COPYRIGHT © BY THE JOURNAL OF BONE AND JOINT SURGERY, INCORPORATED

http://dx.doi.org/10.2106/JBJS.17.00798

Appendix

TABLE E-1 Variables Inserted Into the Logistic Regression Model

	Reoperation		Surgical Site Infection		Periprosthetic Joint Infection		Mortality	
	OR (95% CI)	P Value	OR (95% CI)	P Value	OR (95% CI)	P Value	OR (95% CI)	P Value
Age	0.99 (0.98-1.00)	0.318	0.991 (0.98-1.005)	0.220	0.980 (0.96-0.99)	0.021	1.061 (1.02-1.12)	0.007
Male sex	1.34 (1.03-1.76)	0.031	1.541 (1.13-2.11)	0.007	1.674 (1.12-2.49)	0.011	2.083 (0.95-4.35)	0.057
BMI	1.029 (1.00-1.05)	0.006	1.037 (1.01-1.06)	0.002	1.029 (1.00-1.06)	0.052	1.029 (0.97-1.10)	0.364
Total Elixhauser comorbidity index	1.015 (0.92-1.12)	0.777	1.074 (0.95-1.20)	0.221	1.197 (1.04-1.37)	0.011	1.545 (1.08-1.77)	<0.001
Year of surgery	1.051 (1.02-1.08)	0.002	1.040 (1.002-1.08)	0.041	1.022 (0.97-1.07)	0.374	0.927 (0.85-1.03)	0.117
Treatment during hospitalization								
Steroids	0.853 (0.50-1.45)	0.558	1.224 (0.72-2.08)	0.455	1.308 (0.69-2.46)	0.407	3.984 (0.65-9.61)	0.149
Insulin	1.163 (0.81-1.66)	0.410	1.279 (0.86-1.91)	0.230	1.092 (0.66-1.81)	0.734	1.852 (0.80-4.27)	0.109
Mean glucose level throughout hospitalization	0.998 (0.99-1.003)	0.378	0.998 (0.99-1.004)	0.521	0.999 (0.99-1.006)	0.801	1.007 (0.99-1.02)	0.075
Coefficient of variation*	1.008 (0.99-1.02)	0.226	1.013 (1.00-1.03)	0.058	1.018 (1.002-1.035)	0.030	1.023 (0.99-1.04)	0.072

*For each 1% increase in the coefficient of variation.

COPYRIGHT © BY THE JOURNAL OF BONE AND JOINT SURGERY, INCORPORATED

http://dx.doi.org/10.2106/JBJS.17.00798

TABLE E-2 Review of Studies Assessing Association Between Perioperative Hyperglycemia and Postoperative Infection (Superficial and Deep)*

Study	Sample Size	Procedure	Glycemic Control	Outcome	Key Results	Comment
Mraovic et al.[4], 2011	101 cases, 1,847 controls	Primary THA/TKA	Periop. glucose levels	All patients had PJI	1. Patients with PJI had higher periop. glucose levels: 112 ± 36 versus 105 ± 31 mg/dL (p = 0.043). 2. In patients without DM, but not in those with DM, high FPG on POD1 associated with increased risk of PJI. 3. PJI rates increased if glucose level >200 mg/dL on POD1 (p < 0.001)	No adjustments for confounders
Hwang et al.[23], 2015	714	TKA (not specified if primary/revision)	Preop. glucose levels	SSI (superficial and deep)	FPG ≥200 mg/dL associated with superficial infection (p = 0.038)	Adjusted for age, sex, BMI, transfusions. No cases of PJI; only 10 cases of superficial infection
Stryker et al.[26], 2013	30 cases, 30 controls	Primary TKA (22), THA (7), shoulder arthroplasty (1)	Postop. glucose levels	All cases had 30-day wound complications (including superficial infection)	Increased risk for wound complications for those with postop. FPG >200 mg/dL (p = 0.02)	Small sample size. Only 30 days follow-up. No PJI cases
Reátegui et al.[27], 2015	833	Primary TKA	Periop. hyperglycemia (≥126 mg/dL)	Infections (joint and non-joint-related)	1. Significant association between postop. hyperglycemia and overall infection (p < 0.006). 2. No association between intraop. or preop. hyperglycemia and infection	No adjustments for confounders. Did not assess SSI separately from infections not related to joint
Chrastil et al.[1], 2015	13,272	Primary THA/TKA	Preop. (−7 to 0 days) and postop. (0 to 7 days) hyperglycemia	PJI	1. Max. preop. glucose levels correlated with increased risk of PJI with an optimal cutoff of ≥194 mg/dL (p = 0.008). 2. Modest correlation of PJI with postop. max. glucose level (p = 0.03) and with average periop. glucose level (p = 0.02)	Adjusted for age, sex, BMI, joint arthroplasty, DM complications, smoking
Jämsen et al.[2], 2010	1,565	Primary TKA	Preop. glucose levels	PJI	1. PJI rates associated with preop. glucose levels stratified as <110, 110-125, and ≥126 mg/dL. 2. No longer reached significance when ASA score or	Adjusted for age, sex, ASA score, BMI. 15 PJI cases. Authors unable to differentiate known diabetics from those

http://dx.doi.org/10.2106/JBJS.17.00798

					BMI added to age and sex in adjusted model	whose diabetes remained undiagnosed
Maradit Kremers et al.[3], 2015	9,129	Primary/revision TKA/THA	Median periop. glucose level (hyperglycemia >180 mg/dL)	PJI	Higher risk of PJI among patients with periop. hyperglycemia (HR = 1.59, 95% CI = 1.07-2.35), but effects attenuated and not significant after adjusting for covariates	Adjusted for age, sex, BMI, type of surgery, ASA score, op. time. 368 SSI cases, 192 of them PJI
Jämsen et al.[5], 2012	7,181	Primary TKA/THA	Preop. glucose levels	PJI	1. Preop. glucose levels not associated with PJI in entire cohort (p = 0.07). 2. Patients without DM had trend toward higher PJI rates with preop. glucose level of ≥124 mg/dL (OR = 3.3; 95% CI = 0.96-11.0)	Adjusted for age, sex, ASA score, arthroplasty site, BMI, diabetic status. 52 PJI cases.

*THA = total hip arthroplasty, TKA = total knee arthroplasty, PJI = periprosthetic joint infection, DM = diabetes mellitus, FPG = fasting plasma glucose level, POD = postoperative day, SSI = surgical site infection, BMI = body mass index, ASA = American Society of Anesthesiologists, CI = confidence interval, HR = hazard ratio, and OR = odds ratio.