

# Risk Factors for Complications after Total Knee Arthroplasty in the California Joint Replacement Registry

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## Introduction

- Comparison of outcomes after total knee arthroplasty (TKA) depends on an accurate risk adjustment model that accounts for patient comorbidities
- This study aims to identify independent risk factors for complication after TKA using data from the California Joint Replacement Registry (CJRR)

## Methods

- 7,873 primary TKA procedures were performed in 26 hospitals in the CJRR between 2011-2015.
- 90 day complications were identified by ICD-9 codes, and a multivariable logistic risk model for postoperative complication was used to identify independent risk factors as measured by odds ratio (OR).

## Complications

Postoperative Arrhythmia	Acute Renal Failure
Congestive Heart Failure	Myocardial Infarction
Fracture	Dislocation
Wound Infection	Deep Venous Thrombosis
Pulmonary Embolus	Excessive Bleeding
Nerve Injury	Death

## Patient Risk Factors

Age	Gender
Race	Bilateral Procedures
American Society of Anesthesiologists Class	Diabetes
History of Myocardial Infarction (MI)	Coronary Artery Disease
Congestive Heart Failure (CHF)	Peripheral Artery Disease
Chronic Lung Disease	History of Venous Thromboembolism

- The c statistic of the model was 0.646 and chi-squared value was 12.25.
- Hosmer and Lemeshow Goodness of Fit Test was calculated to determine the ability of the risk model to predict complications.

## Results

Patient Risk Factors Evaluated	Description	Odds Ratio (OR)	OR: 95% Confidence Limits	P value
Age	For each additional year	1.03	1.02 1.04	<.0001
Gender	Male vs. Female	1.03	0.86 1.23	0.746
Race	White vs. Other	0.91	0.76 1.09	0.309
Bilateral Procedures	Bilateral vs. Unilateral	0.77	0.56 1.06	0.106
ASA Class	3 or 4 vs. 1 or 2	1.40	1.15 1.70	0.001
Diabetes	Yes vs. No	1.29	0.99 1.69	0.061
History of Myocardial Infarction	Yes vs. No	1.56	0.95 2.57	0.079
Coronary Artery Disease	Yes vs. No	1.06	0.76 1.49	0.723
Congestive Heart Failure	Yes vs. No	5.33	3.61 7.85	<.0001
Peripheral Artery Disease	Yes vs. No	2.01	1.27 3.18	0.003
Chronic Lung Disease	Yes vs. No	1.39	1.07 1.81	0.015
History of Venous Thromboembolism	Yes vs. No	2.11	1.41 3.15	0.000

- Overall observed 90 day complication rate was 7.41%
- Range of observed complication rates was 0.00% to 15.07%
- No significant correlation between gender, race, bilateral procedures, diabetes, history of myocardial infarction, and coronary artery disease

## Conclusion

- Age, American Society of Anesthesiologists class of 3 or 4, congestive heart failure, peripheral artery disease, chronic lung disease, and history of venous thromboembolism are independent risk factors for complication after TKA in the CJRR

## References

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## Disclosures

- James Huddleston – Chair of CJRR
- Kevin Bozic – Founder of CJRR