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**Worsening Renal Function: What Is a Clinically Meaningful Change in Creatinine During Hospitalization With Heart Failure?**

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**Background:** Worsening renal function (WRF) during hospitalization for heart failure (HF), defined as an elevation in creatinine (Cr) during admission, predicts poor outcomes, but the amount of Cr elevation that is clinically meaningful is unclear, as prior studies use varying definitions and focus mainly on extreme increases.

**Methods:** We examined a spectrum of WRF definitions (Cr elevations  $\geq 0.2$  to  $\geq 0.5$  (mg/dL)) and their associations with 6-month death, readmission, and functional decline after discharge in 412 hospitalized HF patients.

**Results:** The sample was 51% male, 76% white, with mean age 72 years (SD 11). Mean admission Cr was 1.8 (SD 1.4). Frequency of WRF varied by definition: 24% for the most restrictive WRF definition (Cr elevation  $\geq 0.5$ ) to 58% for the most inclusive ( $\geq 0.2$ ). Even small Cr elevations increased risk of death, and risks rose with higher elevations (Hazard Ratio=1.24, 1.65, 2.12, 3.17 for elevations 0.2 to 0.5). Maximum sensitivity of any definition for predicting death was 64% (at  $\geq 0.2$ ), maximum specificity was 79% (at  $\geq 0.5$ ). Highest Cr elevations predicted readmission and functional decline.

**Conclusions:** While larger Cr elevations predict highest risk of poor outcomes, physicians monitoring HF patients should be aware that even minor changes in renal function could be significant, since an elevation as low as 0.2 mg/dL is still associated with adverse outcomes. The "best" definition of WRF depends on the clinical context and should consider the tradeoffs among definitions.

**Table. Definitions of WRF and outcomes. Adjusted models include clinical and demographic covariates.**

	Creatinine Sample change (%)	Died (%)	Adjusted HR for death (95% CI)	Readmitted (%)	Adjusted HR for decline or readmission death (95% CI)	Functional OR for decline/death (95%CI)
WRF $\geq 0.2$	58	17	1.24	47	0.95	41
noWRF $< 0.2$	42	13	(0.72,2.14)	48	(0.72,1.27)	39
WRF $\geq 0.3$	45	19	1.65	49	1.09	44
noWRF $< 0.3$	55	12	(0.95,2.84)	45	(0.92,1.45)	37
WRF $\geq 0.4$	32	21	2.12	52	1.25	46
noWRF $< 0.4$	68	13	(1.19,3.78)	45	(0.93,1.69)	37
WRF $\geq 0.5$	24	26	3.17	56	1.41	52
noWRF $< 0.5$	76	12	(1.74,5.78)	44	(1.02,1.94)	36

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**Examining the Concordance Between Patient and Physician Assessments of Health Status in Heart Failure Patients**

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**Background:** To assess the health status of CHF patients the Kansas City Cardiomyopathy Questionnaire (KCCQ) was created and was shown to be a valid, reliable, and sensitive measure of health status in a single center. This analysis, from preliminary work by the Cardiovascular Outcomes Research Consortium (CORC) - a 13-center network of cardiovascular centers, examines the relationship between patient-derived KCCQ Scores and physician assigned NYHA classification from a much more diverse population than originally tested with the KCCQ.

**Methods:** CHF patients (N = 220) from across the US and Canada were given the KCCQ during a routine visit along with a physician-assigned NYHA classification. The mean scores of the 7 domains of the KCCQ were compared, using an ANOVA with tests for linearity, against NYHA classes (Class I=14 pts, II=91, III=102, IV=13).

**Results:** Highly significant and linear differences in mean scores by each of the seven KCCQ domains and NYHA classification were detected. For example, the mean KCCQ Overall Summary score for Class I = 77.2 $\pm$ 18, for Class II=67.4 $\pm$ 21, for Class III=53.5 $\pm$ 21 and for Class IV=37.9 $\pm$ 20; p<0.0001.

**Conclusions:** These results demonstrate statistically significant concordance between patient and physician assessments of health status at multiple centers and as assessed by multiple physicians. They can help translate KCCQ scores into a metric already familiar to most physicians.

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**Gender Is More Important Than Advancing Age as a Predictor of Preserved Systolic Function in Older Persons Hospitalized With Heart Failure**

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**Background:** In populations of patients with heart failure (HF), advanced age is considered one of the important correlates of preserved left ventricular systolic function (LVSF). Gender and coexisting cardiovascular diseases-both correlated with advanced age-have also been associated with this condition. Our objective was to characterize the group of patients with preserved LVSF in a national sample of older patients hospitalized with HF and to determine the relative magnitude of the independent correlations of gender and age with the syndrome.

**Methods:** We conducted a cohort study with data obtained from medical charts for the CMS (formerly HCFA) National Heart Failure Project. Subjects were Medicare beneficiaries from a national sample hospitalized for HF between 4/98 and 3/99. Patients were eligible for the analysis if they were > 65 years old and had documentation of LVSF. Logistic regression was used to adjust for demographic and clinical characteristics. The dependent variable was EF >0.50 or qualitative equivalent.

**Results:** Of the 37,232 patient charts reviewed, 20,566 were eligible. Of these, 6,754 (33%) had preserved LVSF. Patients with preserved LVSF were, when compared to those with impaired LVSF, older (mean age 79.6 vs. 78.2 years, p<0.0001), more likely female (71% vs. 49%, p<0.0001), less likely to have CAD, and more likely to have hypertension. After adjustment for age, race, and comorbidity, the relative odds for preserved LVSF were twice as high for women as for men (OR 2.10, 95% CI 1.96-2.25). Comparatively, the relative odds for increasing age were small (compared to age 65-74: age 75-84 OR 1.08, 95% CI 1.00-1.16; age 85+ OR 1.29, 95% CI 1.18-1.41). The Wald  $\chi^2$  statistic, which reflects the significance of the association, was more than an order of magnitude higher for gender (471) than for age (30).

**Conclusions:** Among older patients with preserved LVSF hospitalized with HF, women are represented disproportionately, constituting almost three-quarters of this group. This gender disparity was not substantially altered by adjustment for age and comorbidity. Further investigation should focus upon the mechanisms beyond aging to explain this female preponderance.

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**Carvedilol Initiation by Community Physicians in COHERE: Comparison With U.S. Carvedilol Trials and Compassionate Use Protocols**

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Patients (Pts) and MDs participating in CHF trials may differ from those in the community. Clinical trial subjects are highly selected, usually younger, more often men, and have fewer comorbidities. Investigators are usually academic specialists with a special interest in CHF. As a result, generalizing trial results to community practice may be problematic. The Coreg® Heart Failure Registry (COHERE) was designed to examine the use of carvedilol (CARV) by community MDs in unselected Pts. The present analyses compare COHERE MDs and Pts with those in the U.S. CARV Trials (CT) and the CARV compassionate use (CU) program, and specifically compare the duration and outcome of the titration phase. As shown in the table, COHERE MDs and Pts differed substantially from those in the CT and CU protocols. Although no or little difficulty with titration was reported in 83% of COHERE Pts, only 45% (vs 85% in CT and CU) were titrated to target CARV doses and more were discontinued. These results emphasize the need for observational studies to assess the use and outcomes of new treatments outside the clinical trial setting.

Characteristic	COHERE	Carvedilol CT	Carvedilol CU
Physicians(n)	633	78	NA
Academic affiliation	41%	85%*	NA
Hospital based	6%	85%*	NA
Cardiologist	56%	91%*	NA
Patients(n)	4278	1094	2981
Age (y)	66 $\pm$ 13	58 $\pm$ 12*	60 $\pm$ 13*
Women	35%	23%*	25%*
LVEF	31 $\pm$ 12%	23 $\pm$ 7%*	NA
NYHA III/IV (%)	38%	47%*	62%*
% on ACEI	74%	95%*	95%*
% on digoxin	56%	91%*	89%*
% on diuretic	75%	95%*	89%*
Titration period(days)	74 $\pm$ 44	NA	54 $\pm$ 32*
% titrated to 25/50mg bid	45%	85%*	93%*
% discontinued	10%	NA	7%*

\* P<0.001 vs COHERE  
NA = Not Available