(QCA). The final analysis was done on data for 291 patients (868 vessels; 3,782 segments) who were a median of 59 years old and had an Agatston calcium score ≤600 (a score of >400 indicates a high likelihood of at least one stenosis). The patients had ECG-gated contrast-enhanced 64-slice MDCT (0.5 mm slice thickness) within 30 days before scheduled QCA and were followed up for clinical events at 30 days and 6 months.

The study differed from other studies in that the entire coronary tree was analyzed, said Dr. Miller; all nonstented segments of at least 1.5 mm were evaluated by both methods. Significant stenosis by QCA was defined as more than 50% stenosis. The diagnostic accuracy (sensitivity and specificity) of MDCTA for identifying significant stenosis (compared with QCA) was the primary endpoint.

The diagnostic performance of MDCTA was better on a per patient basis than on a per vessel basis. On a per patient basis, MDCTA had a sensitivity of 85% and a specificity of 90% (Table 1). In contrast, the sensitivity and specificity were 76% and 93%, respectively, on a per vessel basis. Dr. Miller noted that MDCTA was highly diagnostic based on receiver operating characteristics (ROC) analysis of the data – the ROC area was 93% on a per patient basis, and 91% on a per vessel basis. The ability of MDCTA to predict the need for revascularization was similar to that of QCA; the ROC area for MDCTA was 0.84 compared with 0.82 for QCA (p=0.36) on a per patient basis and 0.84 and 0.89, respectively, on a per vessel basis.

Table 1. Comparison of Diagnostic Accuracy of 64-Row MDCTA (Compared with QCA) on Per Patient and Per Vessel Basis.

	Detection of Significant Stenosis (%)*	
	Per Patient	Per Vessel
Sensitivity	85	76
Specificity	90	93
Positive predictive value	91	82
Negative predictive value	83	89
ROC area	93	91

*Significant stenosis was defined as more than 50% stenosis.

ROC=receiver operating characteristics.

Previous studies have shown highly variable results for the diagnostic accuracy of MDCTA, but Dr. Miller pointed out that those studies were single-center studies and did not compare MDCTA with QCA in predicting revascularization.

Rhythm Control Has No Impact on Mortality: Results of the AF-CHF Trial

The results of the Atrial Fibrillation and Congestive Heart Failure (AF-CHF) trial were presented by Denis Roy, MD, Montreal Heart Institute, Montreal, Canada. The study was funded by the Canadian Institutes of Health Research and was conducted from May 2001 through June 2007 in the US, Canada, Europe, Argentina, Brazil, and Israel. The objective of the trial was to determine if the restoration and maintenance of sinus rhythm would result in a reduction of cardiovascular mortality compared with simple rate control in patients with both CHF and AF. Eligibility criteria were as follows:

- CHF:
  - New York Heart Association (NYHA) Class II-IV with a left ventricular ejection fraction (LVEF) ≤35%, or
  - NYHA I with a prior hospitalization for CHF, or
  - LVEF ≤25%.
- AF:
  - one episode of AF ≥ 6 hours in the last 6 months, or
  - one episode of shorter duration AF within the last 6 months and prior D/C shock.

Patients were randomized to one of two treatment groups. The first group was treated with rhythm control using antiarrhythmic drugs (amiodarone, sotalol, or dofetilide) or non-pharmacologic methods, including cardioversion. Patients randomized to the other treatment arm underwent rate control using beta-blockers and/or digoxin, pacemaker therapy, and AV nodal ablation when necessary. Target heart rates were <80 bpm during resting ECG and <110 bpm during the 6-minute walk. Patients in both groups were given optimal treatment for their CHF and were followed for at least 2 years. The study had 80% power to detect a 25% decrease in cardiovascular (CV) mortality.

A total of 1,376 patients were randomized—682 to rhythm control and 694 to rate control. Patient baseline demographic characteristics were similar, with the majority of the patients being men (78% in rhythm and 85% in rate control). There were 217 (31.8%) deaths in the rhythm control group and 228 (32.9%) in the rate control group; 80% of the deaths were CV-related. The study did not meet its primary objective of reducing CV mortality by 25% using rhythm control (HR 1.06; p=0.59), nor were there any statistically significant differences

in secondary measures of overall survival, stroke, worsening CHF, or a composite of CV death, worsening CHF, and stroke. Additionally, no prespecified subgroup of patients displayed a significantly higher or lower risk of CV death. A statistically significantly higher number of patients in the rhythm control group required hospitalization at 12 months (46% vs 39%; p=0.006).

"Rhythm control does not improve cardiovascular mortality compared with a rate-control strategy in patients with AF and CHF," summarized Dr. Roy.

CRT Demonstrates Benefit in Subset of CHF Patients: The RethinQ Trial

John F. Beshai, MD, University of Illinois-Chicago, presented the results of the Resynchronization Therapy in Normal QRS (RethinQ) study. This study was conducted in patients with New York Heart Association (NYHA) Class III congestive heart failure (CHF), left ventricular ejection fraction ≤ 35%, narrow QRS (<130 ms), and evidence of mechanical dyssynchrony via echocardiography, who were candidates for an implantable cardioverter defibrillator (ICD). Patients with permanent atrial fibrillation, prior cardiac resynchronization therapy (CRT), unstable angina, recent myocardial infarction, or revascularization were excluded. The primary goal of the study was to determine the efficacy of CRT in these patients as measured by an improvement in peak VO_2 testing (>1.0 mL/kg/min) during cardiopulmonary exercise stress at 6 months. A total of 85 patients were randomized to receive an ICD and optimal medical therapy (control group) and 87 patients received an ICD, CRT, and optimal medical therapy (CRT group); 156 patients were included in the efficacy dataset. Patients were stratified by QRS greater than or less than 120 ms and whether or not they had ischemic or non-ischemic cardiomyopathy. All patients were followed for 6 months.

The mean age of the participants was 58 years in the control group and 62 in the CRT group. The mean QRS values in the control and CRT groups were 106 ms and 107 ms, respectively, and approximately one-half of the participants in each group had ischemic cardiomyopathy. The majority of the patients was male (58% control and 71% CRT, respectively). The study did not meet its primary endpoint, with 46% of CRT patients experiencing improvement in peak VO_2 versus 41% in the control group (p=0.63). There were no significant differences between treatment groups in quality of life measures or left ventricular volumes and dimensions. The CRT group had a significant improvement in the secondary measure of NYHA class when compared with the control group (p=0.006; Figure 1). Additionally, subgroup analyses indicated a significant improvement in CRT patients with a QRS duration between 120 and 130 ms (p=0.02), but there were no significant differences based on the presence or absence of ischemia (Figure 2).

Figure 1. NYHA Class.

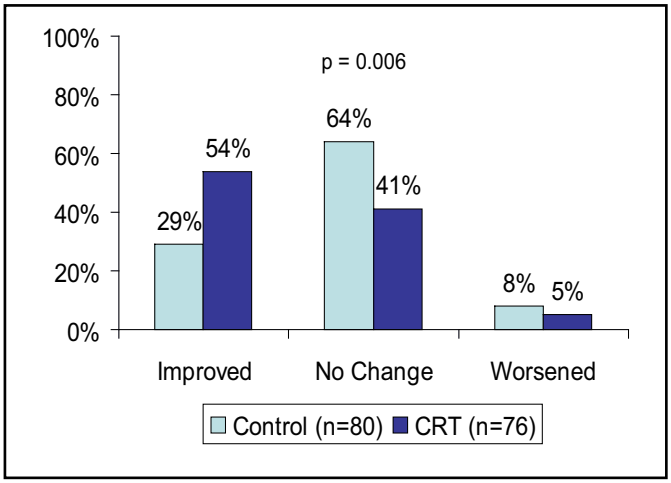
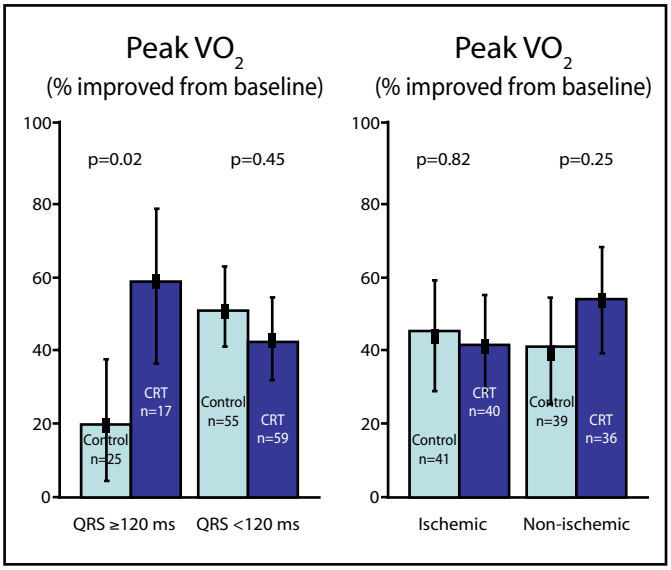


Figure 2. Peak VO_2 by Subgroup.



"Additional research will be critical to further our understanding of the role of CRT in this patient population", summarized Dr. Beshai.

The findings of this study have been published: [Beshai et al. NEJM. 357(24):2461-71].