| Table J-23. Studies evaluating independent predictive value of NT-proBNP for the composite outcome of cardiovascular mortality and morbidity - admission and discharge (all time periods) in patients with decompensated heart failure | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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,)** |
| Verdiani67  2008 | Cohort  Patients hospitalized with acutely decompensated HF | n=120  mean age:  77.8yrs (9)  56.6% male | ADM mean: 10,912 (12,239)  D/C mean: 4,701 (4,898)  Cutpoint: change in NT-proBNP 30% | NT-proBNP (reduction %), gender, ischemic etiology of HF, COPD, DM, depression, CRF, HT, creatinine, sodium, Hb, LVEF, NYHA, LOS | 6 months  composite (CV death or readmission)  (52, 120) | multivariable Cox regressions | gender, ischemic etiology of HF, COPD, DM, depression, CRF, HT, creatinine, sodium, Hb, LVEF, NYHA, LOS | Change reduction <30%: HR = 2.04 (1.02 - 4.08), p=0.04 |
| Bayes-Genis54  2006 | Cohort  decompensated HF patients | n=59,  mean age:  60yrs (14)  76.3% male | ADM mean: 7,050 (6,620)  D/C mean: NR  Cutpoint: per 10% reduction in NT-proBNP | NT-proBNP (relative reduction at 2 weeks), clinical score, age, LVEF, NYHA class | 3 months  composite (CV mortality or HF hospitalizations  (23, 59) | multi-variable step-wise cox regression | clinical score, age, LVEF, NYHA class | Change Decrease at 2 weeks: HR= 0.79 (0.70, 0.88), p<0.001 |
| Park58  2010 | Cohort  decompensated HF patients | n=193  mean age:  69yrs(13)  39.3% male | ADM mean:  with events= 6,634.24 (3.85)  no events= 3,327.57 (3.85)  D/C mean: NR  Cutpoint: per log unit | logNT-proBNP, uric acid, Age, CrCl, ACE inhibitors, ARB, Diuretics | 3 months  composite (cardiac mortality or HF re-hospitalizations  (28, 193) | multi-variable cox regression | uric acid, age, CrCl, ACE inhibitors, ARB, Diuretics | Admission: HR= 1.263 (0.897, 1.780), p=0.182 |
| Ho75  2011 | Cohort  patients hospitalized for acute HF | n=87  mean age:  73yrs (14)  79.0% male | ADM mean:  MACE (–)= 2,305 (2,202)  MACE (+)= 5,084 (5,688)  D/C mean: NR  Cutpoint: >1,875 | NT-proBNP, Left atrial volume index, Pulmonary artery systolic pressure, E/E ratio | 191 days\*\*  composite (cardiac mortality or HF re-admission  (34, 87) | multi-variable cox regression | Left atrial volume index, Pulmonary artery systolic pressure, E/E ratio | Admission: HR=3.751 (1.834, 7.767), p,0.0001 |
| Dini60  2010 | Cohort  patients hospitalized for systolic HF | n=127  mean age:  68yrs (12)  73.2% male | ADM mean: 1,578 (624 – 3,283)\*\*  D/C mean: >1,586  Cutpoint: per 10% reduction in NT-proBNP | NT-proBNP, NYHA class, LVEF, Matrix metalloproteinase-9, E wave deceleration time, Matrix metalloproteinase-3, LV end-systolic volume index | 24 months  composite (Cardiac mortality or HF hospitalizations  (58, 127) | multi-variable cox regression | NYHA class, LVEF, Matrix metalloproteinase-9, E wave deceleration time, Matrix metalloproteinase-3, LV end-systolic volume index | Admission: HR=NR, p=NS |

| Table J-23. Studies Evaluating independent predictive value of NT-proBNP for the composite outcome of CV mortality and morbidity - admission and D/C (all time periods) in Patients With decompensated HF (continued) | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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,)** |
| Krackhardt78  2011 | Cohort  patients admitted with decompensated HF secondary to non-ischemic cardiomyopathy | n=155  mean age: NR  % males: NR | ADM mean: 968\*\* pg/mL  D/C mean: NA  Cutpoint: NA | log NT-proBNP, age, gender, NYHA, LVEF, LVEDP, LVEDD, rhythm AF, history of hypertension, diabetes, renal dysfunction | 8.9 years\*\*  cardiac death/urgent cardiac transplantation  (NR) | cox proportional hazards | age, gender, NYHA, LVEF, LVEDP, LVEDD, rhythm AF, history of hypertension, diabetes, renal dysfunction | Admission: HR=2.76 (1.53-4.98) |

**Abbreviations:** ADM = admission; AF = atrial fibrillation; BMI = body mass index; CRP = C-reactive protein; cTnT = cardiac troponin T; D/C = discharge; DD = diastolic dysfunction; DM = diabetes mellitus; E/Em = E wave deceleration time, Em; EF = ejection fraction; ER = emergency room; HF = heart failure; HFSS = Heart Failure Survival Score;HR = HR; hsCRP = high-sensitivity c-reactive protein; IL-6 = interleukin-6; LOS = length of stay; LV = LV; LV = LV; MDRD = Modification of Diet in Renal Disease formula; MI = myocardial infarction; NR=not reported; NT-proBNP = N-terminal pro-B-type natriuretic peptide; NYHA = New York Heart Association; PASP = pulmonary artery systolic pressure; PCWP= Pulmocapillary wedge pressure; SBP = systolic blood pressure; yrs=years