Table K-3. Studies evaluating incremental value of NT-proBNP to predict the outcomes of mortality in patients with decompensated heart failure for all time points

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| **Author, Year,**  **Length of F/U** | **Study Description** | **Peptide Levels (pg/mL)** | **Prognostic Markers** | **Model Descriptions**  **Measure(s) of Risk (95%CI)** | **Discrimination Statistics**  **(C-statistics/C-index)** | **Global Model Fit Statistics✝** | **Calibration Statistics (Hosmer-Lemeshow Statistic)** | **Measure of Risk Reclassification**  **(IDI and NRI)** |
| Pascual-Figal,6  2011  F/U:  739\*\*d | Study design: Cohort  Patients admitted with ADHF  n, Mean Age (SD), % Males:  107, 72yrs(13),56%  Outcomes  (#events, #risk):  Aall-cause mortality (29, 107) | ADM mean: 3,724 (1,954 – 7,666)\*\*  D/C mean: NR  CP: NR | NT, sST2, hsTnT, Age\*, sex\*, BMI\*, Hb\*, NYHA class\*, BUN\*, prior MI\*, creatinine\*, LVEF\* | Model: Bootstrapped multivariable Cox regression  Adjusted/Non-Adjusted Covariates: sST2, hsTnT, age, sex, BMI, Hb, NYHA class, BUN, prior MI, creatinine  HR=1.005 (1.000-1.01) per 100 pg/mL increase | C-index:  BMod=0.845  BMod + NT=0.852 (p=0.656 vs. BMod)  BMod + NT + hsTnT=0.860 (p=0.559 vs. BMod, p=0.767 for model with NT)  BMod + NT + hsTnT + sST2=0.864 (p=0.570 vs. BMod and p=0.383 for model in NT)  BMod + multimarker (0-3, score based on optimal cutpoints from ROC)=0.906 (p=0.022 vs. BMod and p=0.023 vs. model with NT, significant) | NA | p-value:  BMod=0.558,  BMod + NT=0.285  BMod + NT+ hsTnT=0.653  BMod + NT + hsTnT + sST2=0.699  BMod + multimarker (0-3, based on optimal cutpoints from ROC)=0.954 | IDI:  BMod + NT=(2%, p=0.532 vs. BMod), BMod + NT + hsTnT=(8%, p=0.226 vs. BMod; 6%, p=0.322 model with NT), BMod + NT + hsTnT + sST2=(16%, p=0.025 vs. BMod; 13%, p=0.045 NT model),  BMod + multimarker (0-3, based on optimal cutpoints from ROC)=(25%, p=0.004 vs. BMod and 22%, p=0.003 vs. model; NT, significant)  NRI: NA |

| Table K-3. Studies evaluating Incremental value of NT-proBNP to predict the outcomes of mortality in decompensated Heart Failure patients for all time points (continued) | | | | | | | | |
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| **Author, Year,**  **Length of F/U** | **Study Description** | **Peptide Levels (pg/mL)** | **Prognostic Markers** | **Model Descriptions**  **Measure(s) of Risk (95%CI)** | **Discrimination statistics**  **(C-statistics/C-index)** | **Global Model fit statistics✝** | **Calibration Statistics (Hosmer-Lemeshow statistic)** | **Measure of risk reclassification**  **(IDI and NRI)** |
| Harutyunyan,7  2012  F/U:  6.8yrs | Study design: Cohort   Population: Patients with HF and severe LVSD;   n, Mean Age, %Male: 717, 70yrs (NR), 73%  Outcomes (#events, #risk): All-cause mortality (458, 717) | Admission mean:NR   Discharge Mean: NR;   Cutpoint: NR | log2 NT-proBNP, YKL-40, age, sex, and LVEF, Hb, history of HF, IHD, COPD, stroke/TIA, and DM, log2 hs-CRP, eGFR | Model: Multivariate cox regression;  age, sex, and LVEF, Hb, history of HF, IHD, COPD, stroke/TIA, and DM, log2 hs-CRP, eGFR, YKL-40  HR=1.28 (1.15, 1.44) | NA | Base Model with YKL-40, chi-square=196,  Add NT-proBNP to base model with YKL-40, chi-square=214 (p<0.0001) | NA | NA |

✝Likelihood-based measures i.e., log likelihood ratio, likelihood ratio chi-square, Global chi-square, incremental chi-square

\*Insignificant

\*\*Median Values

**Abbreviations:** ADHF = acute decompensated heart failure; ADM = admission; AHF = acute heart failure; BMI = body mass index; BMod = behavior modification; BNP=B-type natriuretic peptide; BP = blood pressure; BUN = blood urea nitrogen; CHFb = congestive heart failure; COPD = chronic obstructive pulmonary disease; CRP = C-reactive protein; CP = cutpoint; D/C = discharge; DM = diabetes mellitus; eGFR = estimated glomerular filtration rate; F/U= followup; GFR = glomerular filtration rate; Hb = hemoglobin; HF = heart failure; HR = hazard ratio; hs-CRP = high-sensitivity c-reactive protein; hsTnT = high-sensitivity cardiac troponin T; IDI = integrated risk improvement; IHD = idiopathic heart disease; IQR = interquartile range; LVEF = left ventricular ejection fraction; LVSD = left ventricular systolic dysfunction; MI = myocardial infarction; mmol/L = milli mol per Liter; NR = not reported; NRI = net reclassification index; NS = not significant; NT = N-Terminal; NT-proBNP = N-terminal pro-B-type natriuretic peptide; NYHA = New York Heart Association; pg/mL = picograms per milliliter; ROC = receiver operating characteristic; SBP = systolic blood pressure; sST2 = ???; TIA = ???; TnT = troponin T; vs. = versus; YKL = human cartilage glycoprotein-39; yrs = years