Heart Failure: An Ounce of Prevention vs a Pound of Cure

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General Principles of HF Prevention

- Maintain healthy life-style habits
- Avoid excessive alcohol
- Have regular 'flu shot
- Identify those at risk
- Prevent myocardial infarction
- Treat hypertension, DM, lipids
- Correct ischemia
- Correct valvular regurgitation
- Correct uncontrolled A Fib













When pooled, the outcomes data indicate that patients who were controlled, regardless of treatment regimen, had significantly better outcomes than those whose blood pressure was not controlled at 6 months.¹

Early blood pressure control was a powerful determinant of almost all endpoints (except myocardial infarction).¹

1. Weber MA et al. Blood pressure dependent and independent effects of antihypertensive treatment on clinical values in the VALUE trial. *Lancet.* 2004;363:2047-49.



Comparisons of ARB-based regimens with control regimens. *Overall mean blood pressure difference (systolic/diastolic) during follow-up in the ARB group compared with the control group, calculated by weighting the difference observed in each contributing trial by the number of individuals in the trial. Negative values indicate lower mean follow-up blood pressure levels in the ARB group than in controls. p values from 2 test for homogeneity.





There was also a 2-fold risk of heart failure for the doxazosin group compared to the chlorthalidone group.



The amlodipine group had a 38% higher risk of HF (p<.001) with a 6-year absolute risk difference of 2.5%.

The lisinopril group had a 19% higher risk of HF (p < .001).

BENEFITS OF LOWERING BP

Average % Reduction
35-40
20-25
50

In stage 1 HTN and additional CVD risk factors, achieving a sustained 12 mmHg reduction in SBP over 10 years, will prevent 1 death for every 11 patients treated





Cumulative incidence of the hospitalization for congestive heart failure. Intensive statin therapy with atorvastatin 80 mg, as compared with

moderate statin therapy with pravastatin 40 mg, reduced the risk for hospitalization for congestive heart failure by 45% (hazard ratio 0.55, 95% confidence

interval 0.35 to 0.85, p 0.008). This benefit was not attenuated after controlling for recurrent myocardial infarction (MI) or prior history of heart failure.



Benefit of intensive statin therapy versus moderate statin therapy in reducing the risk of hospitalization for heart failure in 27,546 patients. This

analysis includes the Pravastatin or Atorvastatin Evaluation and Infection Trial– Thrombolysis In Myocardial Infarction 22 (PROVE IT–TIMI 22) (1),

Treating to New Targets (TNT) (2), A to Z (11), and Incremental Decrease in End Points Through Aggressive Lipid Lowering (IDEAL) (3) studies.







Baseline characteristics that were independently associated with the development of HF are shown in this figure. For each additional risk factor, the statistical model predicted that HF occurrence was increased on average 37% (relative risk, 1.37; 95% confidence interval, 1.32 to 1.41; p<0.0001).

Reference:

Arnold JMO, Yusuf S, Young J, et al. Prevention of heart failure in patients in the Heart Outcomes Prevention Evaluation (HOPE) study. Circulation 2003; 107:1282-8.







Post hoc analyses	Trandolapril	Placebo	Hazard Ratio	P value
Death from cardiovascular causes, nonfatal MI, or strok (outcome in HOPE)	e 396 (9.5)	420 (10.2)	0.93 (0.81-1.07)	0.32
Death from cardiovascular causes, nonfatal MI, or cardi arrest (outcome in EUROPA)	ac 346 (8.3)	356 (8.6)	0.96 (0.83-1.12)	0.62
CHF				
As primary cause of hospitalization or death	115 (2.8)	152 (3.7)	0.75 (0.59-0.95)	0.02
As primary cause of hospitalization	105 (2.5)	134 (3.2)	0.77 (0.60-1.00)	0.05
As primary cause of death	15 (0.4)	25 (0.6)	0.59 (0.31-1.13)	0.11
Stroke	71(1.7)	92 (2.2)	0.76 (0.56-1.04)	0.09
Onset of new diabetes†	335 (9.8)	399 (11.5)	0.83 (0.72-0.96)	0.01
I denotes confidence interval, MI myocardial infarction with Angiotensin Converting Enzyme Inhibition Trial, HC he European Trial on Reduction of Cardiac Events with I he analysis included 3432 patients in the trandolapril g	, CHF congestiv PE the Heart Ou Perindopril in Sta roup and 3472 p	e heart failure, F itcomes Prevent ible Coronary Ar atients in the pl	EACE the Prevention ion Evaluation, ¹⁵ and tery Disease, ¹⁶ acebo group and exc	of Event EUROP

Table: Incidence of secondary end points and other outcomes









Following are some statistics on the classic cardiovascular risk factors, which are the most important targets for prevention:

Hypertension increases the risk of heart failure two- to threefold.

Diabetes mellitus produces HF independently of CAD – diabetic cardiomyopathy. Incidence of HF in patients with DM is two- to fourfold higher than in patients without. Microalbuminuria increases the risk again.

Hyperlipidemia: elevated triglycerides and TC/HDL-C ratio are associated with HF, while statins have been shown to reduce HF incidence.

Smoking accounts for 17% of incident HF (NHANES I). There is a direct and independent relationship between smoking and development of asymptomatic LV dysfunction. Among HF patients, quitting smoking results in a 30% reduction in mortality/morbidity within 2 years.

In addition, overweight/obesity are identified as independent risk factors for HF. In Canada, ~36% of the population is overweight (BMI \ge 25 kg/m²), 23% obese (BMI \ge 30 kg/m²).





















