

Appendix 7: Variables for Risk Adjustment

Variables for risk adjustment of heart failure mortality are presented with the source of data shown in the columns on the right. Variables may be obtained from administrative data, clinical chart abstraction or both.

VARIABLES FOR CHF MORTALITY-RISK ADJUSTMENT	ADMIN DATA	CHART DATA
DEMOGRAPHIC		
Age	X	X
Sex	X	X
MEDICAL HISTORY (General)		
Charlson non-cardiac comorbidity elements:	X	X
Peripheral vascular disease	X	X
Cerebrovascular disease	X	X
Dementia	X	X
Chronic pulmonary disease	X	X
Rheumatologic	X	X
Peptic ulcer disease	X	X
Mild liver disease	X	X
Moderate or severe liver disease	X	X
Diabetes	X	X
Diabetes with chronic complications	X	X
Hemiplegia or paraplegia	X	X
Renal disease ^{SS}	X	X
Malignancy (including leukemia and lymphoma)	X	X
Metastatic solid tumor	X	X
AIDS	X	X
Cigarette smoking history (current)		X
Alcohol abuse or alcoholism (documented in history or chart)		X
Resuscitation status: DNR		X
Frailty (Definition: limitation in mobility, incontinence, "frail")		X
Nursing home resident	X	X
MEDICAL HISTORY (Cardiac)		
NYHA class (Baseline symptom status: I, II-III, IV)		X
Recent syncope (documented within past year)	X	X
Recent unstable angina (within prior 30 days)	X	X
Recent MI (within prior 30 days)	X	X
Any prior MI		X
Prior cardiac surgery (CABG or valve surgery)	X	X
Prior percutaneous coronary intervention (PCI)	X	X
Etiology (prior history or CAD, MI or angina: ischemic vs nonischemic)		X
Hypertension		X

VARIABLES FOR CHF MORTALITY-RISK ADJUSTMENT	ADMIN DATA	CHART DATA
CLINICAL PRESENTATION		
Pulmonary edema		X
Peripheral edema		X
S3 on auscultation		
Height		X
Weight		X
VITAL SIGNS		X
Tachycardia at presentation (>100/min)		X
Hypotension at presentation (SBP < 100mmHg)		X
Respiratory rate (<30 vs >30/min)		X
LABORATORY INVESTIGATIONS AT PRESENTATION		X
Hyponatremia (<135 vs. >135 mmol/L)		X
Hypokalemia		X
Renal insufficiency ^{§§} Definition: Creatinine > 265 µmol/L		X
Abnormal elevation of liver enzymes		X
Hypoalbuminemia		X
Troponin I		X
BNP (brain natriuretic peptide)		X
Serum urate		X
Anemia		X
Total cholesterol		X
Serum glucose		X
Hemoglobin A1c		X
CARDIAC PROCEDURES		
Left ventricular function assessment available in chart		X
Left ventricular ejection fraction or grade		X

^{§§}Echocardiography, radionuclide angiography or cardiac catheterization