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| Table J-44. Surgical studies evaluating independent predictive value of NT-proBNP for the outcome of mortality |
| **Author****Year** | **Study Design****Population** | **n****Mean Age (SD)****%male** | **BNP Levels (pg/ml)** | **Prognostic Markers** | **Followup****Outcomes****(#events, #risk)** | **Model** | **Adjusted/Non-adjusted****Covariates** | **Measure(s) of Risk****(95% CI,)** |
| Assmus,1902007Multi-subs: TOPCARE-CHD, crossover trials and ongoing registry | CohortPatients with chronic ischemic heart disease, MI≥3 months | n=121mean age: 62(10)y87% male | ADM mean: 42-55,456\*\*\*D/C mean: NRCutpoint: NR | NT-proBNP baseline (log), age\*, systolic BP\*, diabetes\*, creatinine, NYHA\*, MR\*, LVEF\*, baseline NT-proANP\* | 577(422) daysMortality (14,121) | multivariate cox regression, stepwise linear regression with a forward entry-stepping algorithm  | age, systolic BP, diabetes, creatinine, NYHA, MR, LVEF, baseline NT-proANP | HR=7.2 (2.4-22.2) |
| Berger,1912009CARE-HF | RCTPatients with LVEF 35%, a QRS duration 150 ms or QRS ranging from 120 to 149 ms in addition to echocardiographic criteria for dyssynchrony, and NYHA III or IV despite optimized medical therapy. | n=813 (CRT=409,404 Medical therapy)mean age:NR% male: NR | ADM mean: 1,814\*\*(IQR 152-180)D/C mean: Taken at 3 months but levels not reportedCutpoint: 1,814\*\*(IQR 152-180) | log NT-pro-BNP, updated from baseline to 3 months values, CRT, age, sex, baseline clinical (etiology, NYHA functional class, heart rate, supine systolic BP, glomerular filtration rate), ECG (QRS duration), and echocardiographic characteristics (EF, MR area, end-systolic volume index, inter-ventricular mechanical delay), baseline medical therapy (use of an angiotensin converting enzyme-inhibitor or an angiotensin receptor blocker, use of a BB) | 37.6\*\*months (IQR 31.5-42.5)All-cause mortality (228,813) | Cox proportional hazards model | CRT, age, sex, baseline clinical (etiology, NYHA functional class, heart rate, supine systolic BP, glomerular filtration rate), ECG (QRS duration), and echocardiographic characteristics (EF, MR area, end-systolic volume index, inter-ventricular mechanical delay), baseline medical therapy (use of an angiotensin converting enzyme-inhibitor or an angiotensin receptor blocker, use of a BB) | HR=1.56 (1.34-1.82) P<0.001 |

| Table J-44. Surgical studies evaluating independent predictive value of NT-proBNP for the outcome of mortality (continued) |
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| **Author****Year** | **Study Design****Population** | **n****Mean Age (SD)****%male** | **BNP Levels (pg/ml)** | **Prognostic Markers** | **Followup****Outcomes****(#events, #risk)** | **Model** | **Adjusted/Non-adjusted****Covariates** | **Measure(s) of Risk****(95% CI,)** |
| Berger,1912009CARE-HF(cont’d) | RCTPatients with LVEF 35%, a QRS duration 150 ms or QRS rangingfrom 120 to 149 ms in addition to echocardiographic criteria for dyssynchrony, and NYHA III or IV despite optimizedmedical therapy. | n=813 (CRT=409,404 Medical therapy)mean age: NR% male: NR | ADM mean: 1814\*\*(IQR 152-180)D/C mean: Taken at 3 months but levels not reportedCutpoint: 1,814\*\*(IQR 152-180) | log NT-pro-BNP, updated from baseline to 3 months values, CRT, age, sex, baseline clinical (etiology, NYHA functional class, heart rate, supine systolic BP, glomerular filtration rate), ECG (QRS duration), and echocardiographic characteristics (EF, MR area, end-systolic volume index, inter-ventricular mechanical delay), baseline medical therapy (use of an angiotensin converting enzyme-inhibitor or an angiotensin receptor blocker, use of a BB) | 37.6\*\*months (IQR31.5-42.5)Pump failure death (91,813) | Cox proportional hazards model | CRT, age, sex, baseline clinical (etiology, NYHA functional class, heart rate, supine systolic BP, glomerular filtration rate), ECG (QRS duration), and echocardiographic characteristics (EF, MR area, end-systolic volume index, inter-ventricular mechanical delay), baseline medical therapy (use of an angiotensin converting enzyme-inhibitor or an angiotensin receptor blocker, use of a BB) | HR=1.92 (1.58-2.34) P<0.001 |
| 37.6\*\*months (IQR31.5-42.5)Sudden death (79,813) | Cox proportional hazards model | CRT, age, sex, baseline clinical (etiology, NYHA functional class, heart rate, supine systolic BP, glomerular filtration rate), ECG (QRS duration), and echocardiographic characteristics (EF, MR area, end-systolic volume index, inter-ventricular mechanical delay), baseline medical therapy (use of an angiotensin converting enzyme-inhibitor or an angiotensin receptor blocker, use of a BB) | HR=1.33 (1.11-1.60) P=0.0025 |
| Cleland,1922008CARE-HF | Case-seriesPatients with moderate or severe symptoms of HF (LVEF <35%) | n=813“CRT grp” n=409mean age: 66.5 (59.5–72.5)y\*\*74.3% male“Control grp” n=404,mean age: 66.2 (59.0–71.7)y\*\*72.5% male | ADM mean: “CRT grp” 1,920 (744–4,288)\*\*, “Control grp” 1,806 (719–3,949)\*\*D/C mean: NRCutpoint: NR | NT-proBNP at 3 months, age\*, LVEF\*, NYHA, ischemic etiology, beta-blockers\*, GFR\*, IVMD, SBP\*, ESVI\*, CRT | 37.6 months\*\*All-cause mortality (255, 813) | multivariable cox proportional hazard regression | age, LVEF, NYHA, ischemic etiology, beta-blockers, GFR, IVMD, SBP, ESVI | HR = 1.615 (1.411–1.848) |

\*median

**Abbreviations:** ADM = admission; D/C = discharge; BB = betablocker; EF = ejection fraction; GFR = glomerular filtration rate; grp = group; IQR = Interquartile range; LV = left ventricular; MR = mitral regurgitation; NYHA = New York Heart Association; QRS = quick release system; SBP = systolic blood pressure; CRT = cardiac resynchronization therapy;