



Common Mistakes in HF Drug Therapy

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Common Mistakes in HF Drug Therapy

- ACE inhibitors for all patients with HF, regardless of the underlying heart disease.
- Long-term use of nitrates for treatment of heart failure.
- Focus on the improvement of hemodynamic parameters, while neglect the reverse of ventricular remodeling.
- Use digoxin in all patients with HF symptoms.
- Combination of nitrates and dopamine in patients with acute HF.
- Use diuretics as a first line therapy in all acute HF.
- Use amiodarone in HF patients with premature ventricular contraction.

Mistake 1

- Use ACE inhibitors in all patients with HF, regardless of underlying heart diseases.
 - **For example: ACE inhibitors for patients with HF and severe valvular stenosis.**

- The rheumatic valvular heart disease is one of the common etiological factors of chronic heart failure in China.
- Valve replacement or repair should be recommended for patients with severe valvular stenosis or regurgitation, associated with symptoms of HF, or LVEF <50%.

- ACE inhibitors should not be used in patients with valvular stenosis or patients with obstructive hypertrophic cardiomyopathy.
- These patients were excluded in all ACEI clinical trials in HF.
- ACEI is a vasodilator, it is not recommended for these patients to reduce the preload of LV. Possible side effects can include hypotension and syncope.

Different Opinion

- Calcific aortic stenosis has become the most frequent type of VHD in Europe.
- The progression of degenerative of AS share a number of similarity with atherosclerosis.
- Patients with AS who are unsuitable candidates for surgery may be treated with ACEI if they are experiencing HF.

2007 ESC Guideline for VHD

Vasodilators for Patients with Valvular Heart Disease

- Severe aortic regurgitation (AR), when surgery is contraindicated.
- Severe AR, no symptoms of HF, EF>50%.
- Hypertension with AR.
- ACE inhibitors and β blockers should be used for patients with valve replacement and left ventricle dilatation.
- In acute mitral regurgitation (MR), reduction of filling pressure can be obtained with nitrates and diuretics. Nitroprussides reduce the after load and regurgitate fraction.
- Asymptomatic patients with moderate MR and preserved LV function can be followed up without any drugs.

Mistake 2

- Long-term use of nitrates for treatment of heart failure.
 - **For example: Nitrates for routine use in patients with HF.**

When Should Nitrates be Used?

- Acute heart failure with normal SBP (CS1).
- Acute decompensated CHF with normal SBP(CS2).
- Acute coronary syndrome with normal SBP (CS4).
- Angina pectoris.
- CHF Patients with symptoms of dyspnea, despite optimization of routine therapy.

- Nitrate therapy is not included in Anti-atherosclerosis therapy.
- For patients with CHD, angina, nitrates.
- Nitrates may attenuate the process of heart remodeling, but evidence of such is low. Routine use of nitrates is not necessary.

Mistake 3

- Focus on an Improvement of hemodynamic parameters.
- Overlook the reversing ventricular remodeling therapy.

Phases of AHF Management

- Emergency treatment
 - Improvement of hemodynamic disturbance
- In-hospital stabilization
 - Improvement of symptoms
 - limitation of cardiovascular damage
- Discharge planning
 - Etiological treatment
 - Reduce disability and hospitalizations
- Long-term management
 - Delay progression of or reverse remodeling
 - Reduce mortality

Discharge Planning and Long-term Management

- In patients with AHF with prior HF: 65-87% and new onset AHF: 13-25%, most episodes of new onset AHF are actually the first episodes of decompensation.
- Reverse remodelling is necessary in patient's experiencing heart structure and function abnormalities associated with AHF.
- Life-saving therapies with ACEI/ARB or β blockers are still underused in terms of proportion of patients treated and dosages.
- Optimal of pharmacological treatment upon hospital discharge is crucial for proper long-term management.

Long-term Management for AHF

- For patients with AHF and clinical stabilization, it is beneficial to have long-term management with ACEI and beta-blockers, which are associated with a decrease in mortality and hospitalizations.

Reversing Heart Remodelling Therapy in Patients with CHF

- ACEIs and β blockers should be used in all patients with heart remodeling, associated with or without HF symptoms, unless contraindicated.

- CHF is a progressive process. Reversing heart remodeling is a long-term management.
- When can this therapy be stopped? It is dependant on whether cardiac structural or functional abnormalities disappear. It is necessary for long-term following-up.

Mistake 4

- Digoxin for all patients with HF symptoms.
- For example: Digoxin for patients with CHF, sinus rhythm, LVEF>50%, and normal LVEDD.

Digoxin in CHF

- Adding digoxin should be considered for patients with persistent symptoms of HF and reduced LVEF despite the optimised routine therapy with ACEIs, β blockers, and diuretics.
- Digoxin and β blockers are used as rate controllers in patients with chronic atrial fibrillation.

- Digoxin should be used with caution. They should not be used in patients with myocardial infarction, particularly if they have ongoing ischemia.
- Digoxin should not be used in patients with symptoms of HF who have normal LVEF and sinus rhythm.

Mistake 5

- Combinations of nitrates and dopamine for patients with acute HF.
- For example: IV nitroglycerin in one arm and IV dopamine in another arm of patients with AHF.

Classification of Acute HF

- CS1 SBP>140mmHg
- CS2 SBP 100-140mmHg
- CS3 SBP<100mmHg
- CS4 ACS with AHF
- CS5 Isolated Right Ventricular Failure

Practical recommendations for prehospital and early in-hospital management of patients presenting with acute heart failure syndromes

Alexandre Mebazaa, MD, PhD; Mihai Gheorghiade, MD, FACC; Ileana L. Piña, MD, FACC; Veli-Pekka Harjola, MD; Steven M. Hollenberg, MD; Ferenc Follath, MD; Andrew Rhodes, MD; Patrick Plaisance, MD; Edmond Roland, MD; Markku Nieminen, MD; Michel Komajda, MD; Alexander Parkhomenko, MD; Josep Masip, MD; Faiez Zannad, MD, PhD; Gerasimos Filippatos, MD



Treatments

- CS1 (SBP > 140 mmHg): NIV and Nitrates; diuretics are rarely indicated unless volume overload
- CS2 (SBP 100-140 mmHg): NIV and Nitrates; diuretics if systemic chronic fluid retention
- CS3 (SBP < 100 mmHg): Volume loading with initial fluid challenge if no overt fluid retention; inotrope; PAC if no improvement; if BP fails to improve above 100 mmHg and hypoperfusion persists, then consider vasoconstrictors
- CS4 (ACS): NIV; Nitrates; Cardiac catheterization lab, follow guideline recommended management for ACS (aspirin, heparin, reperfusion therapy); IABP
- CS5 (RVF): Avoid volume loading; diuretics if SBP >90 mmHg and systemic chronic fluid retention; inotropes if SBP <90 mmHg; If SBP fails to improve above 100 mmHg, then begin vasoconstrictors

Vasodilators in AHFS

- Management of AHF primarily based on SBP.
- Nitrate therapy is recommended in CS1, CS2, and CS4 if $SBP > 100\text{mmHg}$ (Nitrates should not be used below this pressure).
- Vasodilators are not recommended as first line therapy in CS3.
- Calcium antagonists are not recommended in AHFS during the first 12 hours.

- It is very important to monitor BP and slow titrate IV nitrates in order to avoid large decreases in SBP.
- If SBP<100mmHg, stop titration of nitrates and increase volume loading. If BP remains low, a vasoconstrictor should be considered.
- Routine combinations of nitrates and dopamine is not suitable.

Dopamine in AHFS

- Dopamine may be used as an inotrope ($>2\mu\text{g/kg/min}$, i.v.) in AHF patients with hypotension.
- Infusion of low doses of dopamine may be used to improve renal blood flow and diuresis in decompensated HF patients with hypotension and low urine output.

II b (C) ESC AHFS guideline

Vasoconstrictors in AHFS

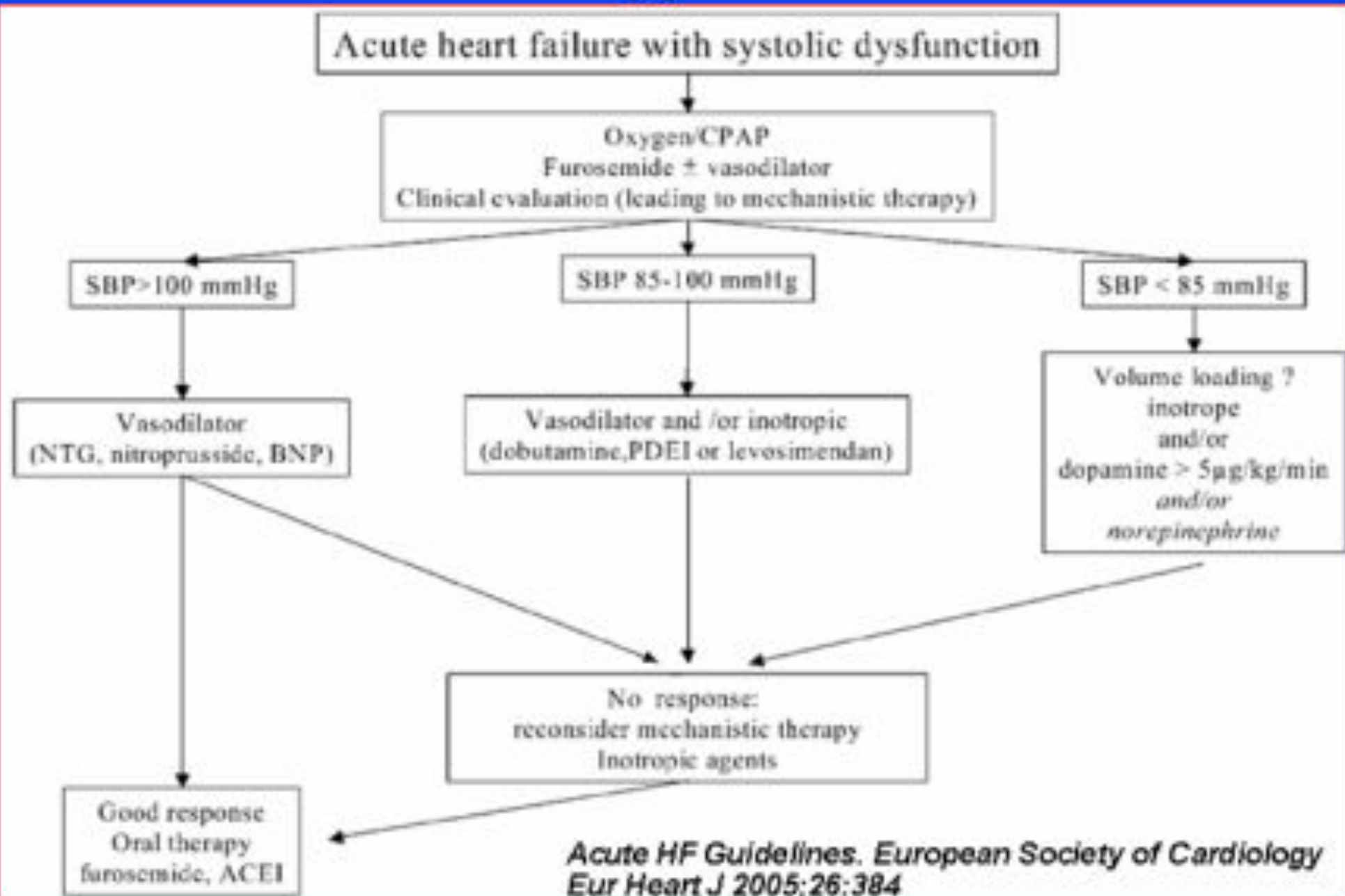
- Norepinephrine is recommended alone or in combination in CS3 and CS5 patients to increase SBP in the situation of persistent organ hypoperfusion.
- There is no evidence of a renal benefit with low-dose dopamine.

2008 Practical recommendations for AHF

Mistake 6

- Use diuretics as a first line therapy in ALL AHF patients.

Current medical therapy in acute heart failure



Diuretics in AHFS

- Diuretics are not ideal first line therapy for all patients with AHFS.
- Diuretics should only be given when there is evidence of systemic volume overload.
- Diuretics may be used as first line therapy in CS2 and CS5 patients.
- For CS1, vasodilators should be given first after which diuretics may be added.

2008 Practical recommendations for AHF

Diuretics in AHFS

- The dose of diuretics should be up-titrated according to renal function, SBP, and history of diuretics use.
- High doses are not recommended, because they may be detrimental to renal function and decrease patient tolerability of ACEIs.
- Electrolytes should be monitored closely.

2008 Practical recommendations for AHF

Mistake 7

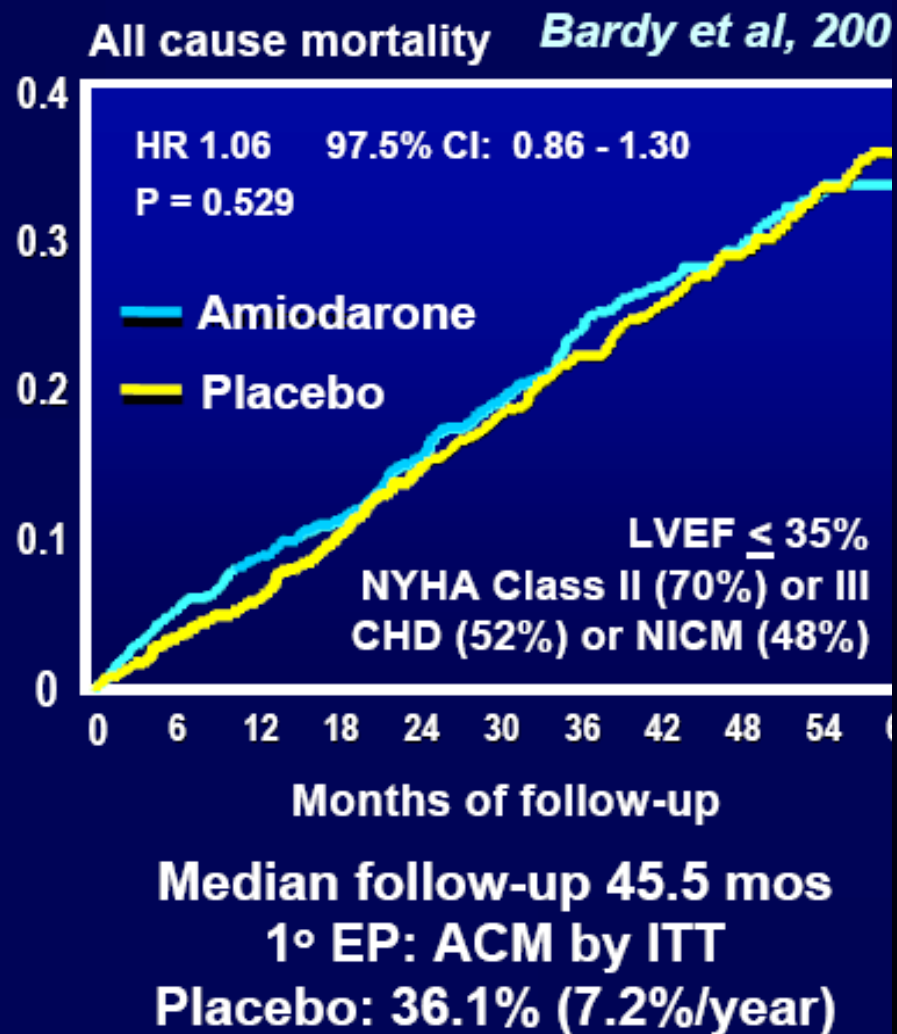
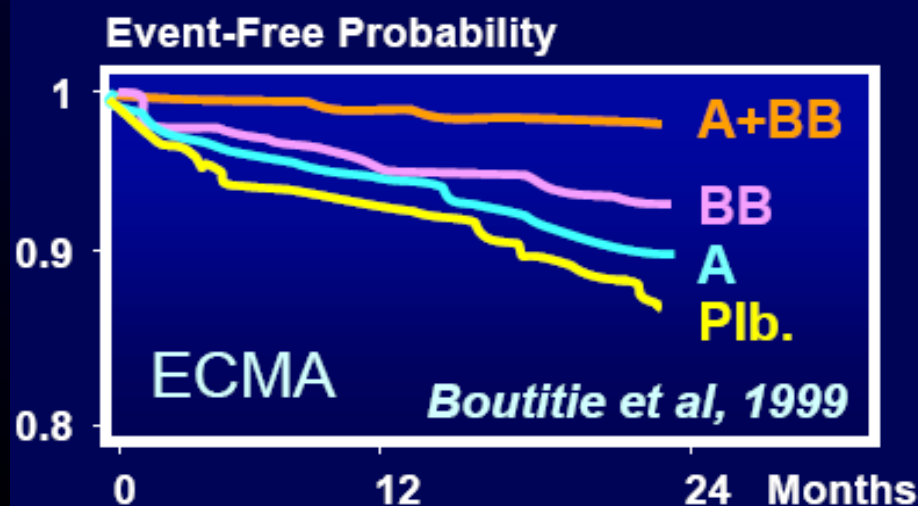
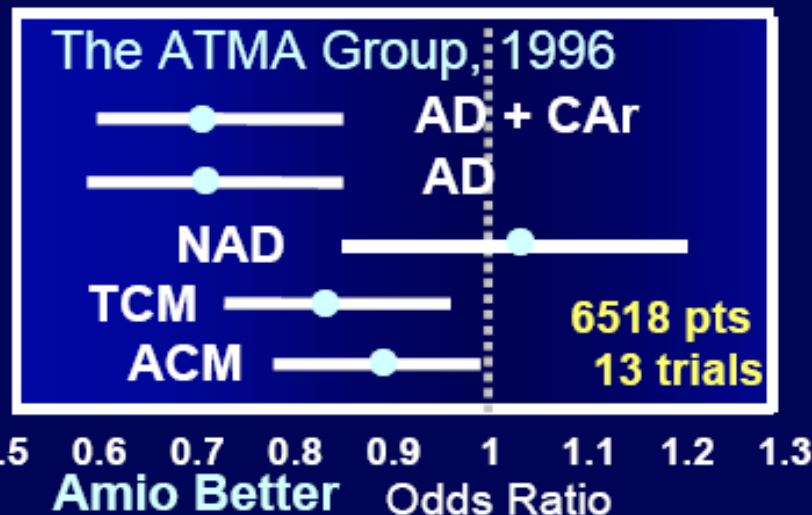
- Use amiodarone in HF patients with premature ventricular contraction (PVC).

- For patients with CHF and ventricular arrhythmia, history of syncope, hypotension should be taken first.
- Remove the temporary factors, such as kaliopenia, hypotension, ischemia and hypoxemia.
- For patients with CHF and PVC along with no hemodynamic instability, amiodarone is not recommended.

- Antiarrhythmic drugs used to suppress premature ventricular contraction and non-sustained ventricular arrhythmia have not been known to improve survival.
- Amiodarone has been associated with overall neutral effects on survival when given to patients with low EF and HF.
- Amiodarone should not be considered as part of the routine treatment of patients with HF, with or without frequent premature ventricular contraction, or asymptomatic non-sustained VT.

Amiodarone

Metanalysis and SCDHeFT



Anti-arrhythmic Agents in CHF

- Antiarrhythmic agents, including amiodarone, are not recommended for the prevention of sudden death in patients with HF. (A)
- In patients with HF and implantable ICDs, amiodarone may be considered to reduce the frequency of repetitive discharge. (C)
- Patients on amiodarone along with other drugs such as digoxin, warfarin, and statins should be carefully monitored due to the possibility of advanced drug interaction. (A)

HFSA 2006 Guideline

Amiodarone in CHF

- Patients with previous episodes of cardiac arrest or documented sustained VT have a high risk of recurrent events. These patients which can not receive an ICD may have amiodarone considered as secondary prevention.
- Patients with CHF and sustained VT associated with hemodynamic instability.
- Patients with CHF and atrial fibrillation.

2006 AHA/ACC/ESC Guideline

Amiodarone - Some Recommendations

- Class IIa Recommendation

- Amiodarone, often in combination with beta blockers, can be useful for patients with LVD due to prior MI and symptoms due to ***VT unresponsive to beta-adrenergic blocking agents*** (Level of Evidence: B)
- Amiodarone is reasonable therapy to reduce symptoms due to recurrent hemodynamically stable VT for patients with LVD due to prior MI ***who cannot or refuse to have an ICD implanted*** (Level of Evidence: C)

- Class IIb Recommendation

- Amiodarone may be reasonable therapy for patients with LVD due to ***prior MI with an ICD indication***, as defined above, in patients ***who cannot, or refuse to have an ICD implanted***. (Level of Evidence: C)

Recommendations for 2^o Prevention

- Class I Recommendations

The ICD is effective therapy to reduce mortality by a reduction in SCD in patients with LVD due to prior MI who present with ***hemodynamically unstable sustained VT***, who are receiving chronic optimal medical therapy, and who have reasonable ***expectation of survival with a good functional status for more than 1 year*** (Level of Evidence: A)

An ICD should be implanted in patients with ***non-ischemic DCM and significant LVD who have sustained VT or VF***, who are receiving chronic optimal medical therapy, and who have reasonable expectation of survival with a good functional status for more than 1 year (Level of Evidence: A)

Management of AF

- In patients with atrial fibrillation and heart failure and/or depressed left ventricular function the use of anti-arrhythmic therapy to maintain sinus rhythm should be restricted to amiodarone

Level of evidence C, class I

Prevention of Sudden Death in CHF

- Beta-blockers have shown a reduction in sudden death as well as in all-cause mortality in both post-infarction patients and patients with HF.
- Aldosterone antagonists decrease sudden death and overall mortality in HF soon after MI and in advanced HF.

- **Thanks for your attention!**
- **Welcome to Beijing, China!**
- **One world one dream!**

