0.138, p=0.064). NT-pro-BNP correlated with mitral valve E/A ratio (r=0.243, p=0.001) but not isovolumetric relaxation time (r=0.044, NS) or deceleration time (r=-0.044, NS). NT-pro-BNP remained correlated to E/A-ratio (β=0.195, p<0.01) with adjustment for circumferential end-systolic stress. However, when taking LV mass and wall stress into account there was only a trend towards a relation between NT-pro-BNP and mitral valve E/A ratio (β=0.133, p=0.071). Change in NT-pro-BNP during 1 year of treatment did not correlate with changes in EFS (r=-0.040), MWS (r=-0.074), E/A-ratio (r=0.008), isovolumic relaxation time (r=-0.04) or mitral valve e-point deceleration time (r=0.037, all NS). **Conclusion:** NT-pro-BNP maybe related to LV contractiliy and filling independent of LV mass and wall stress in hypertensive patients with ECG LV hypertrophy at baseline. However, there was no wall-stress-independent relation between NT-pro-BNP and LV pump function. Furthermore, change in NT-pro-BNP over time was not related to changes in LV function.

1038-73   Heart Failure in the Community and in Hospitals: Selection and Survival of Patients in Different Settings

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The aim of the study was to compare the characteristics and 3-year survival data of patients (Pts) with diagnosis of heart failure (HF) made in the community and in hospitals in the UK. Methods: Three populations (>=45years) were studied: HFa, 6478 Pts from the General Practice Research Database (with data from 696884 persons) with new HF diagnosis clearly stated by 525 GPs, according to their clinical judgment; HilHF, 225 Pts from the Hillingdon study, with new HF diagnosis made by an expert panel of cardiologists, applying the ESC criteria; NetHF, 1929 Pts screened for the Network trial, with HF diagnosis confirmed by hospital cardiologists according to their clinical judgment. Standardized mortality ratio (SMR) at 1-year was calculated using as reference population the 1994 UK age and sex specific death rates (the reference population being 1).Results: Incidence rates (cases/1000 person-years) were 9.6 and 8.9 in HFa and 3.7 and 4.7 in HilHF, in women and men, respectively. NetHF were mostly chronic cases. Proportions of women were 55.5, 47.1 and 37.5 in HFa, HilHF and NetHF, respectively (* p<0.02, £p<0.001, $p<0.01). Mean survival (months-95%CI) was 23.8 (23.4-24.1) for HFa, 21.7 (19.6-23.7) for HilHF and 31.8 (31.3-32.3) for NetHF(* p=0.25, £ < 0.001, $<0.001).. 1-year SMR (95% CI) was 14.7 (13.9-15.7) for HFa, 15.2 (11.1-20.7) for HilHF and 3.2 (2.4-4.3) for NetHF. Both HFa and HilHF (incident cases) had an especially high mortality in the first 3 months of follow-up that was not seen in NetHF (chronic cases).Conclusions: There is a descending rank order in mean age and proportion of women in HF Pts seen in the community, in hospitals and those screened for trials. Chronic cases, which are usually studied in trials, represent survivors from the high mortality observed in the first 3 months after diagnosis. Both the clinical judgment of GPs and the rigorous application of ESC criteria seem to lead to the detection of severe cases with similar survival in both absolute terms and in shape of the survival curves.(* indicates HFa vs. HilHF; £, HFa vs. NetHF; $, HilHF vs. NetHF).

1038-74   Does the Prevalence of Atrial Fibrillation Vary by Race in Patients With Heart Failure? The Epidemiology, Practice, Outcomes, and Costs of Heart Failure (EPOCH) Study

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Background: The association between heart failure (HF) and atrial fibrillation (AF) is well known but the risk factors predisposing to AF in the setting of HF are not well understood. It has been postulated that among patients with HF, blacks may have a lower prevalence of AF compared with whites, but this has not been clearly defined along with the potential factors that may explain any observed racial difference.
Methods: We performed a cross-sectional analysis of the association between race and AF in a random sample of adults hospitalized with HF (July 1999-June 2000). HF was confirmed using Framingham Heart Study criteria. Data on demographic characteristics, comorbid conditions, vital signs at presentation, prior medication use, and left ventricular systolic function status were obtained from medical records and automated databases. Prevalent AF was defined as AF or atrial flutter documented by electrocardiogram during hospitalization and/or by medical history. We assessed the independent relationship between race and AF using multivariable logistic regression.
Results: Among 1373 patients (223 blacks, 1150 white) hospitalized with confirmed HF, the prevalence of AF was 34.0% (95% CI: 31.4% to 36.4%). Blacks were more likely than whites to be younger (mean age 67 vs. 74 yrs, P<0.001) and to have hypertension (75.3% vs. 62.4%, P<0.001) and prior HF (64.6% vs. 54.9%, P<0.01). Blacks were also less likely to have a history of coronary disease, hypothyroidism, valve replacement, or revascularization, or to be taking digoxin or a beta-blocker on admission. Blacks had a significantly lower prevalence of AF (19.7%) compared with whites (38.3%, P<0.001). After adjustment for risk factors for AF and other potential confounders, blacks had 35% decreased odds of having AF (adjusted odds ratio 0.65, 95% CI: 0.43-0.97) compared with whites.
Conclusion: In a large contemporary cohort of adults with heart failure, atrial fibrillation was a common complication but was significantly less common among blacks compared with whites. Racial variation was not explained by differences in traditional risk factors for atrial fibrillation, presumed heart failure etiology or severity, or medical management.

1038-75   Sex Differences in Heart Failure: Report From a Large Community-Based Cohort

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Background: The extent to which women differ from men with respect to clinical presentation, treatment and outcomes in heart failure (HF) is debated.
Methods: We queried a HF registry compiled from consecutive HF admissions to 10 community hospitals. Demographics, clinical characteristics, treatment variables and outcomes were compared by sex.
Results: Vital status 6 months after hospital admission was known for 2,508 patients. Of these, 1,304 (56%) were women. Mean functional class at admission and the prevalence of atrial fibrillation and prior HF were equivalent. Women were older (77.1 vs 73.8 years), more often nursing home residents (17 vs 9%) and less often received care from cardiologists (14 vs 20%). Women had higher mean ejection fraction (0.39 vs 0.32) and more often had diastolic HF (52 vs 34%). Ischemic cause of HF was documented less often among women (31 vs 43%). Women had lower mean serum creatinine and hematocrit. Women received catheterization (10 vs 14%), exercise testing (8 vs 11%) and coronary revascularization (4 vs 7%) less often (all P<0.05). Other diagnostic studies were performed equally. At discharge women less often received ACE inhibitors (57 vs 63%) and digoxin (49 vs 54%). Hospital stay was longer for women (7.5 vs 6.9 days) (all P<0.05). Hospital mortality was equivalent (6.5 vs 6.0%). Women were less likely to die during the 6 months following discharge (15.2 vs 18.4%, P=0.03). Thus, crude 6-month mortality trended lower among women (21.3 vs 24.0%, P=0.12). Sex was borderline predictive of better survival using the Kaplan-Meier method (P=0.11) and a proportional hazards model to account for age and other factors (P=0.19). In follow-up, women were slightly less likely to have rehospitalization for HF (24 vs 26%, P=0.27) or any cause (42 vs 45%, P=0.09). The combined endpoint of death or readmission occurred less often among women (52 vs 57%, P=0.02).
Conclusions: In this community-based HF cohort, clear sex-related trends emerge. Women are older and more often have diastolic HF. They receive a different standard of care with respect to medications and referral to specialists. In spite of this, women have comparable or better clinical outcomes during and after hosptialization for HF.

1038-76   Gender-Related Differences in Neurohormonal Plasma Levels

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Background :Age is known to affect plasma concentrations of cardiac neurohormonal markers used in the evaluation of congestive heart failure, but little is known about gender-related effects.
Methods :Accordingly, we compared the plasma levels of atrial natriuretic peptide (N-proANF), brain natriuretic peptide (BNP), big endothelin-1 (big ET-1) and angiotensin II (AII) in 92 healthy subjects (46 females, age 30 to 70 years; 46 males, age 30 to 69 years). Except for oral contraceptive or hormone replacement therapy, no subject was taking chronic medication.
Results :Overall, mean plasma levels of N-proANF (322 vs 259* pg/mL), BNP (6.3 vs 4.5** pg/mL) were higher in women than in men, while AII levels were higher in men (10.1 vs 13.5* pg/mL). Plasma levels of big ET-1 were similar in both groups (4.3 vs 4.1 pg/mL).
However, when stratified for age (< or > 50 years), it appears that the increase in natriuretic peptides in women becomes more evident with aging, while the reverse is true for AII in men. By contrast, big ET-1 levels seem unaffected by age (see table).
Conclusion :Normal values of N-proANF, BNP and AII are affected by age and sex. These variations are to be taken into account when using neurohormonal cardiac markers for diagnostic purpose. In this perspective, changes in big ET-1, which is more stable accross gender and age, should be easier to interpret.

Data (pg/mL) are means (±SD); *p<0.05, **p<0.01

	N	Age	N-proANF	BNP	Big Et-1	AII
Male <50	24	38±6	230±65	3.9±0.7	4.1±7.0	13.0*±5.3
Female <50	23	40±6	242±64	4.3±1.1	4.4±0.8	10.0±4.5
Male >50	22	58±5	292±117	5.2±2.2	4.2±0.9	14.1±8.0
Female >50	23	60±6	402*±174	8.3**±2.4	4.1±0.7	10.5±7.5

1038-77   The Prevalence of Diastolic Heart Failure in the Community

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Background Heart failure is placing an increasing burden on the community. The European Study Group on Diastolic Heart Failure has recently issued guidelines for the diagnosis of diastolic heart failure (DHF) (*Eur Heart J* 1998. **19**: 990), which may underlie up to 50% of all cases. No studies have looked at the prevalence of DHF in the community using these criteria. Accordingly this study was undertaken to assess this further in a community in North London. **Methods** 1403 subjects ≥ 45 years old were chosen at random from 7 representative general practices and invited to undergo a questionnaire, clinical examination, ECG, echocardiogram and plasma N-terminal-proBNP (NTB) levels (Elecys, Roche Diagnostics). DHF was diagnosed according to criteria set by the Study Group namely all three of: symptoms of congestive heart failure in the absence of significant lung disease and/or signs of congestive heart failure; left ventricular ejection fraction

(LVEF) >45%, and abnormal diastolic filling parameters on echocardiography. **Results** 734 subjects (52%) attended, 518 (71%) Caucasians and 216 (29%) from ethnic minorities, the majority from the Indian Subcontinent. 676 subjects (92%) had LVEF, diastolic parameters (E/A ratio, E wave deceleration time, isovolumic relaxation time) and questionnaire assessed. Twenty-nine (4.3%, 2.9-6.1%) subjects satisfied the criteria for DHF: mean age 65 years, 52% female, 69% Caucasian. 17 subjects (59%) had a history of hypertension, 9 of whom (53%) had echocardiographic evidence of left ventricular hypertrophy; 22 subjects (76%) had a history of any of hypertension, diabetes mellitus or coronary artery disease. Mean plasma NTB levels were 155pg/ml for those with DHF, compared with 77pg/ml for those without DHF together with normal systolic function and no significant valvular heart disease (p=0.001). NTB gave an area under the receiver operating characteristic curve of 0.69 (p<0.001) in predicting DHF in these subjects.**Conclusion** Thus DHF is a common problem in the community; is most commonly caused by hypertension, often in association with left ventricular hypertrophy, and leads to an increase in plasma natriuretic peptide levels.

1038-78 **Diastolic Heart Failure and B-Type Natriuretic Peptide: The Important Influence of Female Gender and Underlying Coronary Artery Disease**

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Background: Recent investigations have alluded to the value of assessing B-type Natriuretic Peptide (BNP) in "diastolic" heart failure. Although correlations with functional capacity have been suggested in this cohort, the potential confounding role of gender and coronary artery disease in determining BNP levels has not been previously elucidated.
Methods: We examined 62 consecutive heart failure patients with preserved left ventricular function (mean EF 58 ± 6 %) treated in our specialty center (71% on ACE inhibitor or ARB, 61% on beta blockers) and measured BNP levels with a point of care assay. Detailed demographic, echocardiographic and clinical parameters were collected and independent correlations with BNP levels were conducted.
Results: On linear regression analysis, significant correlates of BNP levels were age (r = 0.3, p = 0.01), NYHA class (r = 0.4, p = 0.003), female gender (r = 0.25, p = 0.04), and underlying coronary artery disease (r = 0.22, p = 0.06). No significant correlation was noted between BNP levels and EF, serum creatinine, BMI, African American race, use of ACE inhibitor or ARB or beta-blocker therapy. On multivariable regression analysis only female gender (t =2.6, p = 0.01), coronary artery disease (t = 2.4, p = 0.02), and NYHA class (t =1.9, p = 0.05) remained independent predictors of elevated BNP levels.
Conclusions: While this investigation has confirmed the relationship of symptom directed functional class estimates and BNP levels in "diastolic" heart failure, female gender and underlying coronary artery disease were also found to predict the expression of this cardiac neurohormone. Thus, elevated BNP levels in heart failure and preserved systolic function should prompt the clinician to pursue a potential underlying ischemic substrate.

1038-79 **Tissue Doppler Imaging Is Superior to Mitral Flow Velocities for Predicting Exercise Performance**

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Background: A reduced early diastolic to late diastolic mitral inflow velocity ratio (E/A) on conventional Doppler flow imaging implies slowing of left ventricular (LV) relaxation. Decreased E/A ratio occurs commonly in older patients and is widely believed to be an indicator of significant diastolic dysfunction.
Methods: To determine whether E/A is predictive of exercise capacity, we performed conventional Doppler measurements of transmitral flow and tissue Doppler imaging of the mitral annulus in 76 patients prior to maximal exercise testing. The apical 4-chamber view was used to obtain the velocities.
Results: Exercise capacity correlated with the ratio of early mitral flow (E) to early annulus velocity (Ea) (r= - 0.57, p=0.001; Figure) while E/A did not correlate. The patients with E/Ea<10 performed better on treadmill than the patients with E/Ea<10 by mean of 4.9 METs (95% CI of 3.44 to 6.30; p<0.001). Exercise capacity was similar in patients with a normal mitral inflow pattern and those with a slow relaxation pattern of mitral inflow (E/A<1) but E/Ea<10. The subjects with a slow relaxation mitral inflow pattern and E/Ea <10 performed poorly on treadmill as did subjects in the groups with pseudonormalized or restrictive pattern.
Conclusion: Tissue Doppler imaging of mitral annulus can predict functional capacity of

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patients better than conventional measures of mitral inflow. These data suggest that elevated LV filling pressures rather than slow LV relaxation adversely affects exercise capacity.
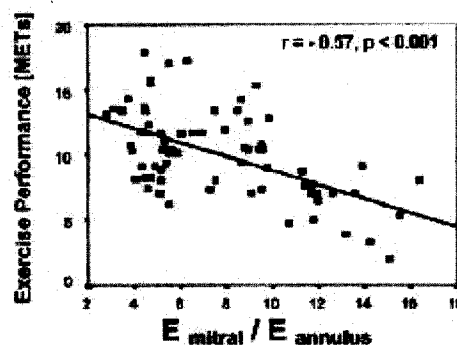
1038-80 **A Low Pulse Pressure Is an Independent Predictor of Mortality in Heart Failure: Data From a Large Nationwide Cardiology Database (IN-CHF Registry)**

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High pulse pressure (PP) is an independent risk factor for cardiovascular mortality in hypertensive subjects and in the elderly general population. PP is a complex parameter, which is influenced by large-artery stiffness on one hand and by contractile function of the left ventricle on the other hand. We analyzed data from the Italian Network of Congestive Heart Failure (IN-CHF) registry to test the hypothesis that PP may have an independent prognostic role among patients with heart failure (HF).
Methods: The study group included 8660 patients with HF (mean age 64±12 years, men 73%). Thirty per cent of the patients were in New York Heart Association class III or IV. Subjects were divided into 4 groups according to their PP at enrollment: <40 mmHg, 40-49 mmHg, 50-59 mmHg, and ≥ 60 mmHg. Univariate and multivariate analyses were performed to assess the association between PP and all-cause mortality at 1 year.
Results: All cause mortality at 1 year was 11.5% (995/8660). Both mean arterial pressure (odds ratio [OR] 0.98, 95% confidence interval [CI] 0.97-0.99) and systolic blood pressure (SBP) (OR 0.98, 95% CI 0.98-0.99) had an independent inverse association with mortality. An inverse univariate relation was observed between PP and mortality rate. The excess mortality risk in the lowest PP group (OR 1.45, 95% CI 1.13-1.85 vs the highest PP group) was confirmed in a multivariate analysis which took into account the effect of several other variables. When SBP replaced mean arterial pressure in the model, PP did not retain its independent prognostic role, possibly because of a high linear correlation between these two variables (r=0.87, p<0.0001).
Conclusion: A low PP is an independent predictor of mortality among patients with HF. Different pathophysiological mechanisms may underlie the different prognostic significance of PP in hypertension and in HF.

1038-81 **Does Endomyocardial Biopsy in Heart Failure Patients Have Diagnostic Value?**

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Background: The routine use of endomyocardial biopsy (EMB) as a diagnostic test in the evaluation of heart failure patients (HFP) is controversial and generally unadvisable because of low diagnostic yield and potential for significant procedural morbidity and mortality. Purpose: Therefore we reviewed our experience with EMB in a large and mostly referral HFP at our tertiary care center. **Methods:** We retrospectively reviewed 3419 EMB records from the 3/1/97 to 2/28/02 and identified 78 (2.3%) HFP, who were screened and referred for EMB by the heart failure specialists. Pre-EMB clinical diagnosis included 55% dilated cardiomyopathy, 14% prior condition (amyloid, sarcoid, lupus), 7% probable myocarditis, 11% ischemia, 6% drug toxicity, 3% hypertrophic cardiomyopathy, 3% constrictive pericarditis, 1% restrictive cardiomyopathy. EMBs were completed through conventional right internal jugular vein approach under fluoroscopic guidance utilizing commercially available bioptomes. EMB samples were routinely submitted for light and electron microscopy, immunofluoresence, Congo red and iron staining. **Results:** There were 44 (56%) men and 34 (44%) women with mean age of 50.5±18.5 (13-81) years. EMB results were 57 (73.1%) non-diagnostic and 21(26.9%) diagnostic findings such as 8 (10.2%) amyloid, 5 (6.4%) drug toxicity, 4 (5.1%) myocarditis, 2 (2.6%) iron overload and 2 (2.6%) immunologic/lupus. In HFP undergoing EMB there were 2 (2.6%) of right ventricular perforations as the major procedural complication. In comparison in 3341 EMB performed routinely in heart transplant recipients there were 4 (0.12%) bleedings/hematoma, 3 (0.09%) life threatening arrhythmia, 3 (0.09%) carotid puncture and 1 (0.03%) right ventricular perforation.**Conclusions:** In HFP without established etiology for heart failure, EMB is of diagnostic value in 26.9% of cases. Contrary to prior concerns regarding the safety of the EMB in HFP this diagnostic test can be completed with low procedural morbidity and no mortality.