

**SUPPLEMENTARY DATA**

**Table 1 of the supplementary data**

Infective endocarditis ICD-10-CM codes

<b>ICD-10 codes</b>	<b>ICD-10-CM definition</b>
B37.6	Candida endocarditis
I33.0	Acute and subacute infective endocarditis
I38	Endocarditis, valve unspecified
I39	Endocarditis and heart valve disorders in diseases classified elsewhere
I33.9	Acute and subacute endocarditis, unspecified

ICD-10-CM, International Classification of Diseases, 10th Revision, Clinical Modification.

**Table 2 of the supplementary data**

ICD-10 codes used for identifying comorbidities, in-hospital complications, procedures, and microbiological information

<b>Variable</b>	<b>Description/ICD-10 codes</b>
<b>Comorbidities</b>	
Age < 65	Mean age minus 65 (years above 65, continuous)
Male sex	Male (%)
Cancer	Metastatic cancer and acute leukemia (CC 8), lung and other severe cancers (CC 9)
Diabetes mellitus	Diabetes with acute complications (CC 17), diabetes with chronic complications (CC 18), diabetes without complications (CC 19), diabetic and other vascular retinopathies (CC 123)
Protein-calorie malnutrition	CC 21
Chronic renal failure	Chronic kidney disease, stage 5 (CC 136), chronic kidney disease, severe (stage 4) (CC 137), chronic kidney disease, moderate (stage 3) (CC 138), chronic kidney disease, mild or unspecified (stages 1-2 or unspecified) (CC 139), unspecified renal failure (CC 140)
Intravenous drug use	F11.1, F11.2, F11.9
Cardiac implantable electronic device infection	T82.7
Presence of a prosthetic heart valve/ Infection of a cardiac valve prosthesis	T82.6XXA; Z95.2; Z95.3; Z95.4
Cardiac rheumatic disease	I05; I06; I07; I08
Valvular heart disease, including rheumatic valve disease	I05; I06; I07; I08; I34; I35; I36; I37
<b>Complications</b>	
Cardiogenic shock	R57.0
Cardio-respiratory failure	Cardio-respiratory failure and shock (CC 84), plus ICD-10-CM codes R09.01 and R09.02 within 12 months prior to index (any diagnosis position), except R57.0
Congestive heart failure	CC 85
Stroke	Cerebral hemorrhage (CC 99), ischemic or unspecified stroke (CC 100)
Acute renal failure	CC 135
Arterial embolism	H34.9; I26.90; I65.1; I63.22; I65.29; I65.09; I63.019; I63.119; I63.219; I65.8; I63.59; I65.8; I63.59; I65.9; I63.20; I66.09; I66.19; I66.29; I66.9; I74.01; I74.09; I74.11; I74.2; I74.3; I74.5; I74.8; I74.9; K55.011; K55.012; K55.019; K55.021; K55.022; K55.029; K55.031; K55.032; K55.039; K55.041; K55.042; K55.049; K55.051; K55.052; K55.059; K55.061; K55.062; K55.069; K55.30; K55.31; K55.32; K55.33; N28.0

Variable	Description/ICD-10 codes
Septic shock	R65.21
<b>Microbiology</b>	
<i>Staphylococcus aureus</i>	B95.61, B95.62
Coagulase-negative staphylococci	B95.7, B95.8
<i>Viridans</i> group streptococci	B95.0, B95.1, B95.4, B95.5
Enterococci	B95.2
<i>Streptococcus pneumoniae</i>	B95.3
<i>Candida</i> spp	B37.6
Gram-negative bacilli ( <i>Escherichia coli</i> , <i>Haemophilus influenzae</i> , <i>Klebsiella pneumoniae</i> , <i>Pseudomonas</i> , other gram-negative infectious agents)	B96.20, B96.21, B96.22, B96.23, B96.29, B96.3, B96.1, B96.5
Anaerobes ( <i>Bacteroides fragilis</i> , <i>Clostridium perfringens</i> , other anaerobic bacteria)	B96.6, B96.7
Other	B95- o B96- not included in previous codes
Unknown	Infective endocarditis without identification of the infectious agent
<b>Treatment</b>	
Cardiac valve surgery	024F07J; 024F08J; 024F0JJ; 024F0KJ; 02BF0ZX; 02BF0ZZ; 02CF0ZZ; 02NF0ZZ; 02QF0ZJ; 02QF0ZZ; 02RF07Z; 02RF08Z; 02RF0JZ; 02RF0KZ; 02UF07J; 02UF07Z; 02UF08J; 02UF08Z; 02UF0JJ; 02UF0JZ; 02UF0KJ; 02UF0KZ; 02WF07Z; 02WF08Z; 02WF0JZ; 02WF0KZ; X2RF032; 024G072; 024G082; 024G0J2; 024G0K2; 02BG0ZX; 02BG0ZZ; 02CG0ZZ; 02NG0ZZ; 02QG0ZE; 02QG0ZZ; 02RG07Z; 02RG08Z; 02RG0JZ; 02RG0KZ; 02UG07E; 02UG07Z; 02UG08E; 02UG08Z; 02UG0JE; 02UG0JZ; 02UG0KE; 02UG0KZ; 02VG0ZZ; 02WG07Z; 02WG08Z; 02WG0JZ; 02WG0KZ; 024J072; 024J082; 024J0J2; 024J0K2; 02BJ0ZX; 02BJ0ZZ; 02CJ0ZZ; 02NJ0ZZ; 02QJ0ZG; 02QJ0ZZ; 02RJ07Z; 02RJ08Z; 02RJ0JZ; 02RJ0KZ; 02UJ07G; 02UJ07Z; 02UJ08G; 02UJ08Z; 02UJ0JG; 02UJ0JZ; 02UJ0KG; 02UJ0KZ; 02WJ07Z; 02WJ08Z; 02WJ0JZ; 02WJ0KZ; 02BH0ZX; 02BH0ZZ; 02CH0ZZ; 02NH0ZZ; 02QH0ZZ; 02RH07Z; 02RH08Z; 02RH0JZ; 02RH0KZ; 02TH0ZZ; 02UH07Z; 02UH08Z; 02UH0JZ; 02UH0KZ; 02WH07Z; 02WH08Z; 02WH0JZ; 02WH0KZ

CC, condition categories; ICD-10, International Classification of Diseases, 10th Revision.

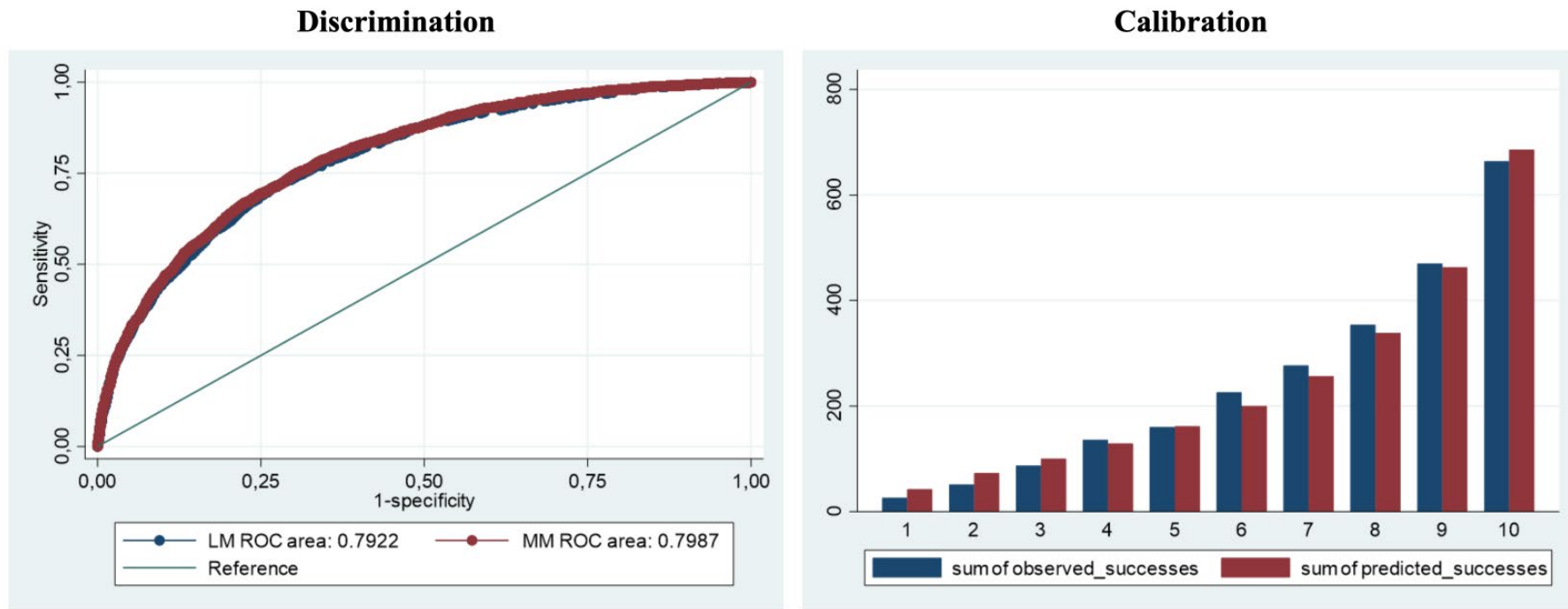
**Table 3 of the supplementary data**

Baseline characteristics of the matched cohorts for cardiac surgery

	<b>Surgery</b>	<b>No surgery</b>	<b>SDM</b>
Age <65	54.4	55.1	-0.012
Sex (Female/Male)	73.5	74.0	-0.010
Metastatic cancer, acute leukemia, and other severe cancers (CC 8-9)	1.1	1.0	0.010
Chronic renal failure (CC 136-140)	13.3	13.1	0.006
Cardiac implantable electronic devices infection	7.7	8.1	-0.015
Cardiogenic shock (R57.0)	5.2	6.1	-0.040
Cardio-respiratory failure (CC 84), except R57.0	25.9	24.7	0.026
Congestive heart failure (CC 85)	41.3	42.0	-0.013
Stroke (CC 99-100)	6.1	5.6	0.021
Acute renal failure (CC 135)	28.4	28.6	-0.004
Septic shock	9.7	9.3	0.013
Enterococci	15.2	14.5	0.019
<i>Staphylococcus aureus</i>	16.5	16.2	0.008
<i>Viridans</i> group streptococci	25.6	24.8	0.017
<i>Candida</i>	0.9	0.8	0.011

CC, condition categories; SDM, standardized difference in means.

**Figure 1 of the supplementary data.** Assessment of discrimination and calibration for the multilevel logistic regression model



LM ROC, area under the ROC curve for the logistic regression model; MM ROC, area under the ROC curve for the multilevel regression model.

**Figure 2 of the supplementary data.** Kernel Density plots representing the pre- and post- matching. Patients were matched based on the variables depicted in table 3 of the supplementary data

