Direct comparison of the prognostic value of serial BNP and NT-proBNP measurements in patients with heart failure

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Disclosures: none

Background

- BNP and NT-proBNP have different biological activity, half-life, in vitro stability and clearance mechanisms

- B-type NPs are powerful predictors of mortality and CV events in acute and chronic heart failure (HF)

- Patients hospitalized for decompensated HF are frequently readmitted associated with adverse outcome

- B-type NP plasma levels are useful for risk stratification

Maisel A, et al. *Eur J Heart Failure* 2008;10:824-839

Research questions

- Are BNP and NT-proBNP equally strong prognosticators ?

- Change over time provides incremental prognostic information after hospital discharge ?

- Serial testing superior to single measurements ?

Purpose

Direct comparison of the prognostic performance of BNP versus NT-pro-BNP measurements in a large population of HF patients at two points in time:

1. At hospital discharge after an admission for HF
2. At follow-up (6 months): serial measurement and intraindividual change

METHODS

Coordinating study evaluating **O**utcomes of **A**dvising and **C**ounseling in **H**eart failure: NYHA II-IV and structural underlying heart disease

563 subjects, included at hospital discharge after decompensated HF
Stable on standard medication for HF

BNP testing: Triage®, Biosite Inc.
NT-proBNP testing: Elecsys proBNP®, Roche Diagnostics

Primary composite endpoint: HF hospitalization and all-cause mortality

Fixed follow-up: 18 months

Statistical analyses

- Logistic regression models to estimate the size of the effect: odds ratios (OR) with 95% confidence intervals (CI):

    ✓ The prognostic value of BNP and NT-proBNP, and
    ✓ Predictive accuracy: ROC-analyses

- At hospital discharge and after 6 months

Baseline characteristics (n=563)

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Females	217 (39%)
Age (years)	71$\pm$11
NYHA class III or IV	294 (53%)
BMI (kg/m^2)	26$\pm$5
Ischemic etiology	234 (42%)
Previously hospitalized HF	192 (34%)
ACE-I, ARB	463 (82%)
Betablocker	375 (67%)
Hemoglobin (mmol/L)	8.2$\pm$1.3
eGFR (mL/min/1.73m^2)	54$\pm$20

umcg

BNP at discharge and at 6 months in HF patients who reached the primary endpoint (PE+) versus those who remained event free (PE-)
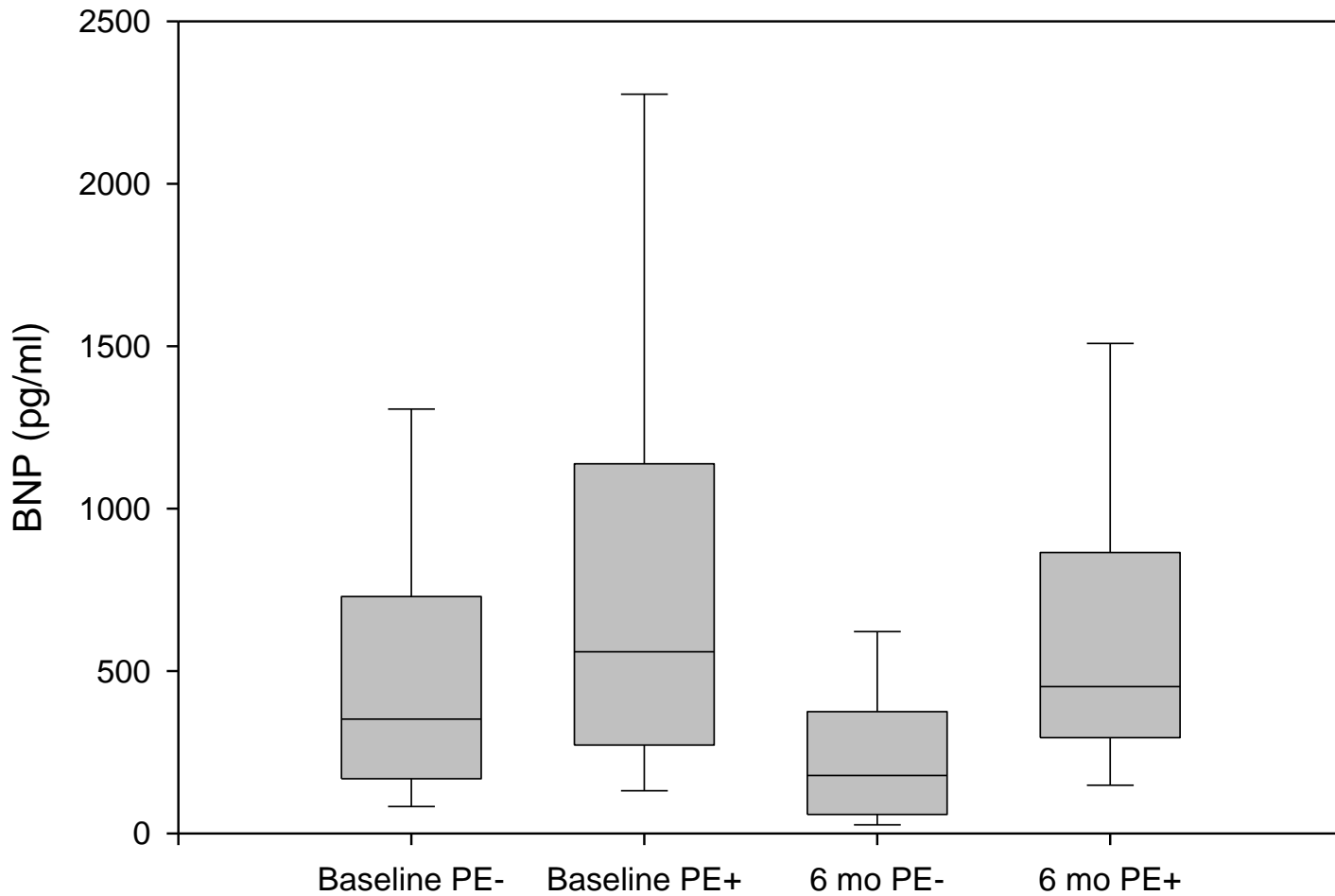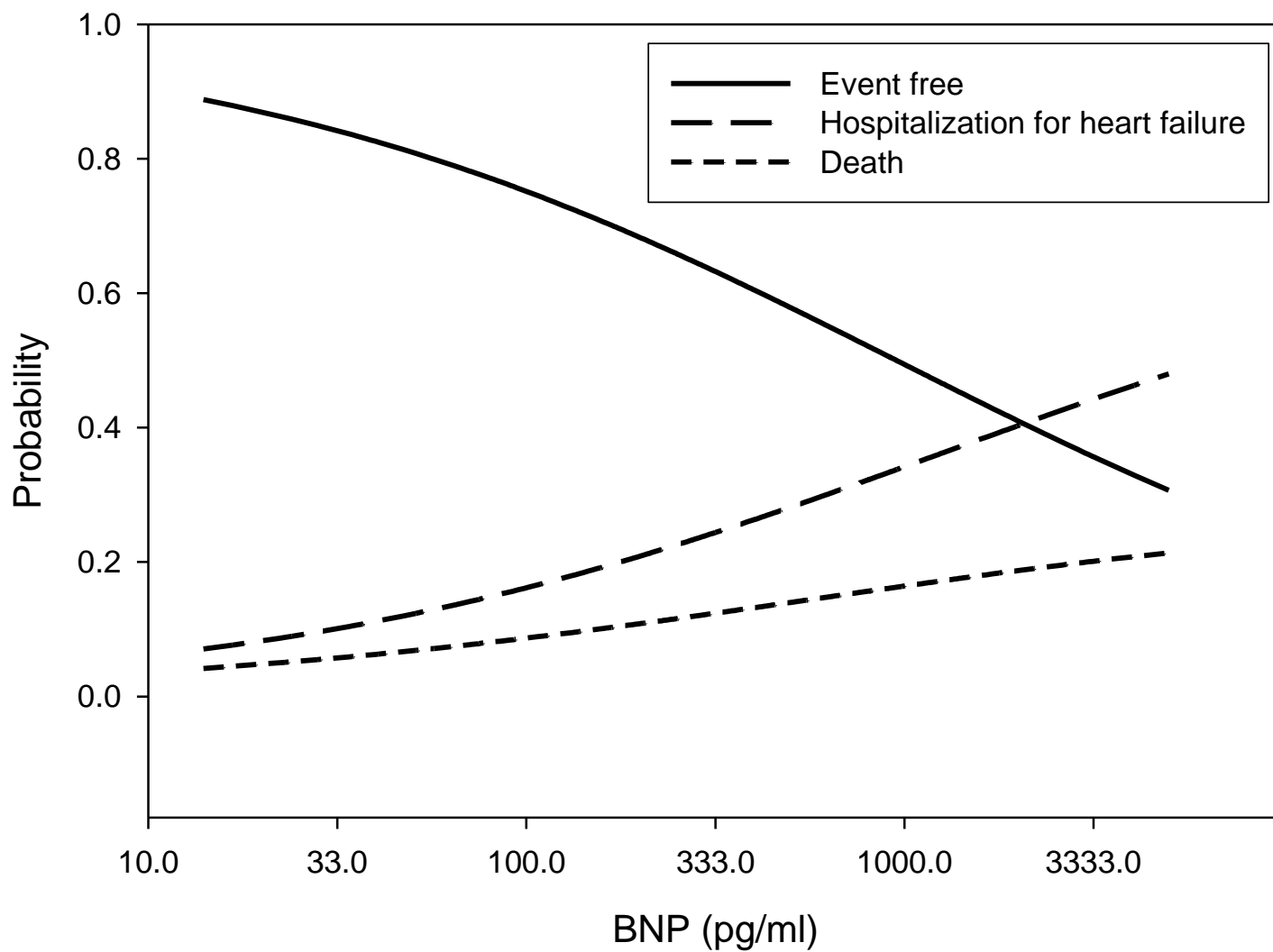
NT-proBNP at discharge and at 6 months in HF patients who reached the primary endpoint (PE+) versus those remained event free (PE-)
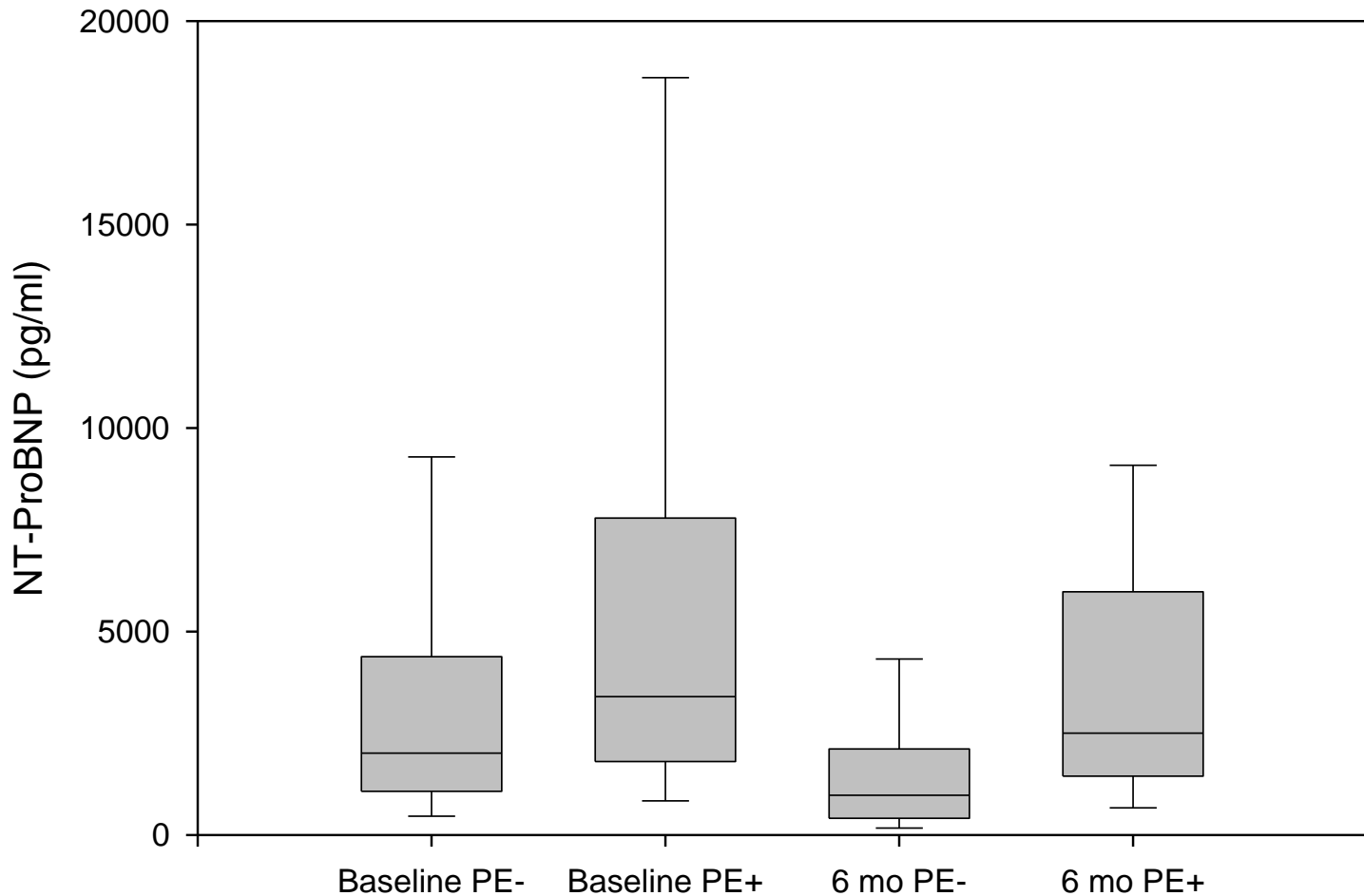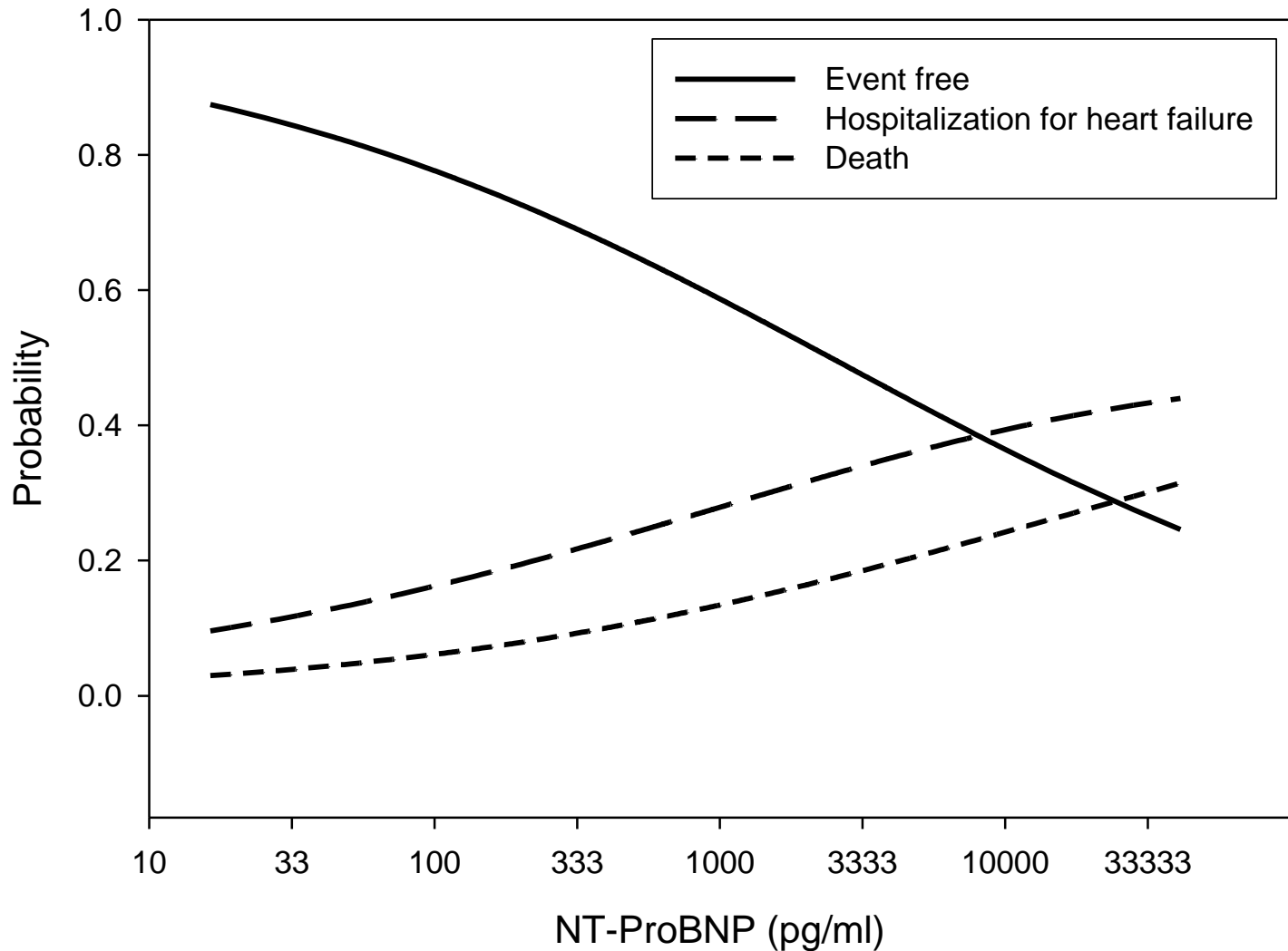
Multivariable adjusted probability of outcome according to the BNP level at baseline

Multivariable adjusted probability of outcome according to the NT-proBNP level at baseline

Predicting HF readmission or death

	O R (95% CI)	AUC - ROC
Doubling baseline BNP	1.28 (1.13-1.45)*	0.76
Doubling baseline NT-proBNP	1.25 (1.11-1.41)*	0.76
Doubling 6-month BNP	2.07 (1.52-2.80)*	0.84
Doubling 6-month NT-proBNP	1.71 (1.35-2.17)*	0.82

Baseline and difference of (NT-pro)BNP did not improve the multivariate model for serial measurements

*p < 0.001

AUC – ROC = area under the receiver operating characteristic curve

OR = odds ratio (multivariate)

CONCLUSIONS

1. **Both BNP and NT-proBNP are equally strong and independent predictors of HF hospitalization and all-cause death at hospital discharge and at 6 months post-discharge.**

2. **The incremental prognostic value of combining routine serial natriuretic peptide measurements after an episode of acute heart failure decompensation is limited.**

Thank you for your attention !

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