 0.51	< 0.0001
Bicuspid AS	1.23	0.84 to 1.81	.28

Abbreviations: AS, aortic valve stenosis; CI, confidence interval; GFR, glomerular filtration rate; KCCQ-OS, Kansas City Cardiomyopathy Questionnaire overall summary.

eTable 6. Adjusted Hazard Ratios for 30 Days Stroke of TAVR in Bicuspid AS Compared With Tricuspid AS

Variable	Hazard ratio	95% CI	*P* Value
Age	1.02	1.01 to 1.03	< .0001
Male sex	0.74	0.67 to 0.82	< .0001
Body mass index, kg/m^2	0.98	0.98 to 0.99	.0003
Estimated GFR per 10 units, $mL/min/1.73m^2$	0.96	0.94 to 0.98	.0002
Prior stroke	1.59	1.39 to 1.83	< .0001
Moderate or severe tricuspid insufficiency	1.21	1.05 to 1.38	.0063
Transfemoral access	0.47	0.40 to 0.56	< 0.0001
Bicuspid AS	1.47	1.12 to 1.93	.0056

Abbreviations: AS, aortic valve stenosis; CI, confidence interval; GFR, glomerular filtration rate.

eTable 7. Adjusted Hazard Ratios for 1 Year Mortality of TAVR in Bicuspid AS Compared With Tricuspid AS

Variable	Hazard ratio	95% CI	*P* Value
Age	1.02	1.02 to 1.03	< .0001
Male sex	1.18	1.10 to 1.26	< .0001
Body mass index, kg/m^2	0.97	0.96 to 0.97	< .0001
NYHA class III/IV heart failure	1.12	1.04 to 1.22	.004
Hypertension	0.89	0.80 to 0.99	.025
Diabetes mellitus	1.11	1.04 to 1.18	.0015
Creatinine ≥2.0 mg/dL	1.25	1.10 to 1.41	.0004
Estimated GFR per 10 units, mL/min/1.73m^2	0.95	0.94 to 0.97	< .0001
Atrial fibrillation/flutter	1.34	1.26 to 1.42	< .0001
Prior stroke	1.11	1.02 to 1.21	.0199
Peripheral artery disease	1.12	1.05 to 1.20	.0005
Chronic lung disease	1.31	1.23 to 1.39	< .0001
Immunocompromised present	1.37	1.25 to 1.51	< .0001
Porcelain aorta	1.19	1.03 to 1.37	.0217
Hemoglobin level, g/dL	0.90	0.88 to 0.91	< .0001
KCCQ-OS score	0.99	0.99 to 0.99	< .0001
Five meter walk test, s	1.01	1.00 to 1.01	< .0001
Mean gradient, mm Hg	0.99	0.99 to 1.00	< .0001
Ejection fraction, %	0.99	0.99 to 1.00	< .0001
Moderate or severe tricuspid insufficiency	1.22	1.14 to 1.31	< .0001
Transfemoral access	0.60	0.54 to 0.37	< .0001
Bicuspid AS	1.01	0.83 to 1.23	.93

Abbreviations: AS, aortic valve stenosis; CI, confidence interval; GFR, glomerular filtration rate; KCCQ-OS, Kansas City Cardiomyopathy Questionnaire overall summary; NYHA, New York Heart Association.

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eTable 8. Adjusted Hazard Ratios for 1 Year Stroke of TAVR in Bicuspid AS Compared With Tricuspid AS

Variable	Hazard Ratio	95% CI	*P* Value
Age	1.02	1.01 to 1.03	< .0001
Body mass index, kg/m^2	0.98	0.97 to 0.99	< .0001
Diabetes mellitus	1.20	1.08 to 1.32	.0005
Estimated GFR per 10 units, $mL/min/1.73m^2$	0.95	0.93 to 0.97	< .0001
Prior stroke	1.74	1.54 to 1.97	< .0001
KCCQ-OS score,	1.00	0.99 to 1.00	.0011
Moderate or severe mitral insufficiency	1.19	1.07 to 1.33	.0014
Transfemoral access	0.56	0.48 to 0.65	< .0001
Bicuspid AS	1.23	0.94 to 1.62	.14

Abbreviations: AS, aortic valve stenosis; CI, confidence interval; GFR, glomerular filtration rate; KCCQ-OS, Kansas City Cardiomyopathy Questionnaire overall summary.

eTable 9. Postprocedural Echocardiographic Data in Matched Cohort

	Bicuspid AS (n = 2691)	Tricuspid AS (n = 2691)	Absolute Difference (95% CI)	*P* Value
Discharge				
Aortic valve area, mean (SD), cm^2	1.8 (0.6)	1.8 (0.5)	0.0 (0.0 to 0.05)	.34
Mean gradient, mean (SD), mm Hg	11.6 (5.7)	11.8 (5.3)	0.2 (-0.5 to 0.1)	.15
Mean gradient ≥ 20 mm Hg	164/2371 (6.9)	196/2400 (8.2)	1.2 (-2.8 to 0.3)	.10
Prosthesis patient mismatch				
None	1165/2003 (58.2)	1186/2015 (58.9)	0.7 (-3.8 to 2.4)	.65
Moderate	563/2003 (28.1)	555/2015 (27.5)	0.6 (-2.3 to 3.4)	.69
Severe	275/2003 (13.7)	274/2015 (13.6)	0.1 (-2.0 to 2.3)	.90
Moderate or severe paravalvular leak	32/2179 (1.5)	18/2233 (0.8)	0.7 (0.0 to 1.3)	.04
Moderate of severe aortic insufficiency	34/2393 (1.4)	22/2427 (0.9)	0.5 (-0.1 to 1.2)	.10
30 days				
Mean gradient, mean (SD), mm Hg	12.2 (5.3)	12.3 (5.4)	0.1 (-0.4 to 0.3)	.69
Increase of mean gradient ≥ 10 mm Hg since discharge	65/1689 (3.8)	44/1779 (2.5)	1.4 (0.1 to 2.6)	.02
Ejection fraction, mean (SD), %	56.2 (11.7)	55.9 (12.2)	0.3 (-0.4 to 1.1)	.39
Moderate or severe paravalvular leak	35/1711 (2.0)	42/1782 (2.4)	0.3 (-0.3 to 0.7)	.53
Moderate of severe aortic insufficiency	46/1896 (2.4)	43/1959 (2.2)	0.2 (-0.8 to 1.2)	.63
1 year				
Mean gradient, mean (SD), mm Hg	13.1 (8.1)	13.0 (6.2)	0.1 (-0.7 to 0.8)	.86
Increase of mean gradient ≥ 10 mm Hg since discharge	34/601 (5.7)	35/668 (5.2)	0.4 (-2.2 to 3.1)	.74
Ejection fraction, mean (SD), %	57.7 (10.4)	57.5 (10.1)	0.2 (-0.8 to 1.3)	.66
Moderate or severe paravalvular leak	19/593 (3.2)	17/673 (2.5)	0.7 (-1.3 to 2.7)	.47
Moderate of severe aortic insufficiency	21/675 (3.1)	24/746 (3.2)	0.1 (-2.1 to 1.9)	.91

Abbreviations: AS, aortic valve stenosis; CI, confidence interval.

eTable 10. Functional and Health Status in Matched Cohort

	Bicuspid AS	Tricuspid AS	Absolute Difference (95% CI)	*P* Value
Functional status				
NYHA heart failure class at 30 days				
Class I	1074/1958 (54.9)	1103/2015 (54.7)	0.1 (-3.0 to 3.3)	.94
Class II	751/1958 (38.4)	760/2015 (37.7)	0.6 (-2.4 to 3.7)	.68
Class III	123/1958 (6.3)	139/2015 (6.9)	0.6 (-2.2 to 1.0)	.43
Class IV	10/1958 (0.5)	13/2015 (0.6)	0.1 (-0.7 to 0.4)	.58
Class I/II	1825/1958 (93.2)	1863/2015 (92.5)	0.8 (-0.9 to 2.4)	.36
Class III/IV	133/1958 (6.8)	152/2015 (7.5)	0.8 (-2.4 to 0.9)	.36
NYHA heart failure class at 1 year				
Class I	449/752 (59.7)	489/804 (60.8)	1.1 (-6.1 to 3.9)	.65
Class II	243/752 (32.3)	263/804 (32.7)	0.4 (-5.2 to 4.4)	.87
Class III	51/752 (6.8)	43/804 (5.3)	1.4 (-1.1 to 3.9)	.24
Class IV	9/752 (1.2)	9/804 (1.1)	0.1 (-1.1 to 1.3)	.89
Class I/II	692/752 (92.0)	752/804 (93.5)	1.5 (-4.2 to 1.2)	.25
Class III/IV	60/752 (8.0)	52/804 (6.5)	1.5 (-1.2 to 4.2)	.25
Changes from baseline to 30 days				
Improved	1635/1946 (84.0)	1649/1997 (82.6)	1.4 (-0.9 to 3.8)	.22
No change	280/1946 (14.4)	313/1997 (15.7)	1.3 (-3.6 to 1.0)	.26
Worsened	31/1946 (1.6)	35/1997 (1.8)	0.2 (-1.0 to 0.7)	.70
Changes from baseline to 30 days				
Improved	634/745 (85.1)	668/800 (83.5)	1.6 (-2.2 to 5.4)	.39
No change	87/745 (11.7)	116/800 (14.5)	2.8 (-6.3 to 0.7)	.10
Worsened	24/745 (3.2)	16/800 (2.0)	1.2 (-0.5 to 2.9)	.13
Health status				
KCCQ OS score at 30 days, median (IQR)	83.3 (65.8-95.1)	83.3 (64.6-94.8)		.44
Changes from baseline to 30 days, mean (SD)	28.9 (26.3)	29.0 (26.9)	0.1 (-1.8 to 1.6)	.89
KCCQ OS score at 1 year, median (IQR)	86.5 (68.8-96.9)	87.5 (71.9-96.9)		.23
Changes from baseline to 30 days, mean (SD)	30.6 (25.8)	33.0 (25.9)	2.4 (-5.1 to 0.3)	.08

Abbreviations: AS, aortic valve stenosis; KCCQ-OS, Kansas City Cardiomyopathy Questionnaire overall summary; NYHA, New York Heart Association.

Supplemental Figure Legends

eFigure 1. Numbers of 1-Year Follow-up Status

The numbers of 1-year follow-up status (visit completed, death, lost to follow-up, unknown, and visit not due) in patients with bicuspid and tricuspid aortic stenosis are shown respectively.
AS indicates aortic valve stenosis. Additional events of death at 1 year was detected by CMS-linkage (10 and 16 patients with bicuspid and tricuspid aortic stenosis, respectively).
AS indicates aortic valve stenosis.

eFigure 2. Cumulative Event Rates of All-Cause Mortality or Stroke After Transcatheter Aortic Valve Replacement in Patients with Bicuspid and Tricuspid Aortic Stenosis

Cumulative event rates of all-cause mortality or stroke in (A) unadjusted cohort, (B) propensity-matched cohort, (C) propensity-matched cohort only including patients with CMS-linkage, and (D) propensity-matched cohort only including patients who had CMS-linkage and completed 1-year endpoint.
AS indicates aortic valve stenosis.

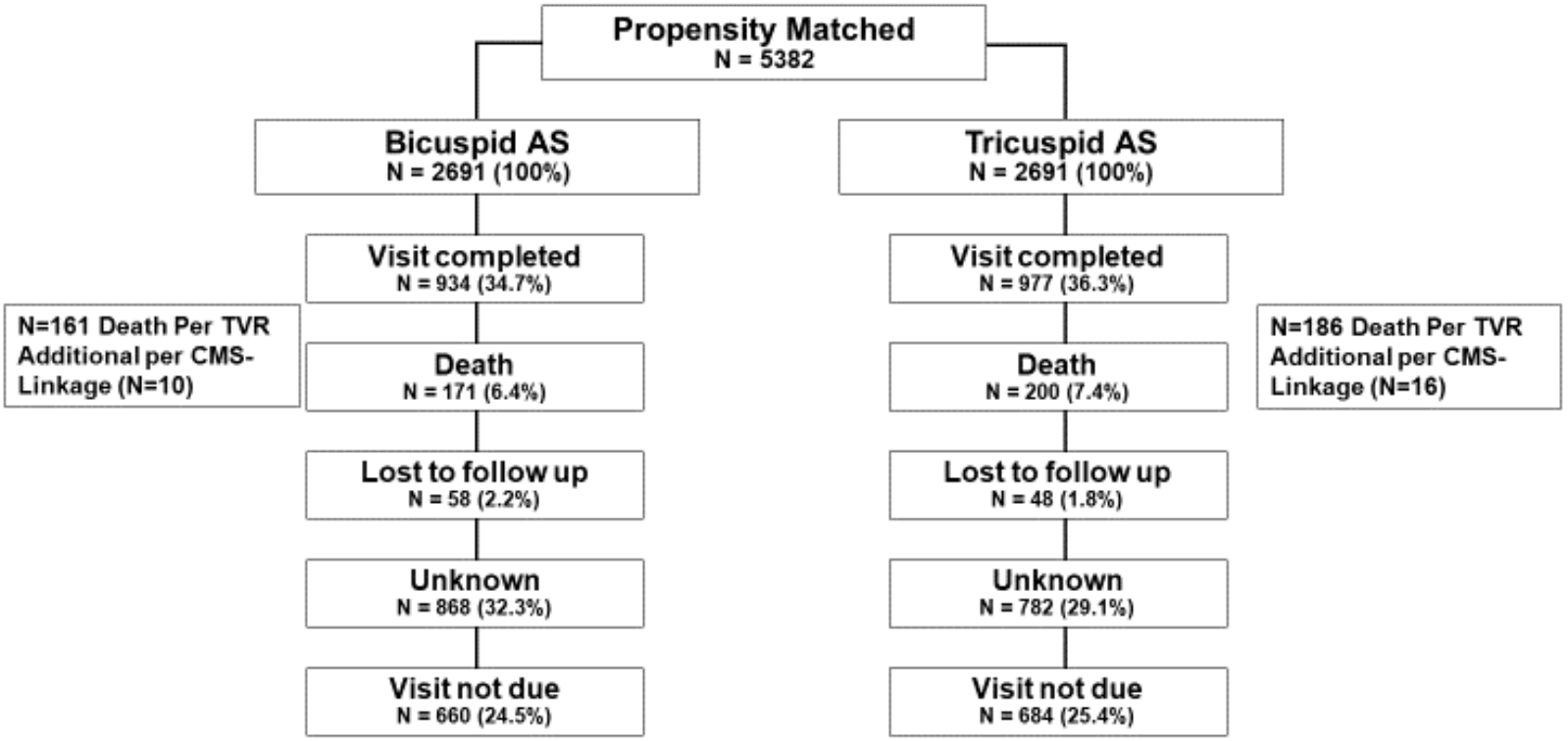
eFigure 3. Cumulative Event Rates of All-Cause Mortality or Stroke Among Patients with Bicuspid and Tricuspid Aortic Stenosis in Propensity-Matched Cohort with CMS-Linkage

Cumulative event rates of all-cause mortality (A) and stroke (B) in propensity-matched cohort only including patients who had CMS-linkage. Cumulative event rates of all-cause mortality (C) and stroke (D) in propensity-matched cohort only including patients who had CMS-linkage and completed 1-year endpoint. The reported *P* values were obtained from Cox proportional hazards

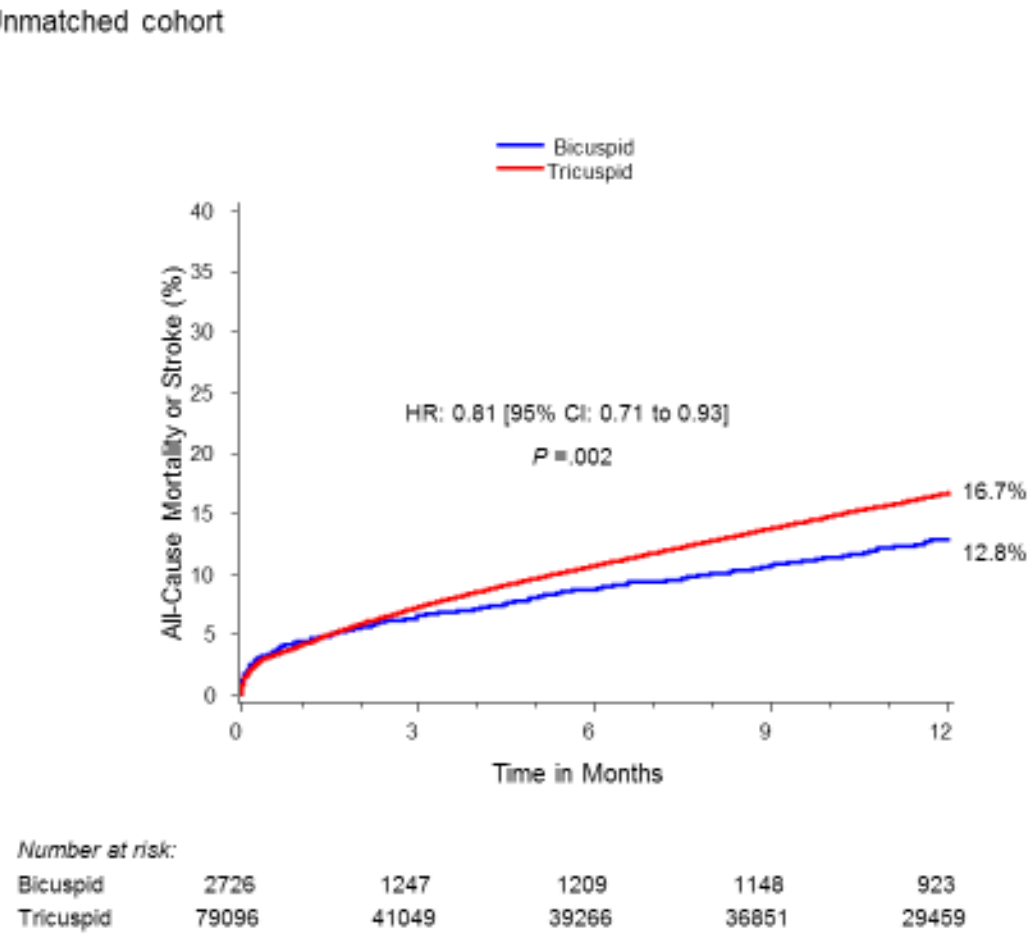
models. The median (interquartile range) follow-up for bicuspid and tricuspid AS group were as following: 365 days (365-365 days) and 365 days (359-365 days) in propensity-matched cohort with CMS linkage, respectively; both 365 days (365-365 days) in propensity-matched cohort with CMS linkage and 1-year end-point.

AS indicates aortic valve stenosis.

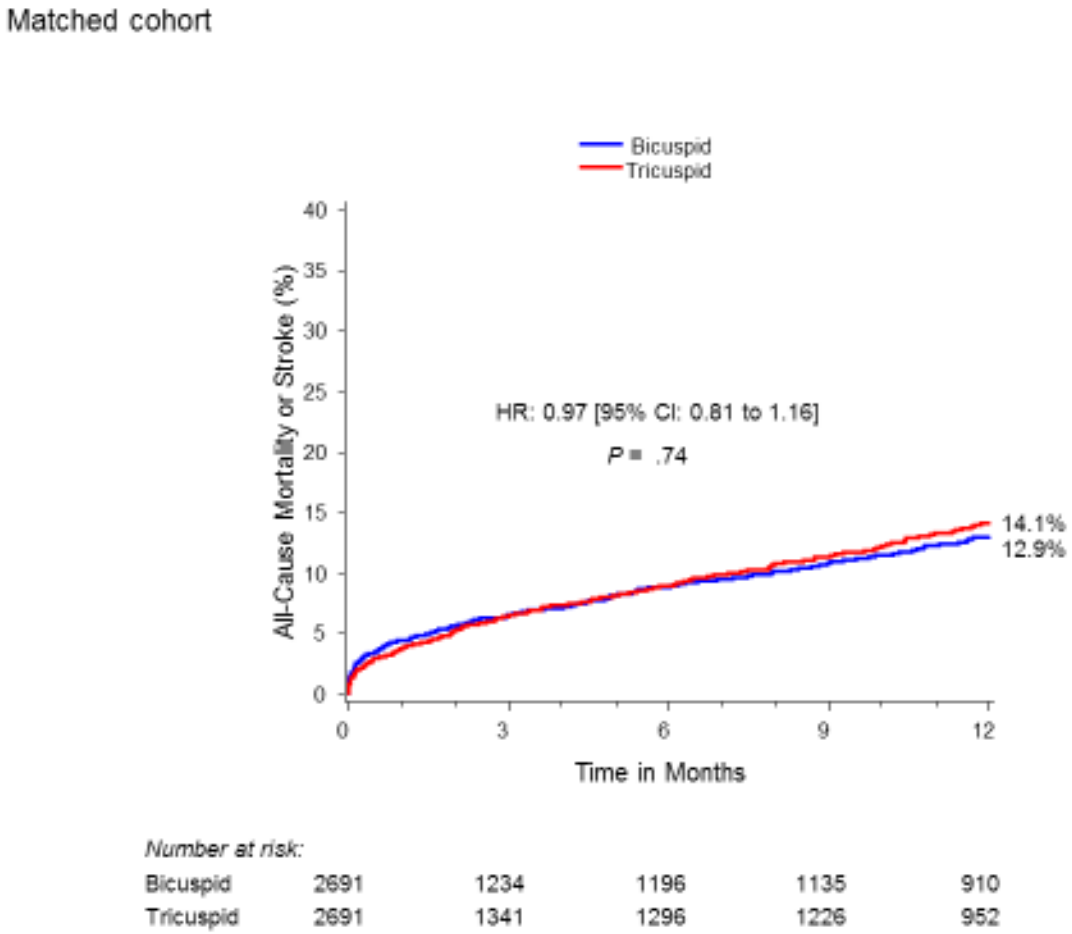
eFigure 1.



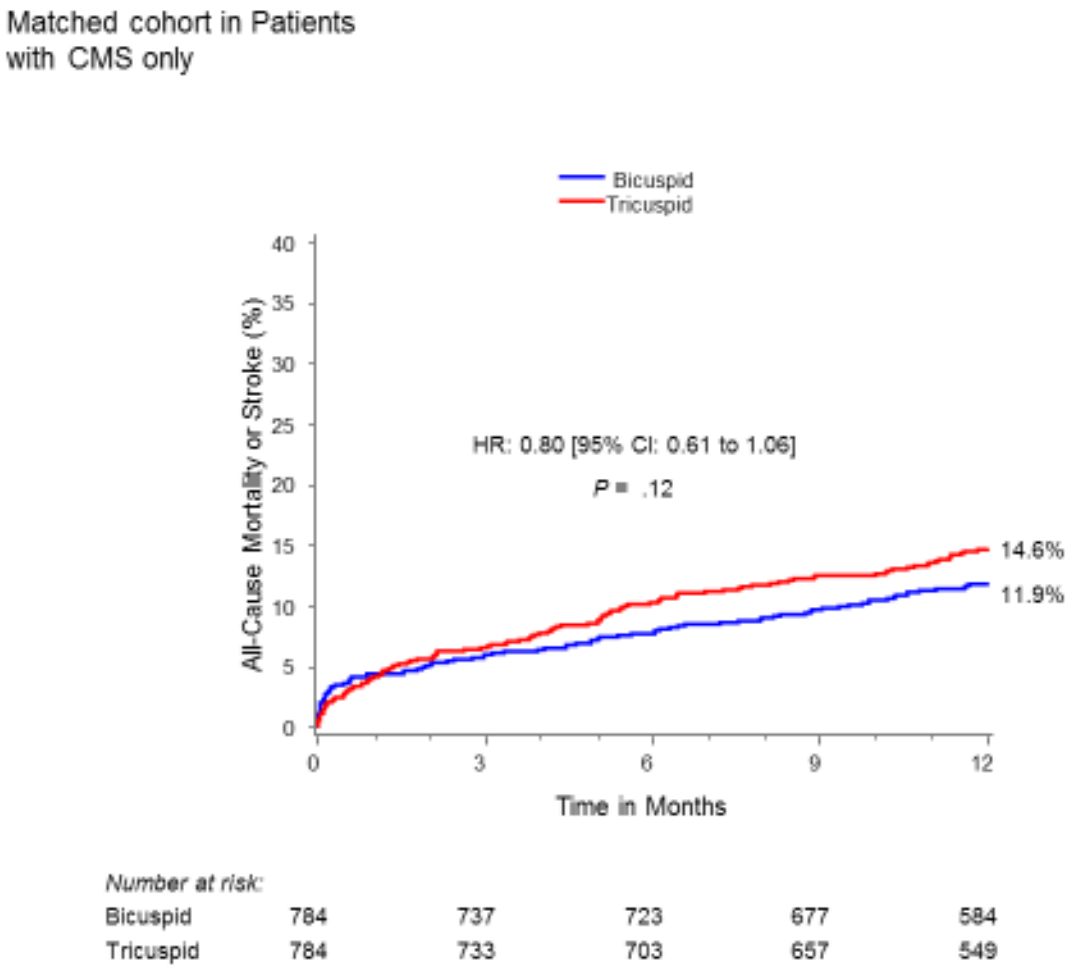
eFigure 2A.



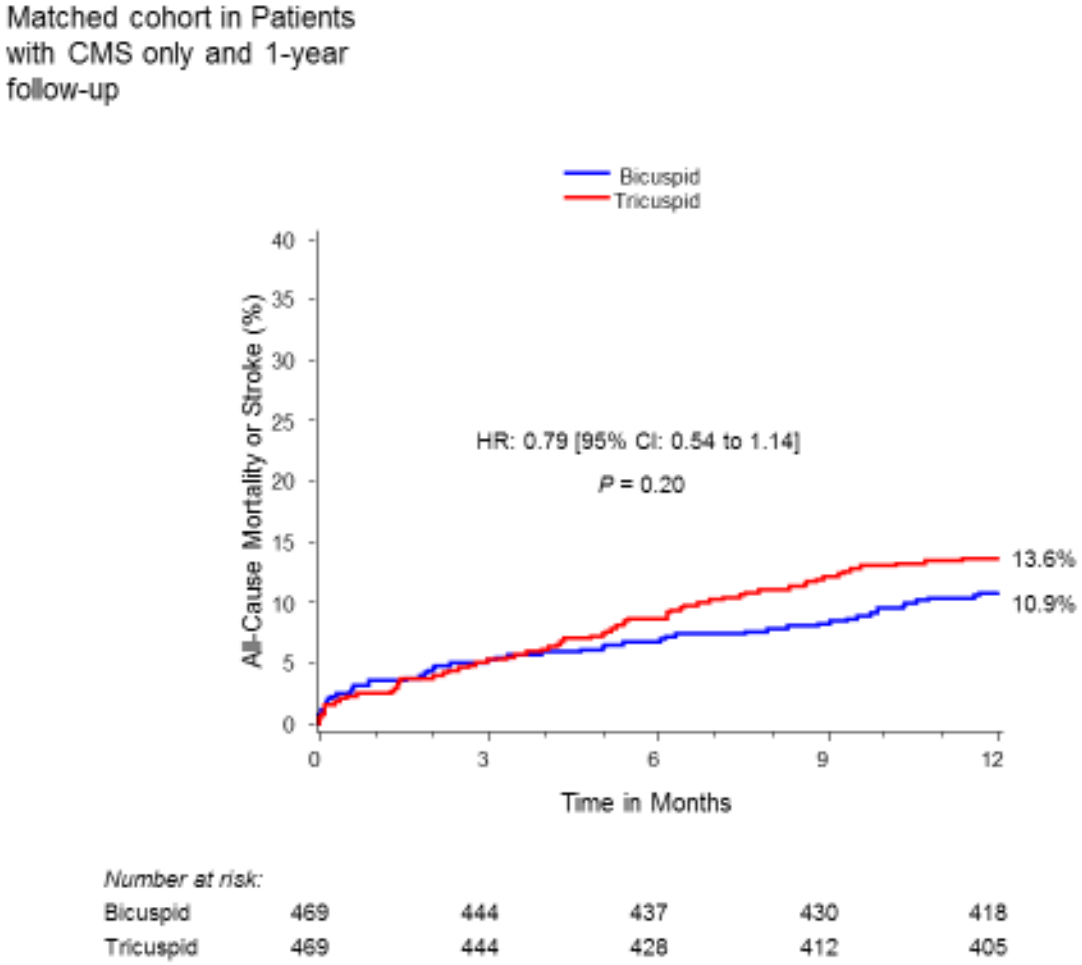
eFigure 2B.



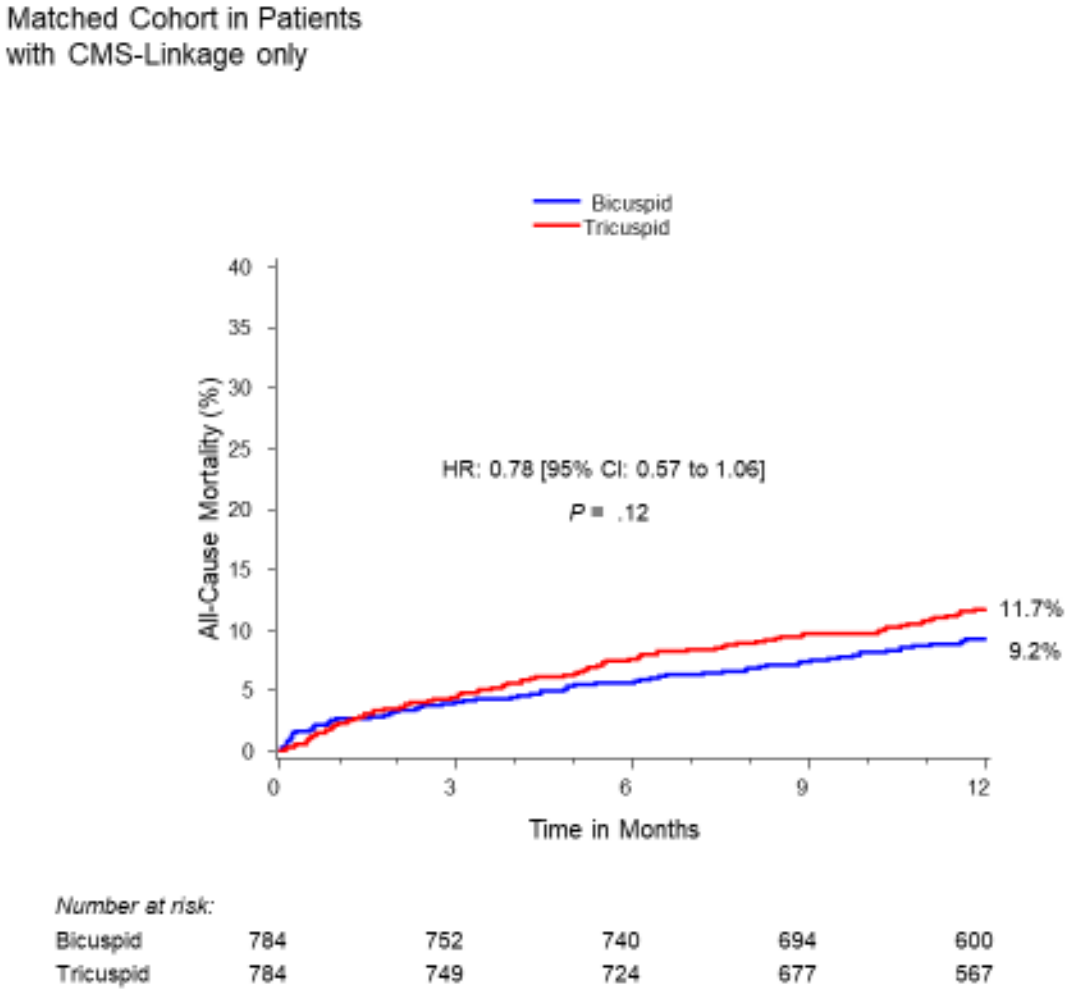
eFigure 2C.



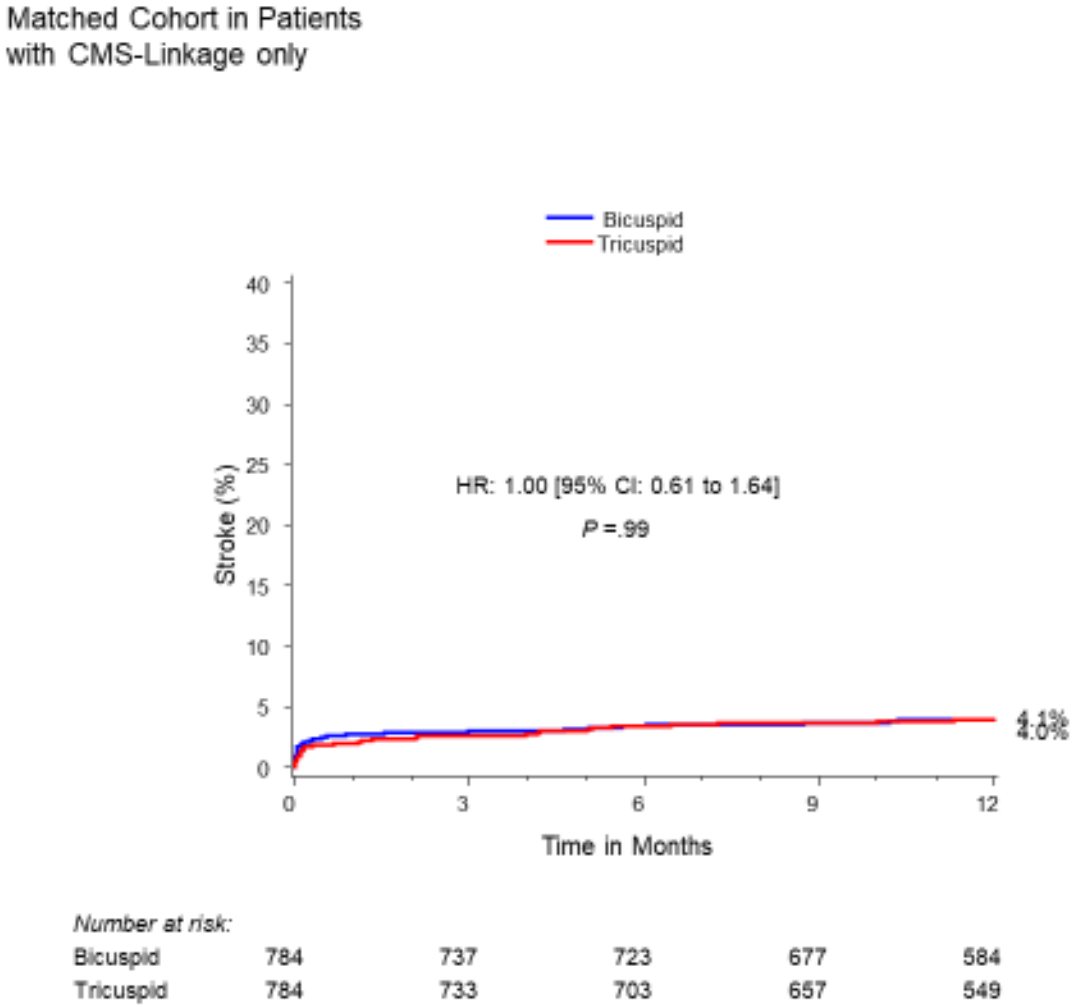
eFigure 2D.



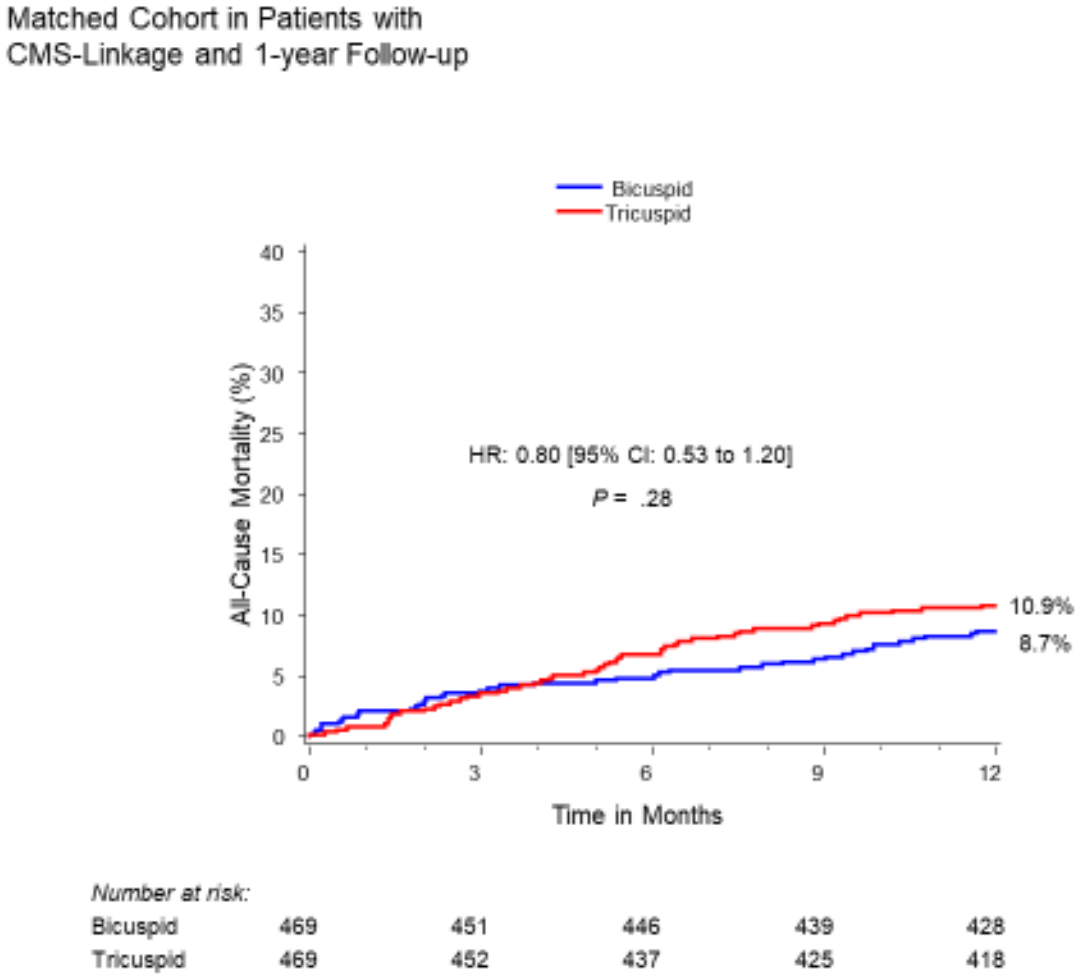
eFigure 3A.



eFigure 3B.



eFigure 3C.



eFigure 3D.