Common Mistakes in HF Drug Therapy

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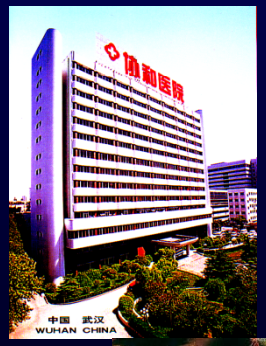


Common Mistakes in HF Drug Therapy

- Misuse of ACE inhibitors in patients with HF, with no regard to etiology of heart disease.
- Routine long-term use of nitrates in chronic HF.
- Overemphasis on correction of hemodynamics, without consideration of reversal of LV remodeling.
- Over-utilization of digoxin in patients with HF.
- Routine simultaneous application of nitrates and dopamine in patients with acute HF.
- Diuretics as first-line therapeutic therapy in all acute HF patients.
- Indiscriminate use of amiodarone in HF patients with premature ventricular contractions.

Mistake 1

- Misuse of ACE inhibitors in patients with HF, with no regard to etiology of heart disease.

  For example: ACE inhibitors for patients with HF and severe valvular stenosis.

- Rheumatic valvular heart disease is one of the common causes of chronic heart failure in China.
- Valve replacement or repair should be considered for patients with severe valvular stenosis/regurgitation, 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, a vasodilator, is not recommended for these patients for reduction of LV preload, for fear of hypotension and syncope.

Different Opinion

- Calcific aortic stenosis has become the most frequent type of VHD in Europe.
- Progressive degeneration of AS shares a number of similarities 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 LV dilatation.
- In acute mitral regurgitation (MR), filling pressure can be reduced by nitrates and diuretics. Nitroprusside reduces afterload and regurgitant fraction.
- Asymptomatic patients with moderate MR and preserved LV function can be followed without drug intervention.

Mistake 2

- Routine long-term use of nitrates in chronic HF.

  For example: Nitrates in stable HF patients with no CHD.

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 effect is weak. Routine use of nitrates is not recommended.

Mistake 3

- Overemphasis on correction of hemodynamics, without consideration of reversal of LV remodeling.

Phases of AHF Management

- Emergency treatment
  - Correction of hemodynamic abnormalities
- In-hospital stabilization
  - Improvement of symptoms
  - Limitation of cardiovascular damage
- Discharge planning
  - Treatment of underlying etiology/pathology
  - Reduction of disability and re-hospitalization
- Long-term management
  - Delay of disease progression & reversal of LV remodeling
  - Reduction of mortality

Discharge Planning and Long-term Management

- In patients with AHF (prior HF: 65-87% and new onset AHF: 13-25%), most episodes are actually the first episodes of decompensation.
- Reversal of LV remodelling is necessary in AHF patients with structural heart disease.
- Life-saving therapies with ACEI/ARBs or β blockers are still underutilized in terms of number of patients treated and dosing.
- Optimization of pharmacologic 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, both of which have been shown to reduce mortality and rehospitalization.

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 otherwise contraindicated.

- CHF is a progressive process. Reversing heart remodeling is a long-term management.
- When can this therapy be stopped?

  It depends on whether cardiac structural or functional abnormalities disappear. Long-term follow-up is necessary.

Mistake 4

- Over-utilization of digoxin in patients with HF.

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

Digoxin in CHF

- Digoxin therapy should be considered for patients with persistent symptoms of HF and reduced LVEF despite optimized therapy with ACEIs, β blockers, and diuretics.
- Digoxin and β blockers are used for rate control in patients with chronic atrial fibrillation.

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

Mistake 5

- Routine simultaneous application of both nitrates and dopamine in 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>140 mmHg
- CS2 SBP 100-140 mmHg
- CS3 SBP<100 mmHg
- 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 persits, 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, ther begin vasoconstrictors

Vasodilators in AHFS

- Management of AHF primarily based on SBP.
- Nitrate therapy is recommended in CS1, CS2, and CS4 if SBP>100 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 titrate IV nitrates slowly in order to avoid large decrease in SBP.
- If SBP<100 mmHg, stop nitrates and increase volume loading. If BP remains low, a vasoconstrictor should be considered.
- Routine combinations of nitrates and dopamine is not recommended.

Dopamine in AHFS

- Dopamine may be used as an inotrope (>2 µg/kg/min, i.v.) in AHF patients with low blood pressure.
- Low doses of dopamine may be used to improve renal blood flow and diuresis in decompensated HF patients with hypo-tension and low urine output. II b (C)

ESC AHFS guideline

Vasoconstrictors in AHFS

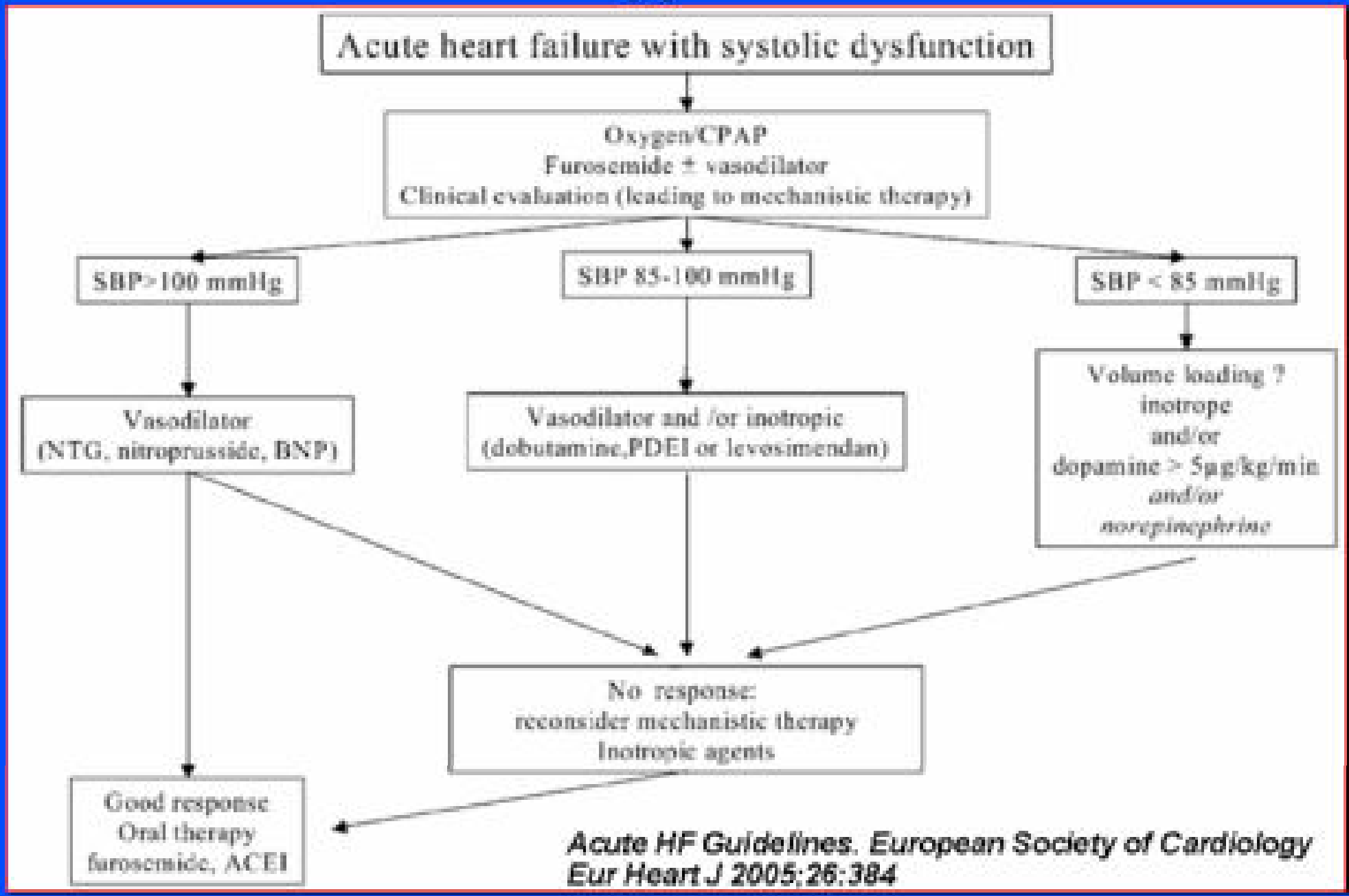
- Norepinephrine is recommended either alone or in combination with other agents to increase SBP in the presence of persistent organ hypoperfusion in CS3 and CS5 patients.
- There is no evidence of renal benefit with low-dose dopamine.

2008 Practical recommendations for AHF

Mistake 6

- Diuretics as first line therapeutic therapy in all acute HF patients.

Current medical therapy in acute heart failure



Acute HF Guidelines. European Society of Cardiology
Eur Heart J 2005;26:384

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's tolerance to ACEIs.
- Serum electrolytes should be monitored closely.

2008 Practical recommendations for AHF

Mistake 7

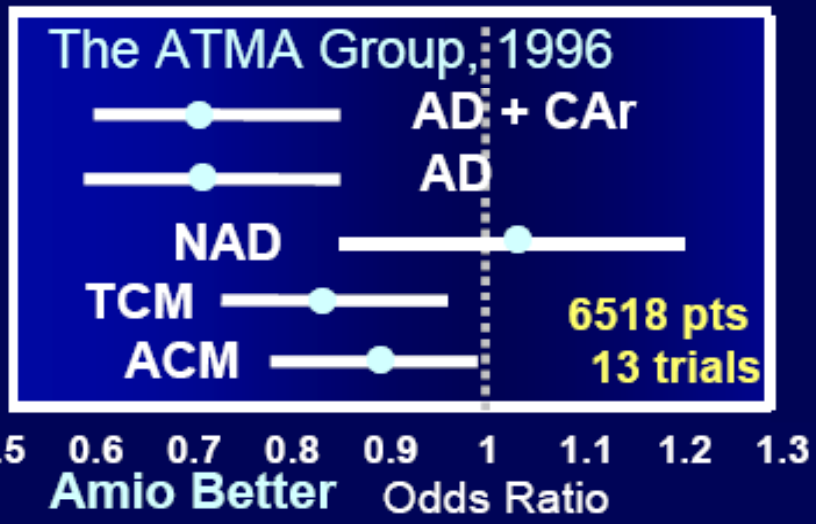
- Indiscriminate use of amiodarone in HF patients with premature ventricular contractions.

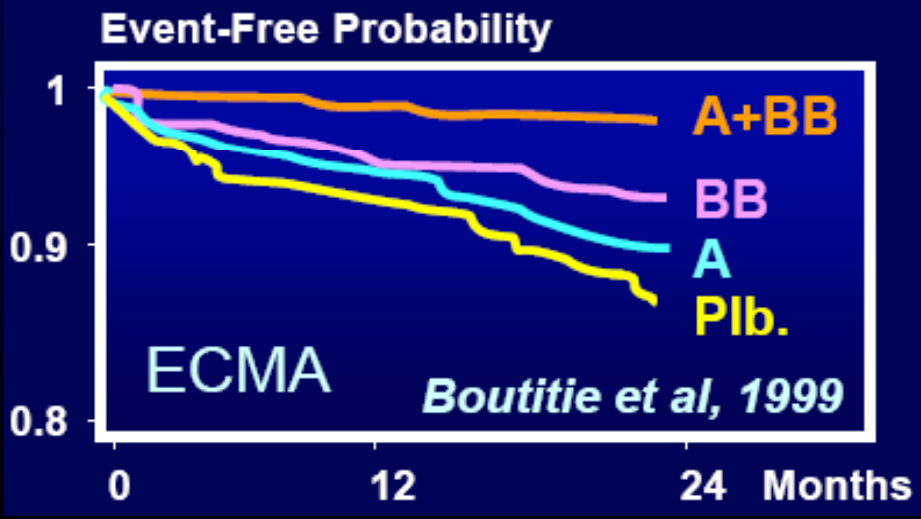
- For patients with CHF and ventricular arrhythmia, patients should be asked for history of syncope or hypotension.
- Eliminate precipitating factors, such as kaliopenia, hypotension, ischemia or hypoxemia.
- For patients with CHF and PVC but no hemodynamic instability, amiodarone is not recommended.

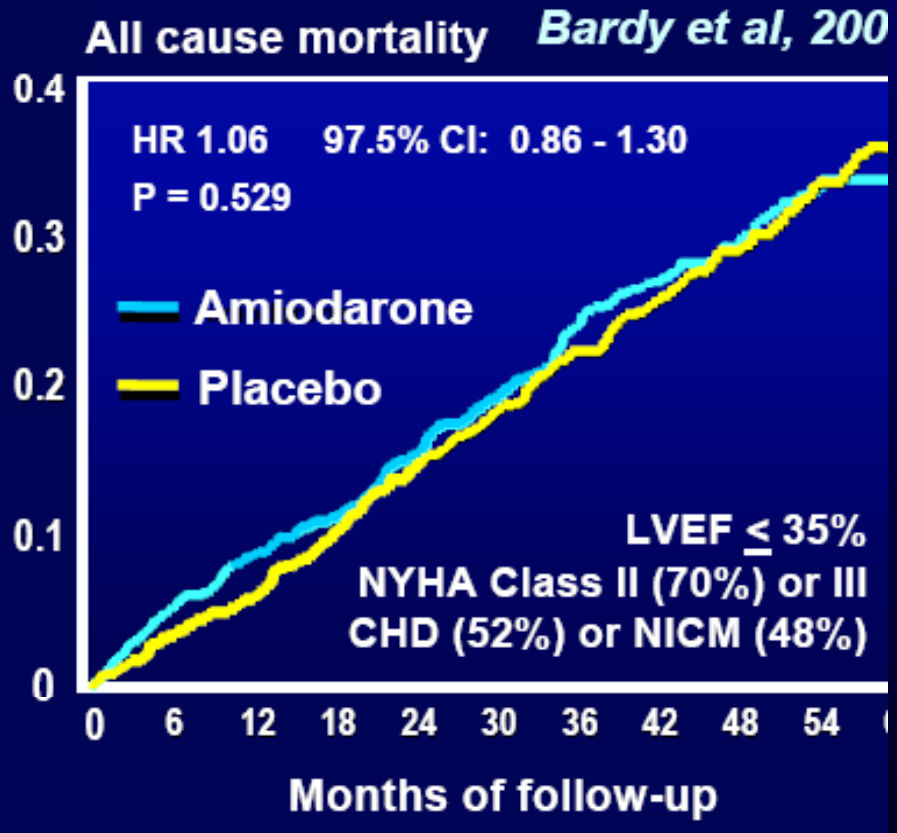
- Antiarrhythmic drugs used to suppress premature ventricular contraction and non-sustained ventricular arrhythmia have not been shown to improve survival.
- Amiodarone is associated with overall neutral effect on survival when given to patients with low EF and HF.
- Amiodarone should not considered 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







Median follow-up 45.5 mos
1° EP: ACM by ITT
Placebo: 36.1% (7.2%/year)

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 cardiac arrest or documented sustained VT have a high risk of recurrent events. These patients, if ICD implantation is not a viable option, may have amiodarone considered for 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 2⁰ 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 been shown to reduce sudden death and 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!**