**Supplemental Methods**

**Biomarker testing.** Blood samples used for measurement of plasma natriuretic peptide levels were collected within 48 hours of admission. The samples were collected into plastic tubes containing ethylenediaminetetraacetic acid (EDTA-2Na, 1.5 mg/ml) and aprotinin (500 kallikrein inhibitor units/ml) and stored at 4°C. After centrifugation, the collected plasma samples were stored at -80°C until measurements were made.

**Measurement of two BNP forms.** Plasma total BNP and proBNP were measured using the chemiluminescence enzyme immunoassays (CLEIAs) as previously described[8, 15]. Briefly, in both CLEIAs, an antibody recognizing a common epitope in the C-terminal region of proBNP and mature BNP was used as a capture antibody. An antibody recognizing the N-terminal region of proBNP and one recognizing the ring region of BNP were used as detection antibodies in the proBNP and total BNP CLEIAs, respectively. Glycosylated proBNP with a relative molecular mass of 32 kDa (HyTest, Turku, Finland) served as the standard. Intra-assay (8 replicates) and inter-assay (10 replicates) coefficients of variation of the standard peptide at 2.6, 8.9, and 76.7 pmol/l (pM) were in the ranges of 1.5-5.4% and 4.1-5.5%, respectively, in the proBNP assay.

**Cyclic guanosine monophosphate (cGMP) and other laboratory markers.** The second messenger mediating the effects of ANP and BNP, cGMP, was measured using a radioimmunoassay assay kit (Yamasa Co, Tokyo, Japan). Estimated glomerular filtration rate (eGFR) was calculated using the equation for Japanese individuals: $194 \times$ serum creatinine $^{-1.094} \times$ age$^{-0.287}$ ($\times 0.739$ for females) (unit, ml/min/1.73 m$^2$)[15].

**Echocardiography.** Echocardiography was routinely performed when the patients were admitted to the hospital. Left ventricular (LV) dimensions were measured according to American Society of Echocardiography guidelines[18]. LV ejection fraction (EF) was measured using the modified Simpson's

method or the semiquantitative two-dimensional visual estimate method, as previously described[19].