ST-utbildning i kardiologi med tema kardioonkologi och hjärtsvikt

1-2 oktober 2019

Fredensborgs Herrgård, Vimmerby

Patric Karlström
Överläkare
Medicinkliniken
Jönköping

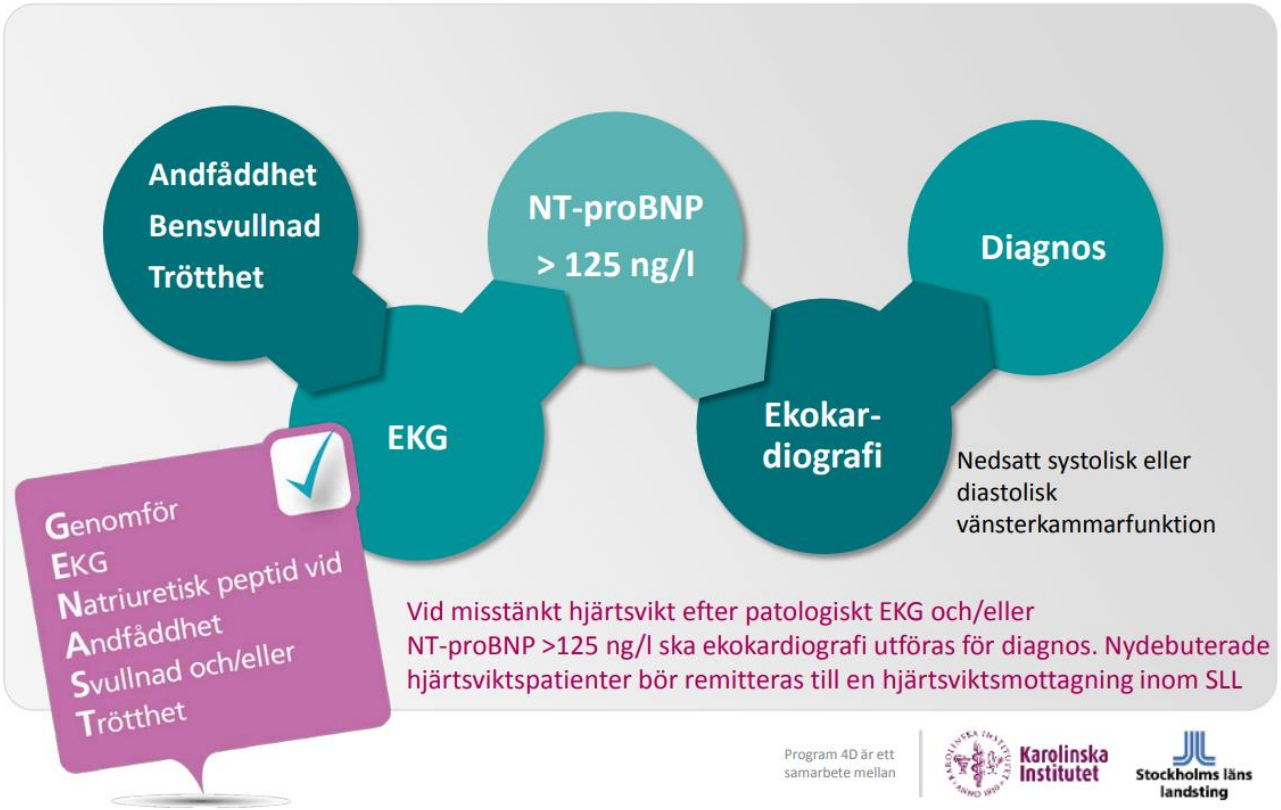
Region Jönköpings län

Agenda

- Diagnos/Definitioner
- Icke farmakologisk behandling
- Farmakologisk behandling
- Pacemaker
- Annat

Diagnostik

Upptäck hjärtsvikt GENAST!



Hjärtsvikt definitioner ESC Guidelines 2016

- HFrEF; Heart Failure with reduced Ejection Fraction(EF)=hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%
- HFmrEF; Heart Failure with mid range Ejection Fraction(EF)=hjärtsvikt med vänsterkammarfunktion (EF) mellan 40-49%
- HFpEF; Heart Failure with preserved Ejection Fraction(EF)=hjärtsvikt med bevarad vänsterkammarfunktion, EF>50%

Kriterium	HFrEF	HFmrEF	HFpEF
1	Symtom och kliniska fynd	Symtom och kliniska fynd	Symtom och kliniska fynd
2	LVEF <40%	LVEF 40-49%	LVEF ≥50%
3		1.NT-pro-BNP >125 ng/L 2. Ett av följande: a. vänsterkammarhypertrofi eller förstoring av vänster förmak b. diastolisk dysfunktion enligt ekokardiografi	1.NT-pro-BNP >125 ng/L 2. Ett av följande: a. vänsterkammarhypertrofi eller förstoring av vänster förmak b. diastolisk dysfunktion enligt ekokardiografi

Ponikowski et al. European Heart Journal (2016) 37, 2129-2200

Hjärtsviktsbehandling

- **Förebygg hjärtsvikt**
  - Hypertoni
  - Hjärtinfarkt
  - Rökning
  - Övervikt
  - Diabetes
  - Droger/läkemedel

Hjärtsviktsbehandling

- Icke farmakologisk behandling
- Farmakologisk behandling
- Kirurgisk
  - PCI/CABG
  - Klaffoperation
  - Pacemaker
  - Hjärttransplantation/pumpar
  - Annan invasiv åtgärd

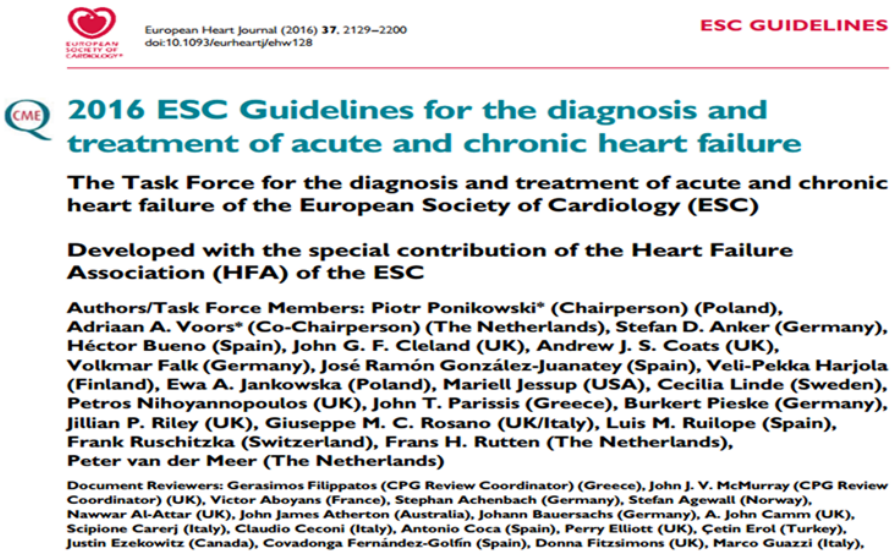
Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- Behandla bakomliggande orsak
  - Klaffel
  - Hjärtinfarkt
  - Förmaksflimmer

Icke-farmakologisk behandling
(komplement till farmakologisk behandling)

- Strukturerat omhändertagande i hjärtsviktsteam
- Rökstopp
- Minskat saltintag
- Vätskerestriktion
- Alkoholrestriktion
- Viktkontroll
- Anpassad fysisk aktivitet
- Utbildning / rådgivning
- Träning

Farmakologisk behandling



European Heart Journal (2016) 37, 2129–2200
doi:10.1093/eurheartj/ehw128

ESC GUIDELINES

2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC)

Developed with the special contribution of the Heart Failure Association (HFA) of the ESC

Authors/Task Force Members: Piotr Ponikowski* (Chairperson) (Poland), Adriaan A. Voors* (Co-Chairperson) (The Netherlands), Stefan D. Anker (Germany), Héctor Bueno (Spain), John G. F. Cleland (UK), Andrew J. S. Coats (UK), Volkmar Falk (Germany), José Ramón González-Juanatey (Spain), Veli-Pekka Harjola (Finland), Ewa A. Jankowska (Poland), Mariell Jessup (USA), Cecilia Linde (Sweden), Petros Nihoyannopoulos (UK), John T. Parissis (Greece), Burkert Pieske (Germany), Jillian P. Riley (UK), Giuseppe M. C. Rosano (UK/Italy), Luis M. Ruilope (Spain), Frank Ruschitzka (Switzerland), Frans H. Rutten (The Netherlands), Peter van der Meer (The Netherlands)

Document Reviewers: Gerasimos Filippatos (CPG Review Coordinator) (Greece), John J. V. McMurray (CPG Review Coordinator) (UK), Victor Aboyans (France), Stephan Achenbach (Germany), Stefan Agewall (Norway), Nawwar Al-Attar (UK), John James Atherton (Australia), Johann Bauersachs (Germany), A. John Camm (UK), Scipione Carerj (Italy), Claudio Ceconi (Italy), Antonio Coca (Spain), Perry Elliott (UK), Çetin Erol (Turkey), Justin Ezekowitz (Canada), Covadonga Fernández-Golfín (Spain), Donna Fitzsimons (UK), Marco Guazzi (Italy),

Farmakologisk behandling

Table I Classes of recommendations

Classes of recommendations	Definition	Suggested wording to use
Class I	Evidence and/or general agreement that a given treatment or procedure **is beneficial, useful, effective.**	Is recommended/is indicated
Class II	**Conflicting evidence and/or a** divergence of opinion about the **usefulness/efficacy of the given** treatment or procedure.	
Class IIa	***Weight of evidence/opinion is in favour of usefulness/efficacy.***	Should be considered
Class IIb	***Usefulness/efficacy is less well*** *established by evidence/opinion.*	May be considered
Class III	Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful.	Is not recommended

Level of evidence A	Data derived from multiple randomized clinical trials or meta-analyses.
Level of evidence B	Data derived from a single randomized clinical trial or large non-randomized studies.
Level of evidence C	Consensus of opinion of the experts and/or small studies, retrospective studies, registries.

Farmakologisk behandling av HFrEF
Systolisk hiärtsvikt (EF<40%)

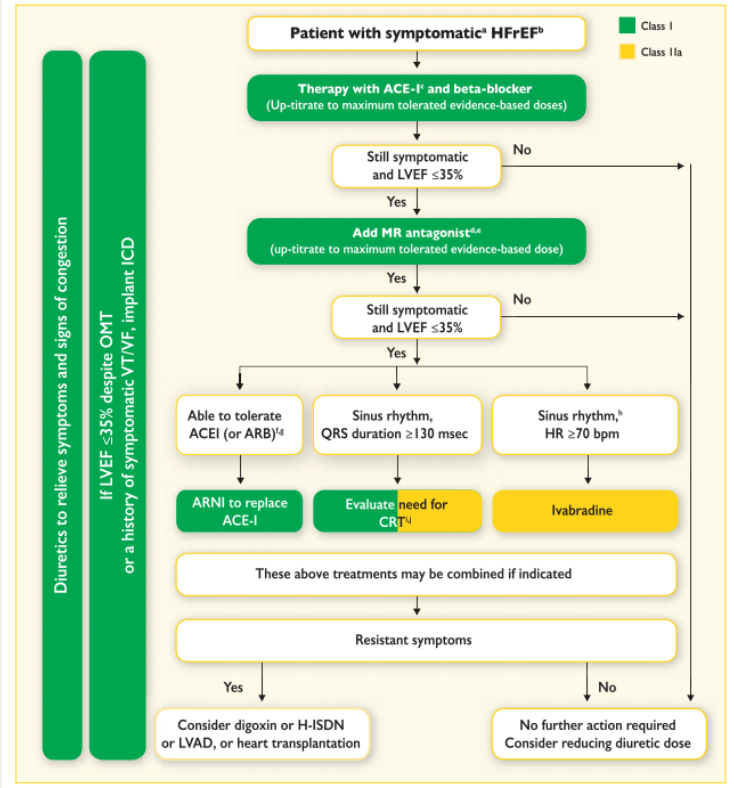


Figure 7.1 Therapeutic algorithm for a patient with symptomatic heart failure with reduced ejection fraction. Green indicates a class I recommendation; yellow indicates a class IIa recommendation. ACEI = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; ARNI = angiotensin receptor neprilysin inhibitor; BNP = B-type natriuretic peptide; CRT = cardiac resynchronization therapy; HF = heart failure; HFrEF = heart failure with reduced ejection fraction; H-ISDN = hydralazine and isosorbide dinitrate; HR = heart rate; ICD = implantable cardioverter defibrillator; LBBB = left bundle branch block; LVAD = left ventricular assist device; LVEF = left ventricular ejection fraction; MR = mineralocorticoid receptor; NT-proBNP = N-terminal pro-B type natriuretic peptide; NYHA = New York Heart Association; OMT = optimal medical therapy; VF = ventricular fibrillation; VT = ventricular tachycardia. [a]Symptomatic = NYHA Class II-IV. [b]HFrEF = LVEF <40%. [c]If ACE inhibitor not tolerated/contra-indicated, use ARB. [d]If MR antagonist not tolerated/contra-indicated, use ARB. [e]With a hospital admission for HF within the last 6 months or with elevated natriuretic peptides (BNP >= 250 pg/ml or NTproBNP > 500 pg/ml in men and 750 pg/ml in women). [f]With an elevated plasma natriuretic peptide level (BNP ≥ 150 pg/mL or plasma NT-proBNP ≥ 600 pg/mL, or if HF hospitalization within recent 12 months plasma BNP ≥ 100 pg/mL or plasma NT-proBNP ≥ 400 pg/mL). [g]In doses equivalent to enalapril 10 mg b.i.d. [h]With a hospital admission for HF within the previous year. [i]CRT is recommended if QRS ≥ 130 msec and LBBB (in sinus rhythm). [j]CRT should/may be considered if QRS ≥ 130 msec with non-LBBB (in a sinus rhythm) or for patients in AF provided a strategy to ensure bi-ventricular capture in place (individualized decision). For further details, see Sections 7 and 8 and corresponding web pages.

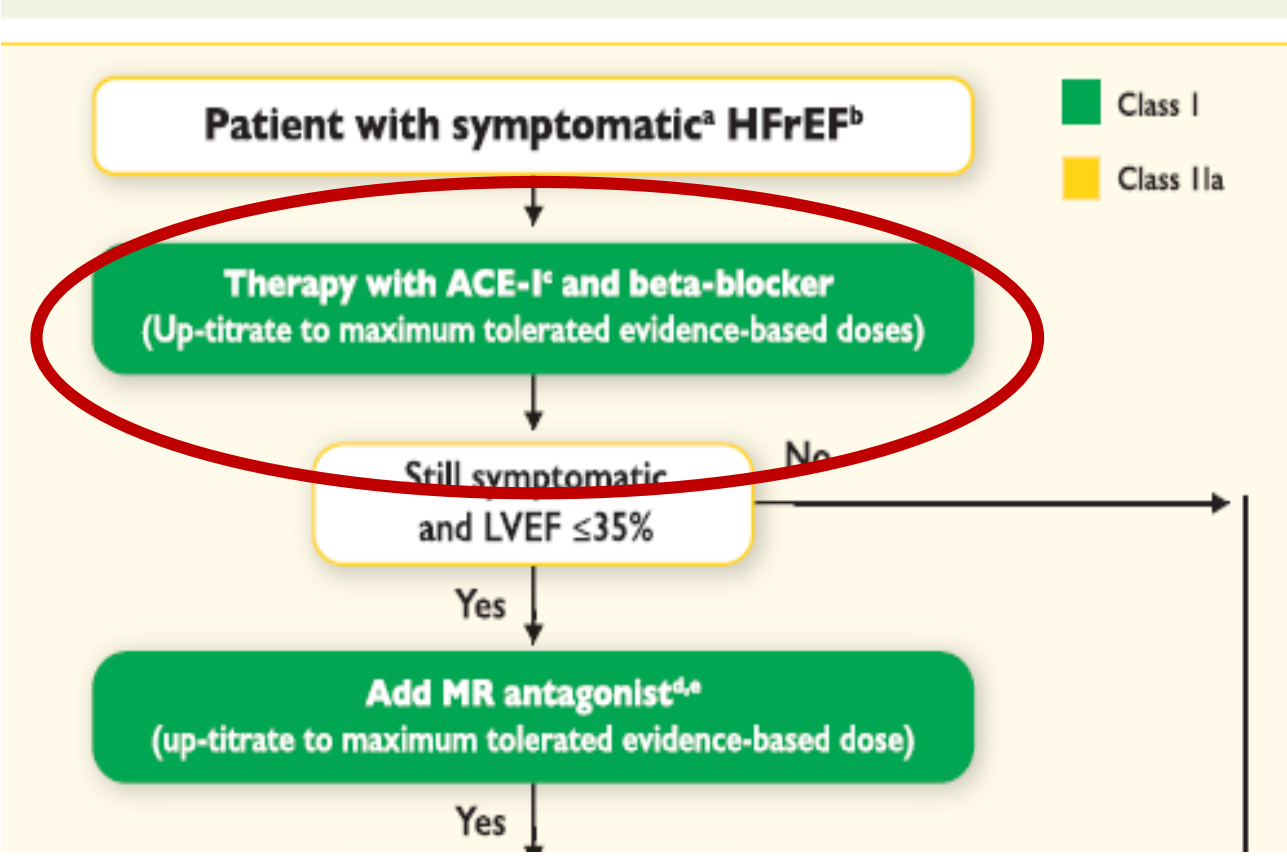
Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- Vätskedrivande vid vätskeretention
  - Furosemid (Furix, Impugan), bumetanid (Burinex)
  - Akut sviktande ge diuretika intravenöst
  - Underhållsbehandling med tablett
  - Symptomatisk behandling

Other pharmacological treatments recommended in selected patients with symptomatic (NYHA Class II-IV) heart failure with reduced ejection fraction

Recommendations	Class [a]	Level [b]	Ref [c]
Diuretics			
Diuretics are recommended in order to improve symptoms and exercise capacity in patients with signs and/or symptoms of congestion.	I	B	178, 179
Diuretics should be considered to reduce the risk of HF hospitalization in patients with signs and/or symptoms of congestion.	IIa	B	178, 179

Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%



Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- **ACE-hämmare**

  Ger ökad överlevnad + minskad morbiditet + ökad livskvalitet + ökad fysisk kapacitet

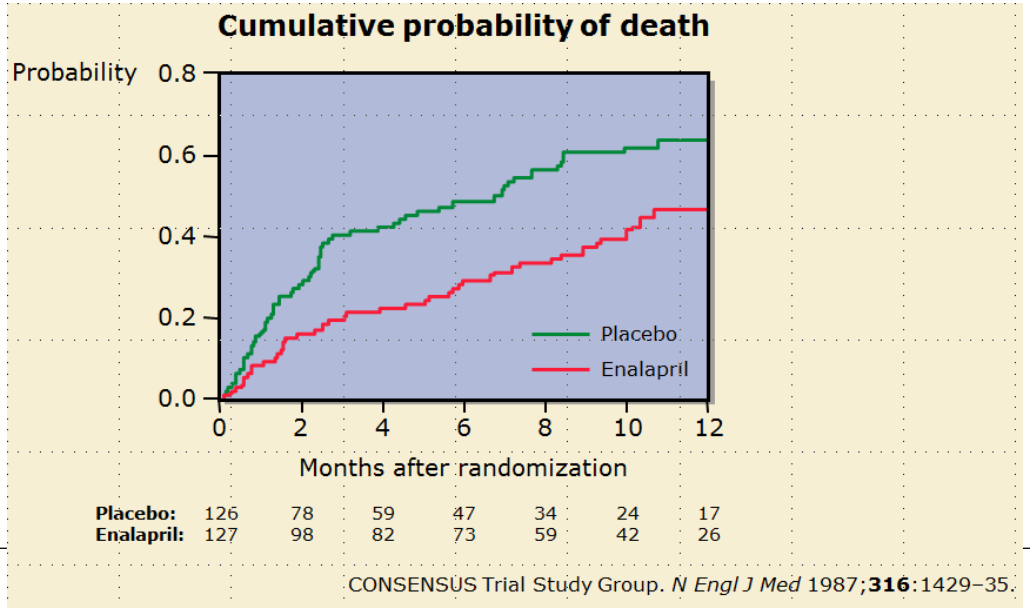
Pharmacological treatments indicated in patients with symptomatic (NYHA Class II-IV) heart failure with reduced ejection fraction

Recommendations	Class[a]	Level[b]	Ref[c]
An ACE-I[d] is recommended, in addition to a beta-blocker, for symptomatic patients with HFrEF to reduce the risk of HF hospitalization and death.	I	A	2, 163–165
A beta-blocker is recommended, in addition to ACE-I[d], for patients with stable, symptomatic HFrEF to reduce the risk of HF hospitalization and death.	I	A	167–173
An MRA is recommended for patients with HFrEF, who remain symptomatic despite treatment with an ACE-I[d] and a beta-blocker, to reduce the risk of HF hospitalization and death.	I	A	174, 175

ACEI = angiotensin-converting enzyme inhibitor; HF = heart failure; HFrEF = heart failure with reduced ejection fraction; MRA = mineralocorticoid receptor antagonist; NYHA = New York Heart Association.
[a]Class of recommendation.
[b]Level of evidence.
[c]Reference(s) supporting recommendations.
[d]Or ARB if ACEI is not tolerated/contraindicated

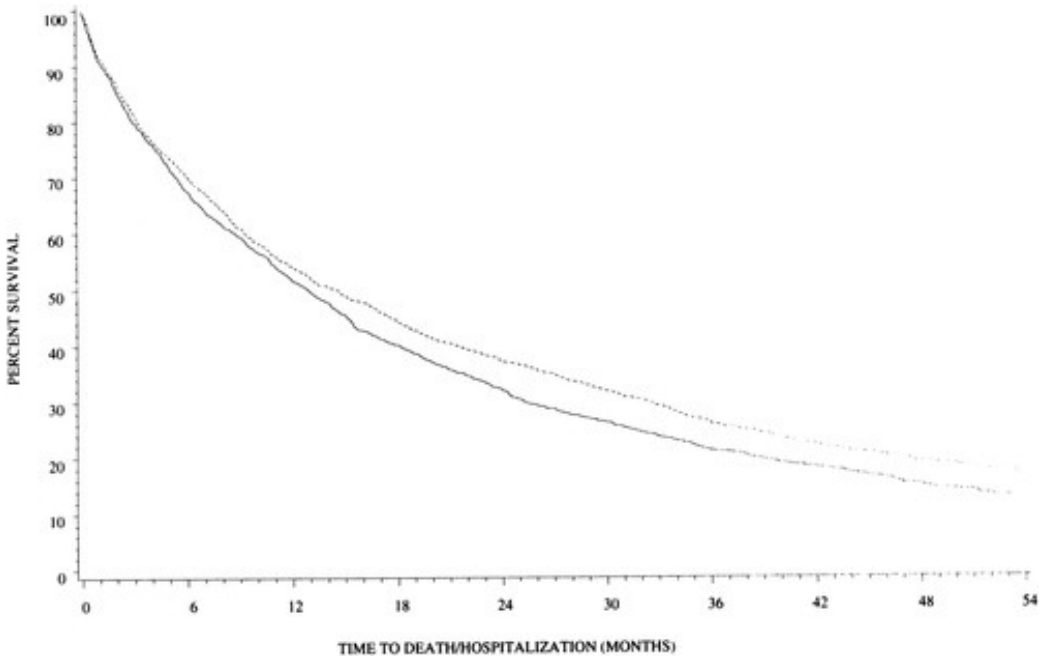
Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- **ACE-hämmare**
  - Enalapril 2,5 mg→20 mg
  - Ramipril 2,5 mg →10 mg



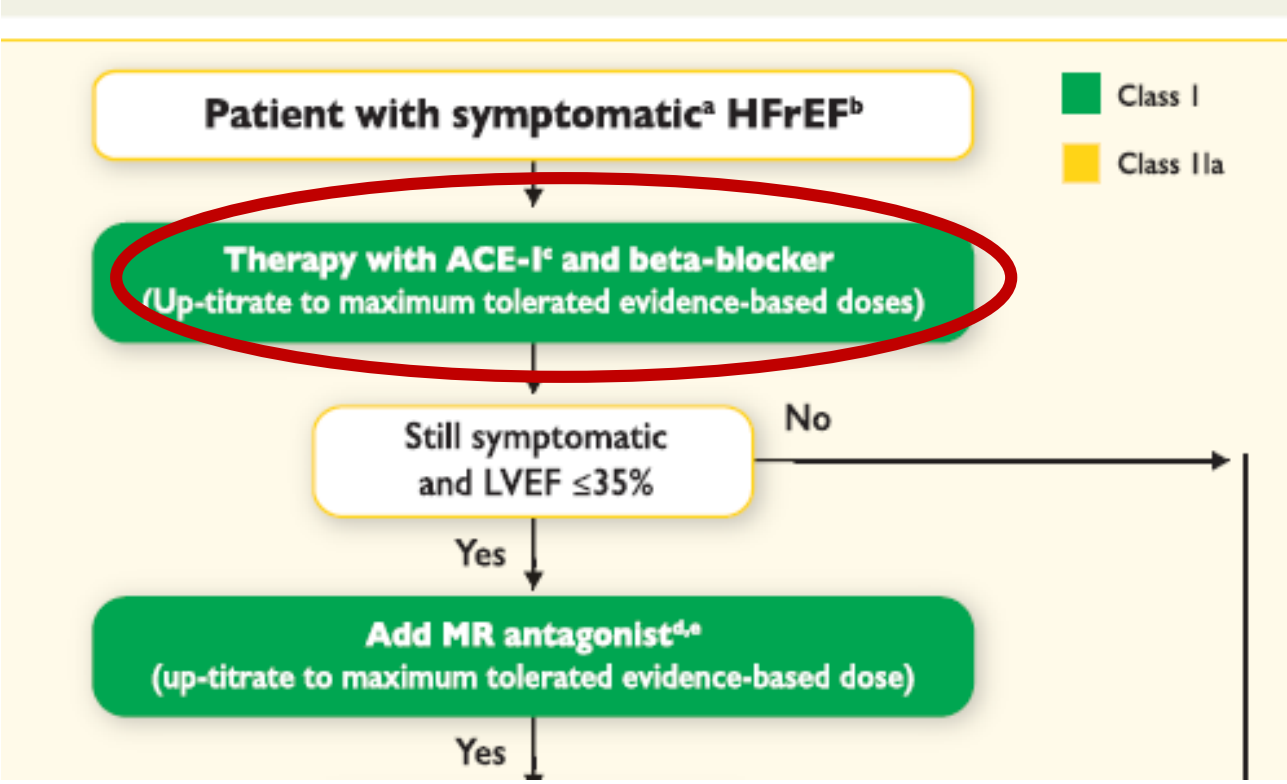
Hög dos mot låg dos ACEi

- 3164 patienter, NYHA II-IV
- EF ≤30 %
- Lisinopril 2,5-5 mg/dag vs 32,5-35 mg/dag
- Ingen skillnad i mortalitet P=0.128
- HF hospitalisering ↓ 24 %
- Död/HF hosp. P=0.002



Milton Packer. Circulation, Volume: 100, Issue: 23, Pages: 2312-2318, DOI: (10.1161/01.CIR.100.23.2312)

Farmakologisk behandling av HFrEF
Systolisk hjärtsvikt (EF<40%)



Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- **Betablockad**

  Ökad överlevnad + minskad morbiditet
  + ökad livskvalitet + ökad fysisk kapacitet

Pharmacological treatments indicated in patients with symptomatic (NYHA Class II-IV) heart failure with reduced ejection fraction

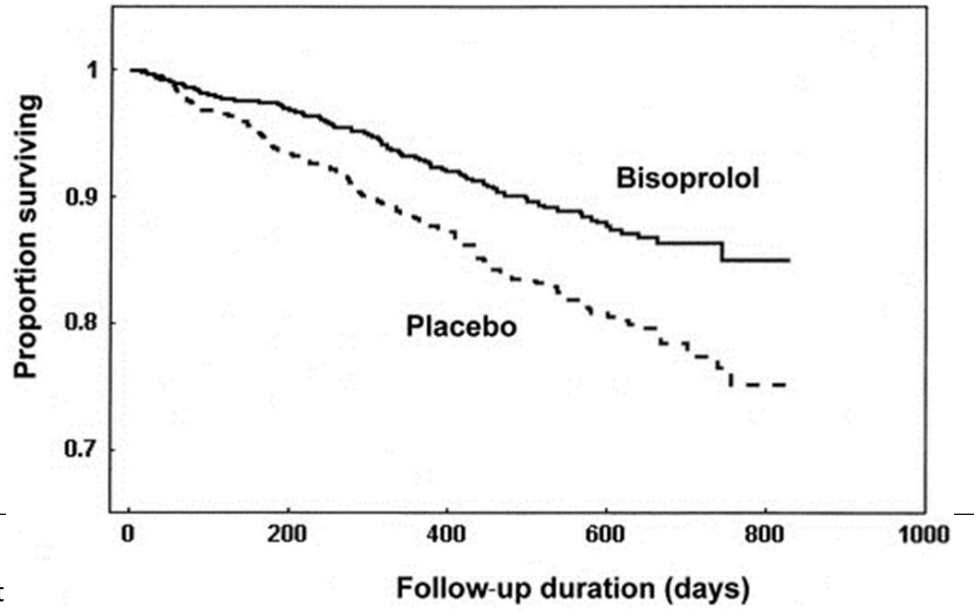
Recommendations	Class[a]	Level[b]	Ref[c]
An ACE-I[d] is recommended, in addition to a beta-blocker, for symptomatic patients with HFrEF to reduce the risk of HF hospitalization and death.	I	A	2, 163 -165
A beta-blocker is recommended, in addition an ACE-I[d], for patients with stable, symptomatic HFrEF to reduce the risk of HF hospitalization and death.	I	A	167–173
An MRA is recommended for patients with HFrEF that remain symptomatic despite treatment with an ACE-I[d] and a beta-blocker, to reduce the risk of HF hospitalization and death.	I	A	174, 175

ACEI = angiotensin-converting enzyme inhibitor; HF = heart failure; HFrEF = heart failure with reduced ejection fraction; MRA = mineralocorticoid receptor antagonist; NYHA = New York Heart Association.
[a]Class of recommendation.
[b]Level of evidence.
[c]Reference(s) supporting recommendations.
[d]Or ARB if ACEI is not tolerated/contraindicated

Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- **Betablockad**
  - Metoprolol 12.5-25 mg→200 mg/dag, risk reduktion 34 % p=0.0062
  - Bisoprolol 1.25 mg→10 mg/dag

  risk reduktion 34 % p<0.0001



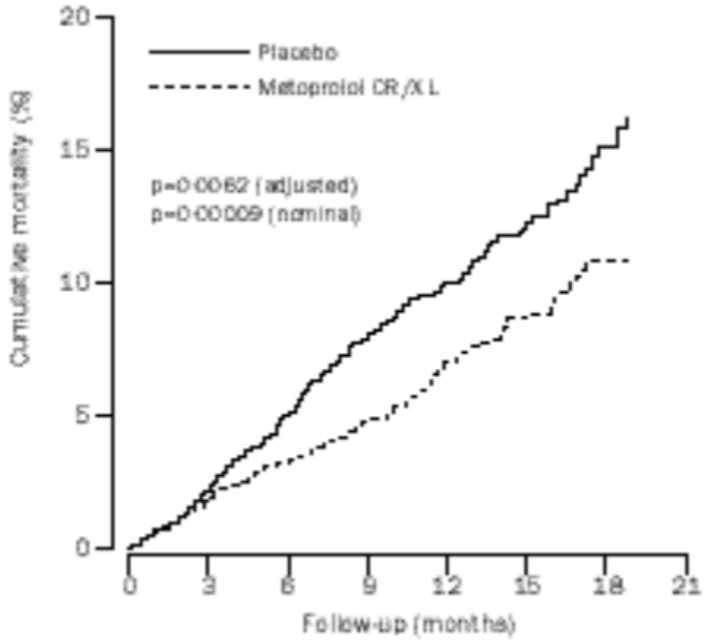
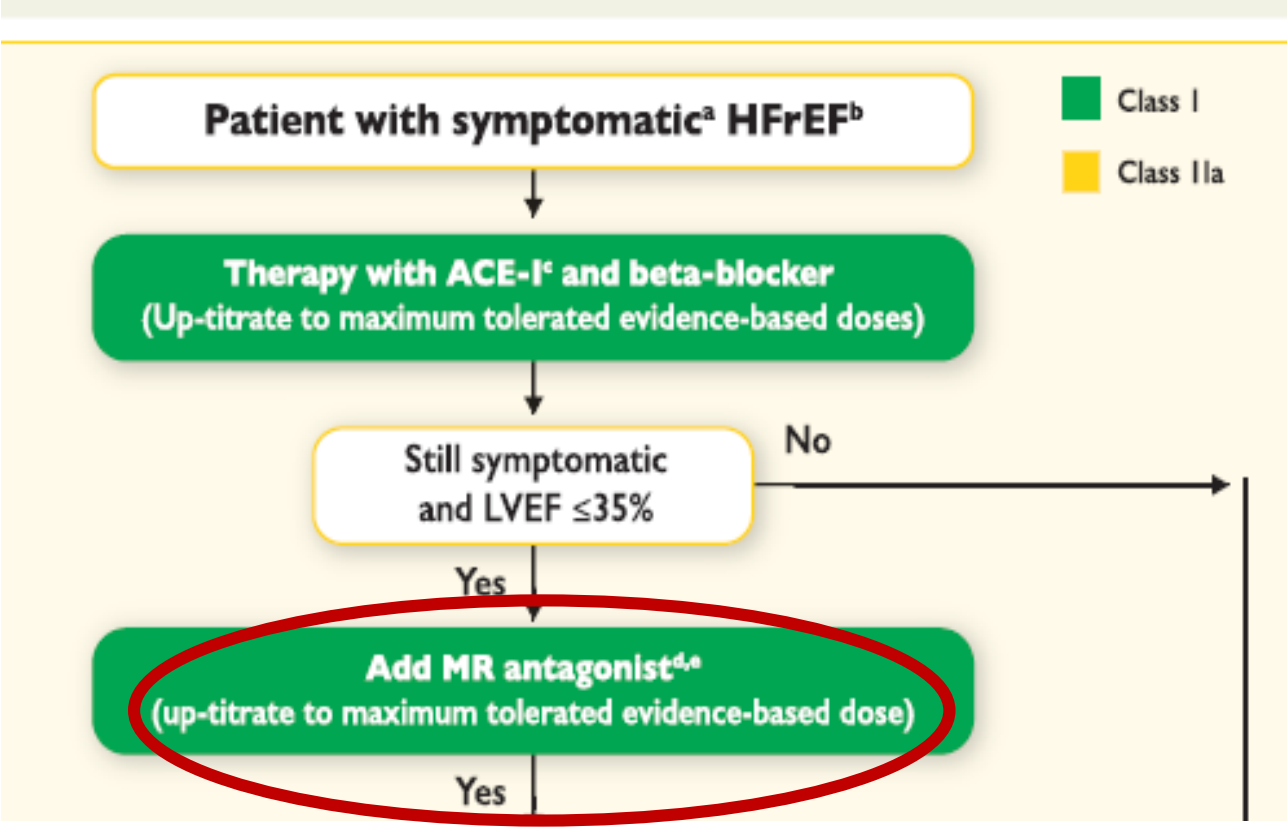


Figure 2: **Kaplan-Meier curves of cumulative percentage of total mortality**

MERIT-HF Lancet 1999; 353: 2001–07
CIBIS-HF Lancet 1999. 353 p 9-13

Region Jönköpings län

Farmakologisk behandling av HFrEF
Systolisk hjärtsvikt (EF<40%)



NYHA funktionsklasser

NYHA-klass		Klinisk bild
NYHA I		Organisk hjärtsjukdom utan symtom.
NYHA II		Lätt hjärtsvikt med andfåddhet och trötthet endast efter fysisk aktivitet av mer uttalad grad.
NYHA III	A	Medelsvår hjärtsvikt med andfåddhet och trötthet vid lätt/måttlig fysisk aktivitet, allt ifrån gång i lätt motlut till av- och påklädning. Kan gå >200 m.
	B	Medelsvår hjärtsvikt med andfåddhet och trötthet vid lätt/måttlig fysisk aktivitet, allt ifrån gång i lätt motlut till av- och påklädning. Kan gå <200 m.
NYHA IV		Svår hjärtsvikt med andfåddhet och trötthet redan vid vila. Ökande symtom vid minsta aktivitet. Patienten är ofta bunden till säng eller stol.

Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- Mineralreceptorantagonist MRA
  - Spironolakton, eplerenone

Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- **MRA**

  Ökad överlevnad + minskad morbiditet
  + ökad livskvalitet + ökad fysisk kapacitet

Pharmacological treatments indicated in patients with symptomatic (NYHA Class II-IV) heart failure with reduced ejection fraction

Recommendations	Class[a]	Level[b]	Ref[c]
An ACE-I[d] is recommended, in addition to a beta-blocker, for symptomatic patients with HFrEF to reduce the risk of HF hospitalization and death.	I	A	2, 163 –165
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[a]Class of recommendation.
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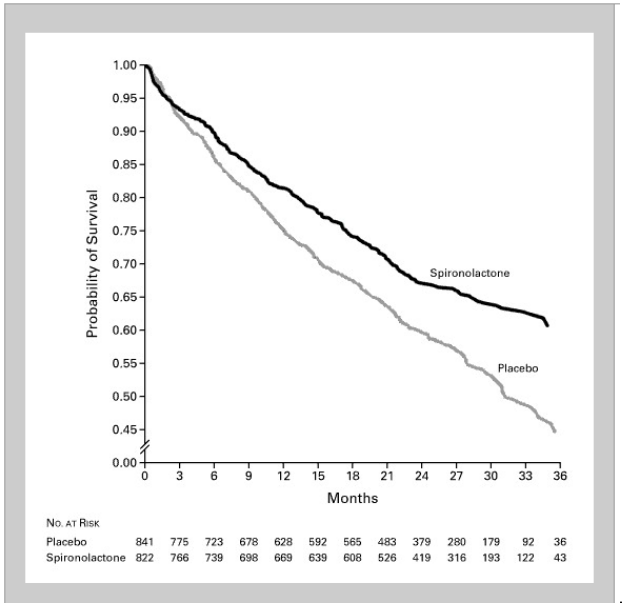
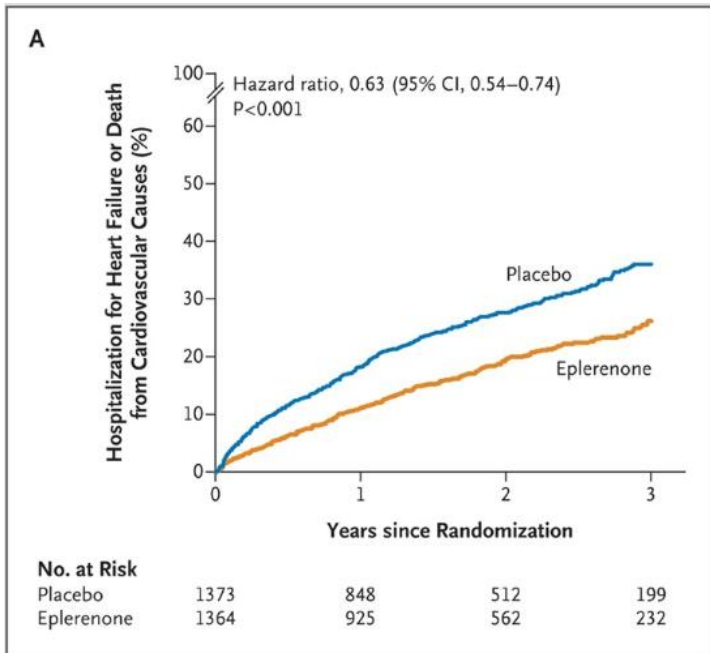
[c]Reference(s) supporting recommendations.
[d]Or ARB if ACEI is not tolerated/contraindicated

Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- **MRA**
  - Spironolakton 12.5-25 mg→50 mg (RR 0.70, P<0.001)
  - Eplerenone 25 mg→50 mg

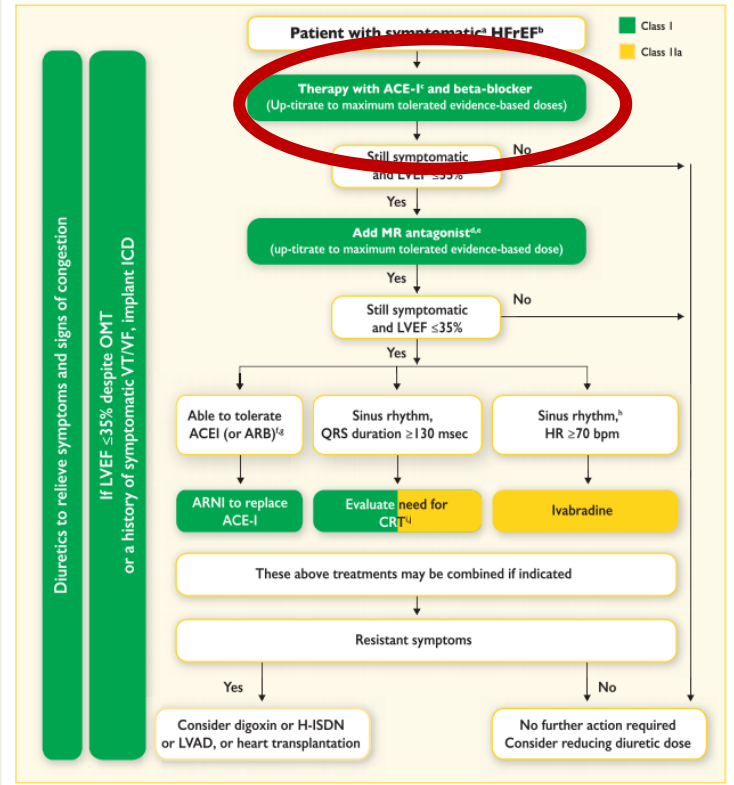




Pitt et al. NEJM 1999; 341:709-717
Zannand et al. NEJM 2011; 364, 11-21

Region Jönköpings län

Farmakologisk behandling av HFrEF
Systolisk hjärtsvikt (EF<40%)



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Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- Angiotensin receptor blockad ARB
  - Candesartan, valsartan, losartan

Om patienten inte tål ACE-hämmare

Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

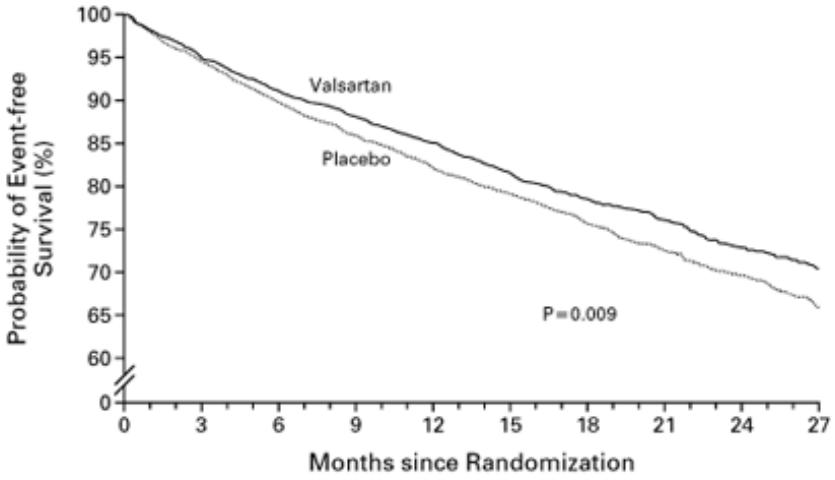
- **ARB**

  Ökad överlevnad + minskad morbiditet
  + ökad livskvalitet + ökad fysisk kapacitet

ARB			
An ARB is recommended to reduce the risk of HF hospitalization and cardiovascular death in symptomatic patients unable to tolerate an ACE-I (patients should also receive a beta-blocker and an MRA).	I	B	182
An ARB may be considered to reduce the risk of HF hospitalization and death in patients who are symptomatic despite treatment with a beta-blocker who are unable to tolerate an MRA.	IIb	C	.

Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

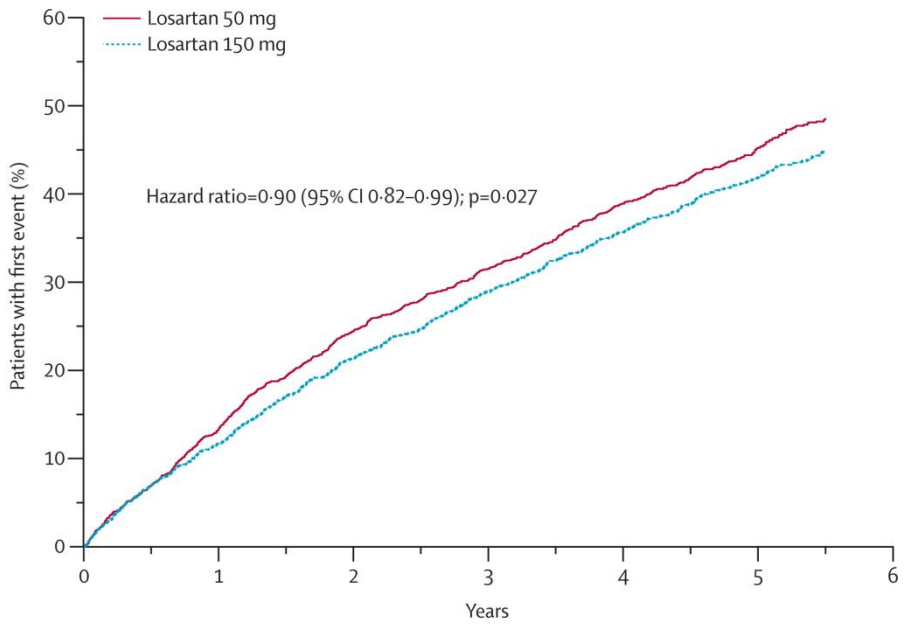
- **ARB**
  - Losartan 50 mg→150 mg
  - Valsartan 40 mgx2→160 mgx2
  - Candesartan 4-8 mg→32 mg



Cohn et al. NEJM 2001;345:1667-1675

Hög dos mot låg dos

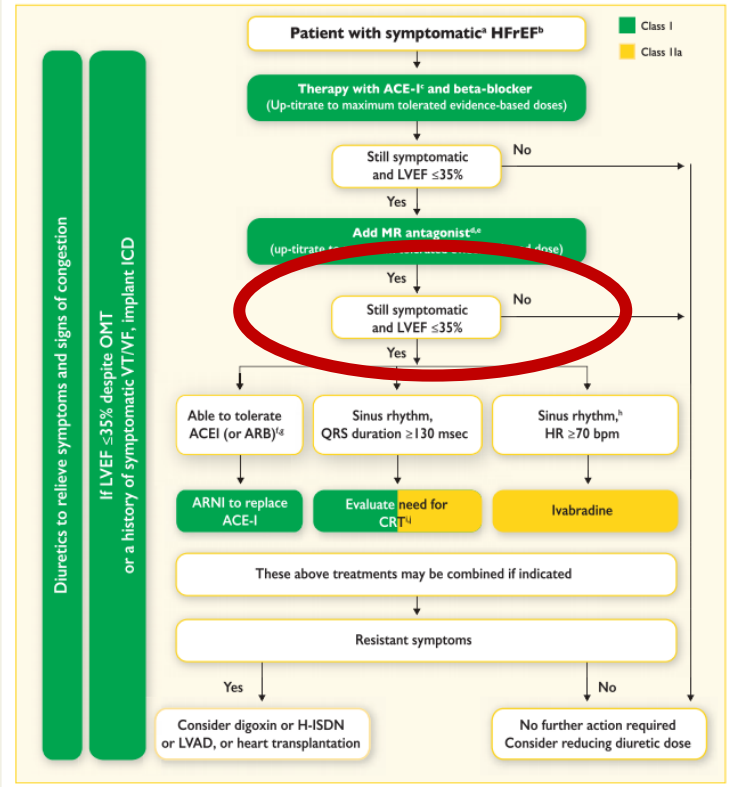
- 1921/1913 patienter hög/låg-dos
- NYHA II-IV
- 66 år, 70 % män
- EF< 40 %
- Losartan 50 mg vs 150 mg
- 4,7 års uppföljning
- Död/HF hosp. P=0.027



Number at risk					
Losartan 50 mg	1646	1422	1277	1126	644
Losartan 150 mg	1684	1493	1344	1205	711

Konstam et al. The Lancet Volume 374, Issue 9704, 28 November–4 December 2009, Pages 1840-1848

Farmakologisk behandling av HFrEF
Systolisk hjärtsvikt (EF<40%)



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Farmakologisk behandling av HFrEF
Systolisk hjärtsvikt (EF<40%)

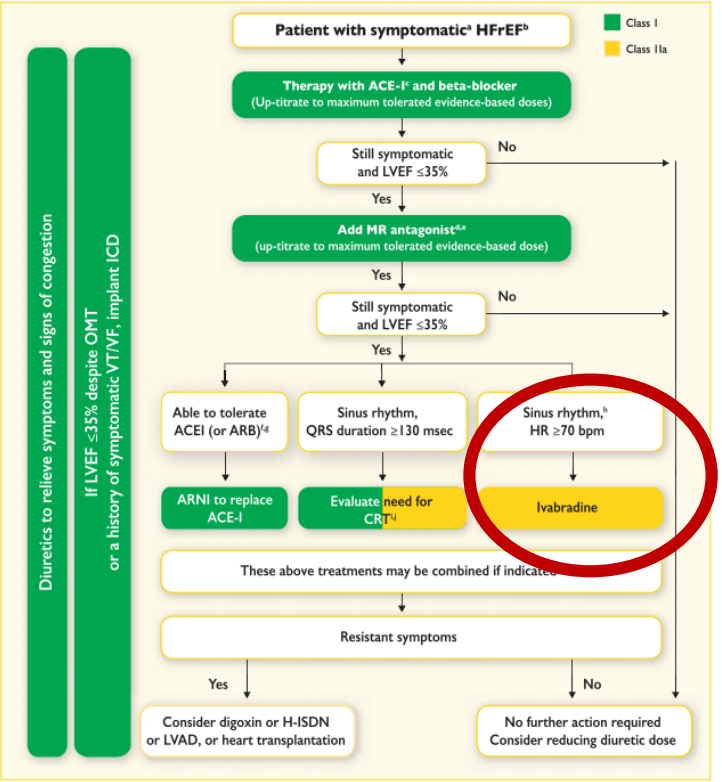


Figure 7.1 Therapeutic algorithm for a patient with symptomatic heart failure with reduced ejection fraction. Green indicates a class I recommendation; yellow indicates a class IIa recommendation. ACEI = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; ARNI = angiotensin receptor neprilysin inhibitor; BNP = B-type natriuretic peptide; CRT = cardiac resynchronization therapy; HF = heart failure; HFrEF = heart failure with reduced ejection fraction; H-ISDN = hydralazine and isosorbide dinitrate; HR = heart rate; ICD = implantable cardioverter defibrillator; LBBB = left bundle branch block; LVAD = left ventricular assist device; LVEF = left ventricular ejection fraction; MR = mineralocorticoid receptor; NT-proBNP = N-terminal pro-B type natriuretic peptide; NYHA = New York Heart Association; OMT = optimal medical therapy; VF = ventricular fibrillation; VT = ventricular tachycardia. [a]Symptomatic = NYHA Class II-IV. [b]HFrEF = LVEF <40%. [c]If ACE inhibitor not tolerated/contra-indicated, use ARB. [d]If MR antagonist not tolerated/contra-indicated, use ARB. [e]With a hospital admission for HF within the last 6 months or with elevated natriuretic peptides (BNP > 250 pg/ml or NTproBNP > 500 pg/ml in men and 750 pg/ml in women). [f]With an elevated plasma natriuretic peptide level (BNP ≥ 150 pg/mL or plasma NT-proBNP ≥ 600 pg/mL, or if HF hospitalization within recent 12 months plasma BNP ≥ 100 pg/mL or plasma NT-proBNP ≥ 400 pg/mL). [g]In doses equivalent to enalapril 10 mg b.i.d. [h]With a hospital admission for HF within the previous year. [i]CRT is recommended if QRS ≥ 130 msec and LBBB (in sinus rhythm). [j]CRT should/may be considered if QRS ≥ 130 msec with non-LBBB (in a sinus rhythm) or for patients in AF provided a strategy to ensure bi-ventricular capture in place (individualized decision). For further details, see Sections 7 and 8 and corresponding web pages.

Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- **Ivabradine** är en jonkanalhämmare (If kanaler) med hög selektivitet. If jonkanalen påverkar sinusknutan och leder till sänkt hjärtfrekvens. Ivabradine har ingen antiarytmisk effekt och påverkar inte hjärtkontraktiliteten.

If-channel inhibitor			
Ivabradine should be considered to reduce the risk of HF hospitalization and cardiovascular death in symptomatic patients with LVEF ≤35%, in sinus rhythm and a resting heart rate ≥70 bpm despite treatment with an evidence-based dose of beta-blocker (or maximum tolerated dose below that), ACE-I (or ARB), and an MRA (or ARB).	IIa	B	180
Ivabradine should be considered to reduce the risk of HF hospitalization and cardiovascular death in symptomatic patients with LVEF ≤35%, in sinus rhythm and a resting heart rate ≥70 bpm who are unable to tolerate or have contra-indications for a beta-blocker. Patients should also receive an ACE-I (or ARB) and an MRA (or ARB).	IIa	C	181

Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- Ivabradine
  - Ivabradine 5 mgx2→ 7.5 mgx2

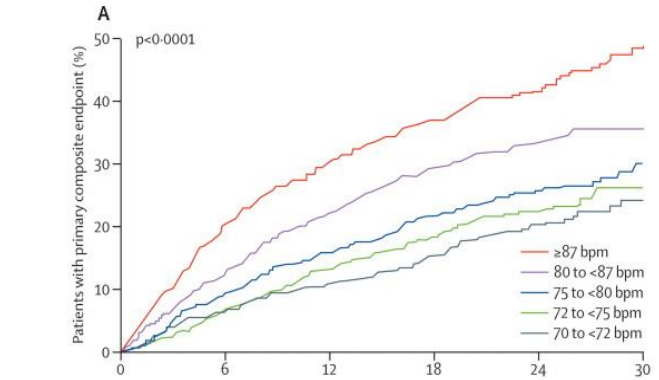
  Om patienten har svårt att tolerera betablockad

  Har sinus rytm

  Frekvens över 75/min

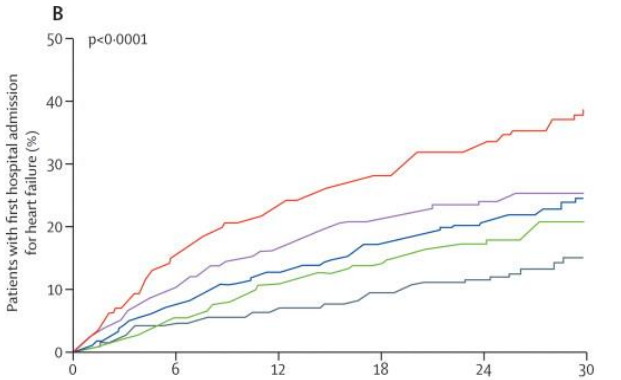
Vad är en lagom hjärtfrekvens?

- SHIFT studien
- 6400 patienter
- Ivabradine vs placebo



Number at risk

≥87 bpm	682	534	441	351	185	66
80 to <87 bpm	639	552	464	375	202	81
75 to <80 bpm	777	699	616	501	270	110
72 to <75 bpm	702	650	580	497	254	111
70 to <72 bpm	461	430	385	334	176	69



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	702	650	580	497	254	111
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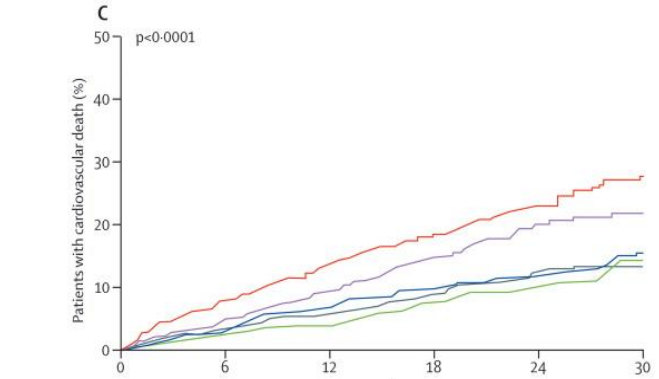
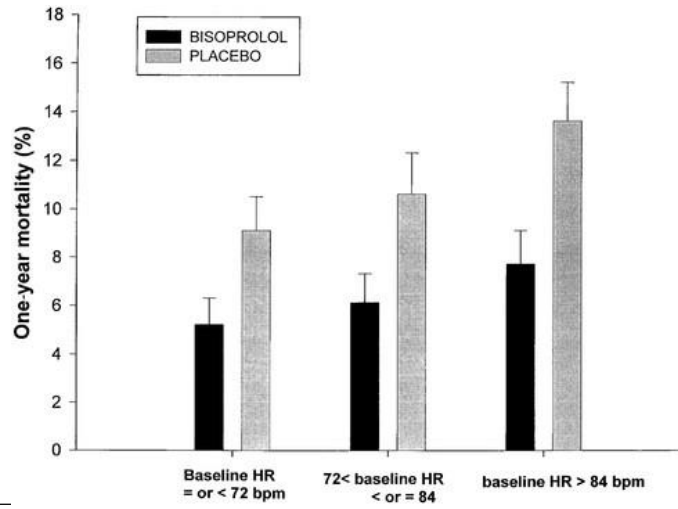


Number at risk

≥87 bpm	682	616	544	448	247	94
80 to <87 bpm	639	602	538	446	243	100
75 to <80 bpm	777	749	683	578	327	131
72 to <75 bpm	702	679	642	560	307	128
70 to <72 bpm	461	445	407	356	192	79

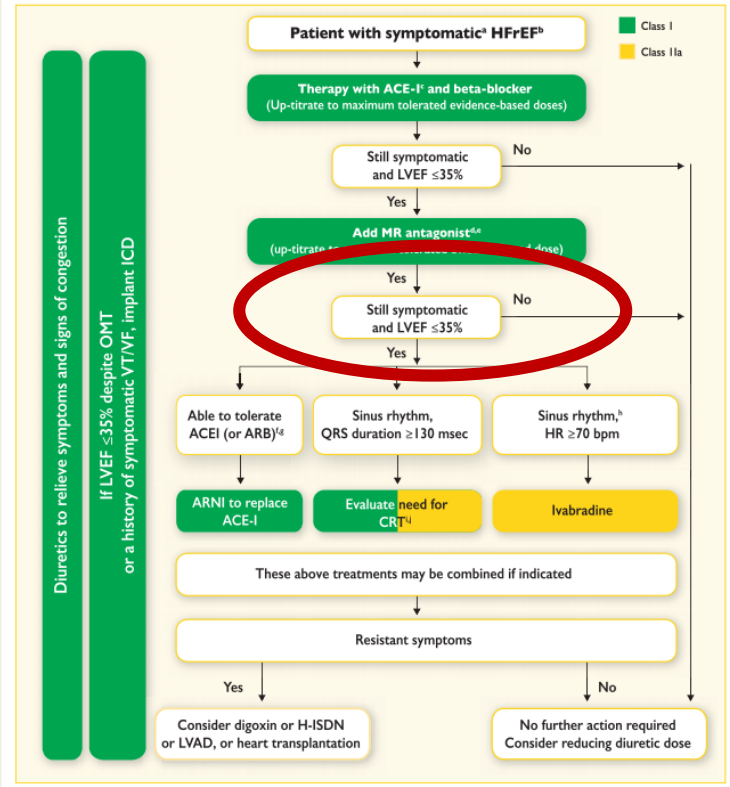


Böhm et al. The Lancet Volume 376, Issue 9744, 11–17 September 2010, Pages 886-894

Philippe Lechat et al. Circulation. CIBIS II Trial, 2001. Volume: 103, Issue: 10, Pages: 1428-1433

Region Jönköpings län

Farmakologisk behandling av HFrEF
Systolisk hjärtsvikt (EF<40%)



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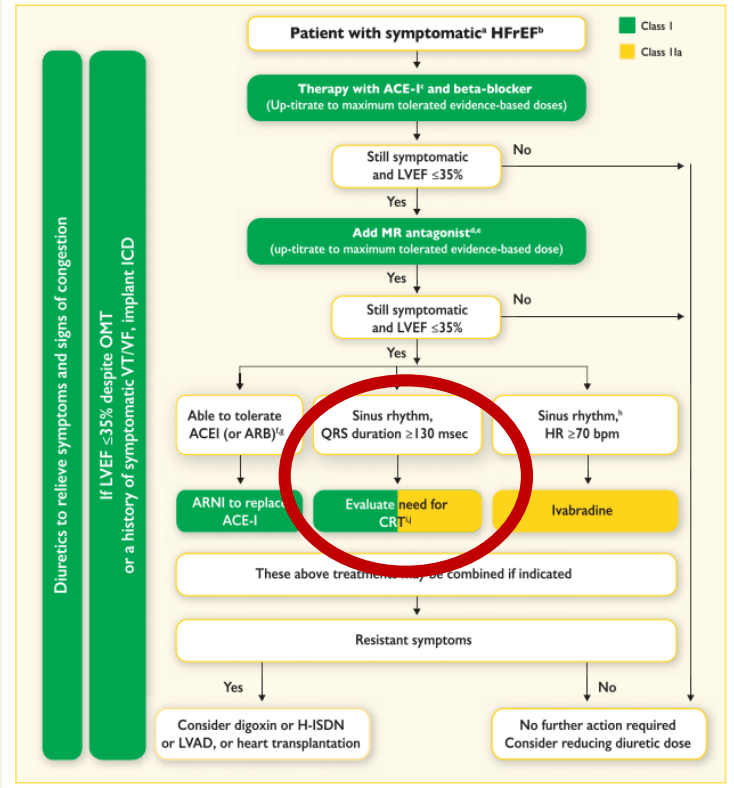
Farmakologisk behandling av HFrEF
Systolisk hjärtsvikt (EF<40%)



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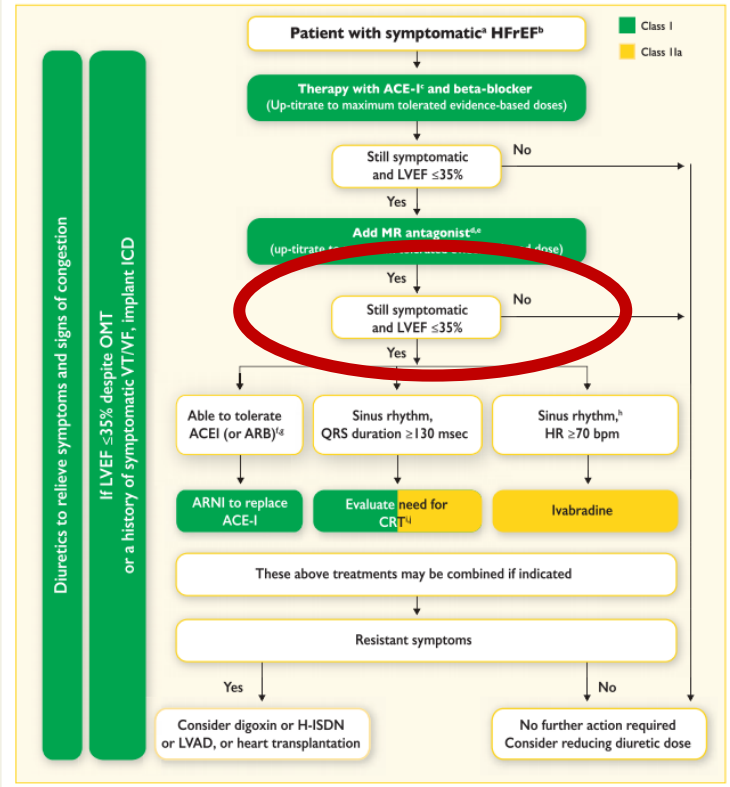
Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- Utvärdera behov av CRT=Cardiac Resynchronization Therapy
  - CRT rekommenderas om QRS-durationen ≥130 ms

Recommendations for cardiac resynchronization therapy implantation in patients with heart failure

Recommendations	Class [a]	Level [b]	Ref [c]
CRT is recommended for symptomatic patients with HF in sinus rhythm with a QRS duration ≥150 msec and LBBB QRS morphology and with LVEF ≤35% despite OMT in order to improve symptoms and reduce morbidity and mortality.	I	A	261–272
CRT should be considered for symptomatic patients with HF in sinus rhythm with a QRS duration ≥150 msec and non-LBBB QRS morphology and with LVEF ≤35% despite OMT in order to improve symptoms and reduce morbidity and mortality.	IIa	B	261–272
CRT is recommended for symptomatic patients with HF in sinus rhythm with a QRS duration of 130–149 msec and LBBB QRS morphology and with LVEF ≤35% despite OMT in order to improve symptoms and reduce morbidity and mortality.	I	B	266, 273
CRT may be considered for symptomatic patients with HF in sinus rhythm with a QRS duration of 130–149 msec and non-LBBB QRS morphology and with LVEF ≤35% despite OMT in order to improve symptoms and reduce morbidity and mortality.	IIb	B	266, 273
CRT rather than RV pacing is recommended for patients with HFrEF regardless of NYHA class who have an indication for ventricular pacing and high degree AV block in order to reduce morbidity. This includes patients with AF (see Section 10.1).	I	A	274–277
CRT should be considered for patients with LVEF ≤35% in NYHA Class III–IV[d] despite OMT in order to improve symptoms and reduce morbidity and mortality, if they are in AF and have a QRS duration ≥130 msec provided a strategy to ensure bi-ventricular capture is in place or the patient is expected to return to sinus rhythm.	IIa	B	275, 278–281
Patients with HFrEF who have received a conventional pacemaker or an ICD and subsequently develop worsening HF despite OMT and who have a high proportion of RV pacing may be considered for upgrade to CRT. This does not apply to patients with stable HF.	IIb	B	282
CRT is contra-indicated in patients with a QRS duration < 130 msec.	III	A	266, 283–285

Farmakologisk behandling av HFrEF
Systolisk hjärtsvikt (EF<40%)



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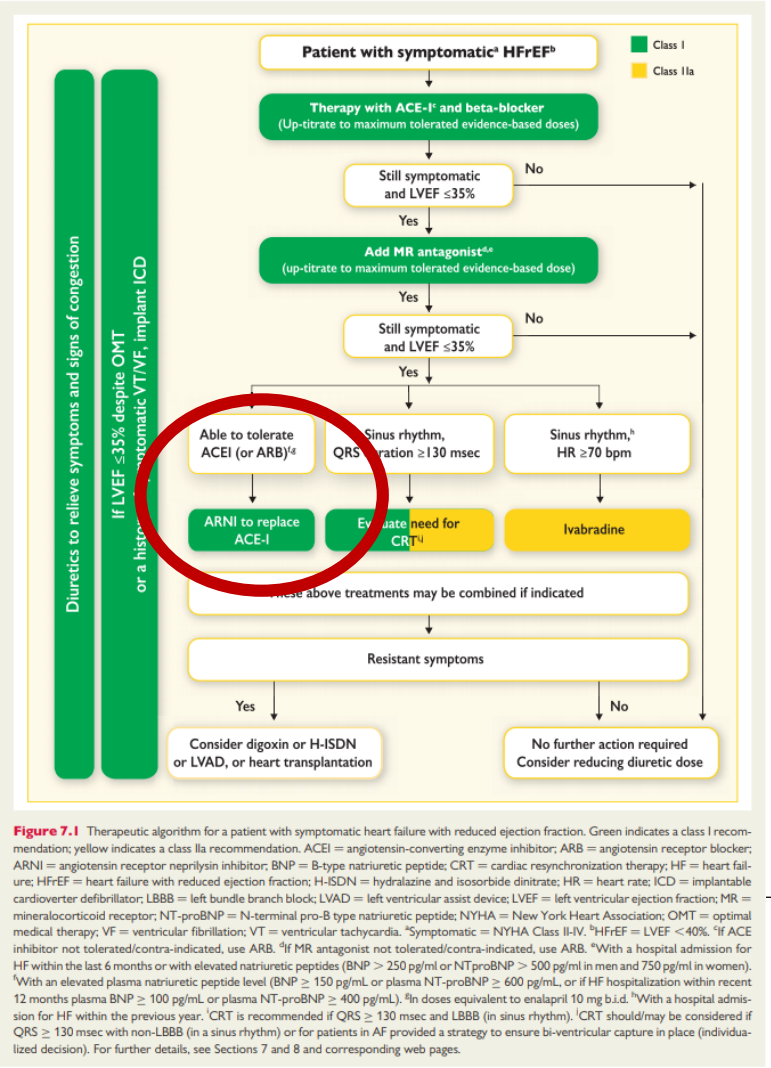
Farmakologisk behandling av HFrEF
Systolisk hjärtsvikt (EF<40%)



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Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- ARNI=Angiotensin receptor neprilysin inhibitor

- **Entresto**
- Valsartan (ARB) och sacubitril (hämmar neprilysin)
- Minskar nedbrytning av natriuretiska peptider t.ex. BNP

Leder till; Sänkt blodtryck, minskar sympatikus tonen, sänker aldosteron nivåerna, minskar fibros samt hypertrofi och ökar diures.

Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

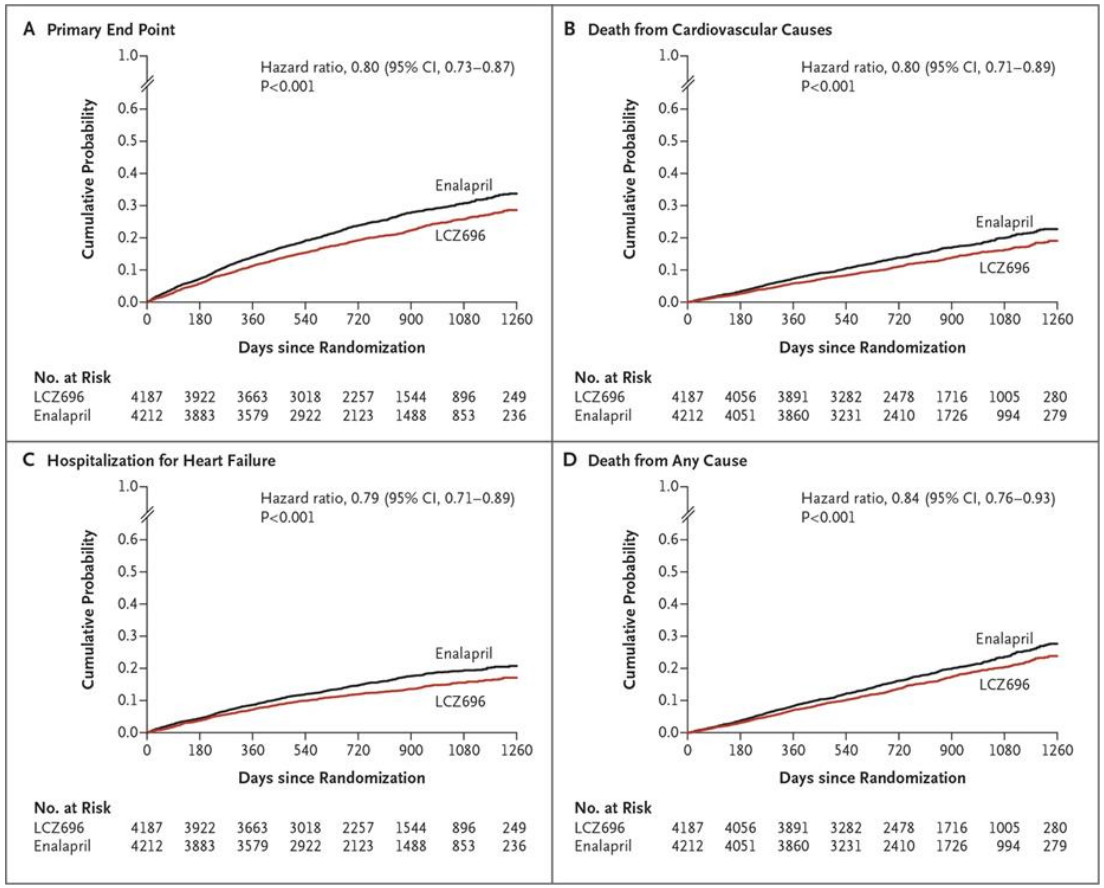
- ARNI=Angiotensin receptor neprilysin inhibitor
- Entresto 49/51 mgx2→97/103 mgx2

Angiotensin receptor neprilysin inhibitor			
Sacubitril/valsartan is recommended as a replacement for an ACE-I to further reduce the risk of HF hospitalization and death in ambulatory patients with HFrEF who remain symptomatic despite optimal treatment with an ACE-I, a beta-blocker and an MRA[d]	I	B	162

- **OBS! 36 timmars uppehåll om patienten står på ACE-hämmare**

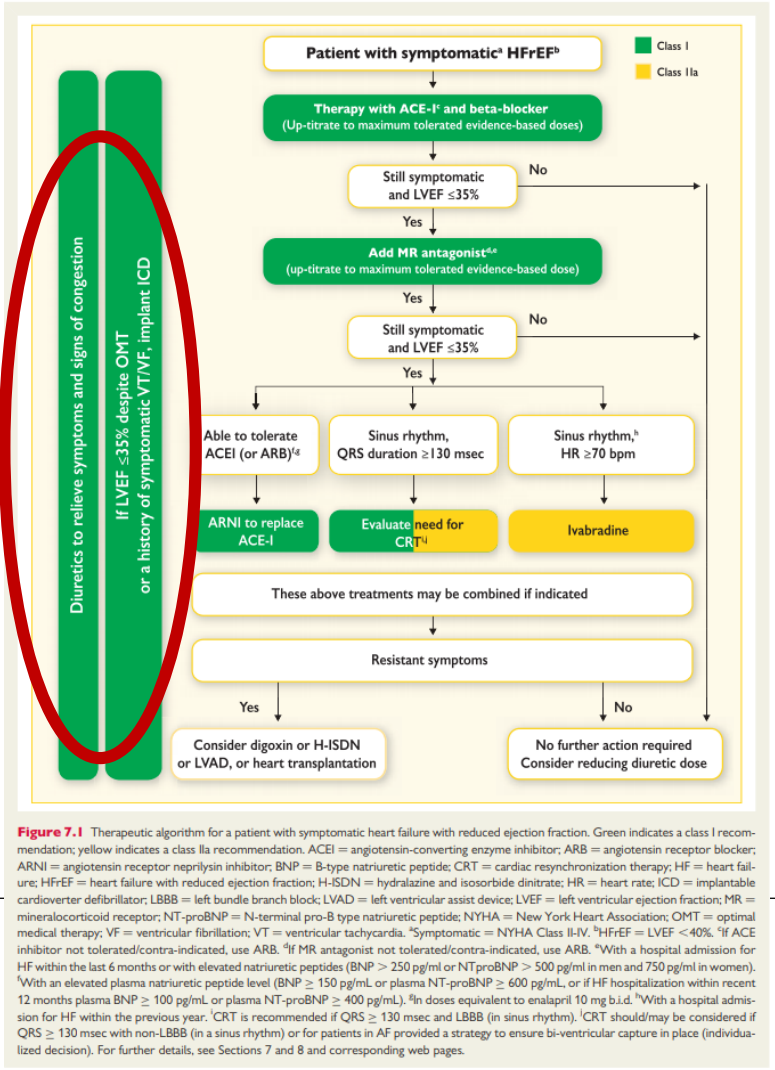
Behandling av HFrEF
Hjärtsvikt med nedsatt vänsterkammarfunktion, EF<40%

- Entresto vs Enalapril
- 8400 patienter
- 64 år
- EF ca. 30 %



McMurray et al. N Engl J Med. 2014 Sep 11;371(11)

Farmakologisk behandling av HFrEF
Systolisk hjärtsvikt (EF<40%)



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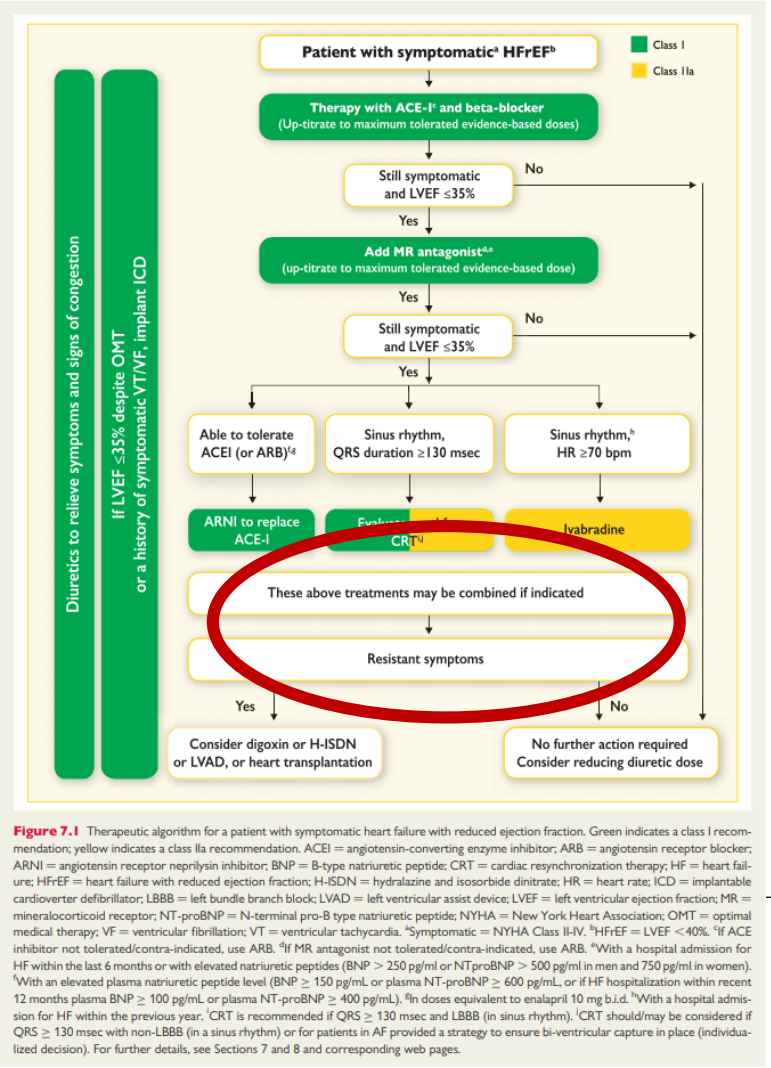

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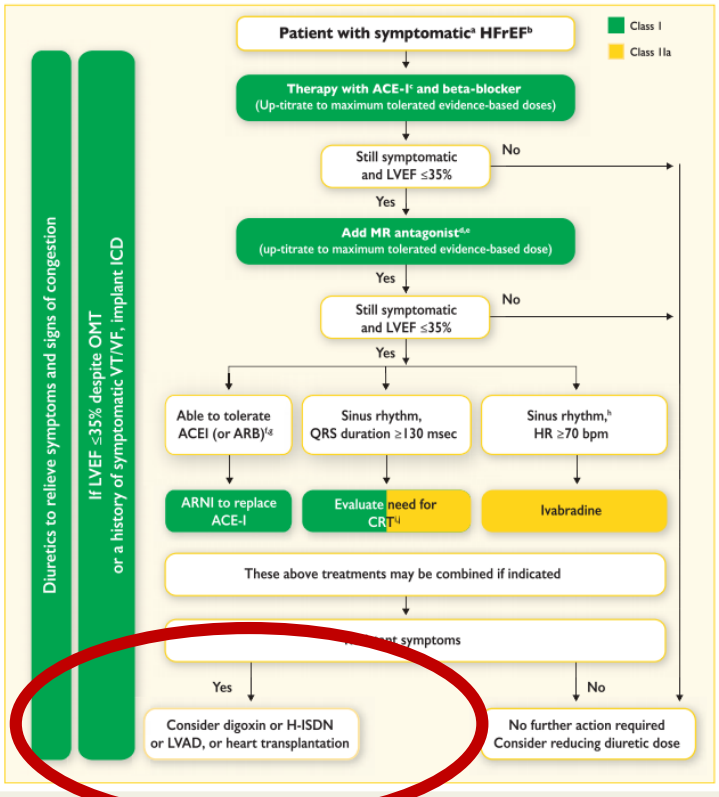

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Farmakologisk behandling av HFrEF
Systolisk hjärtsvikt (EF<40%)

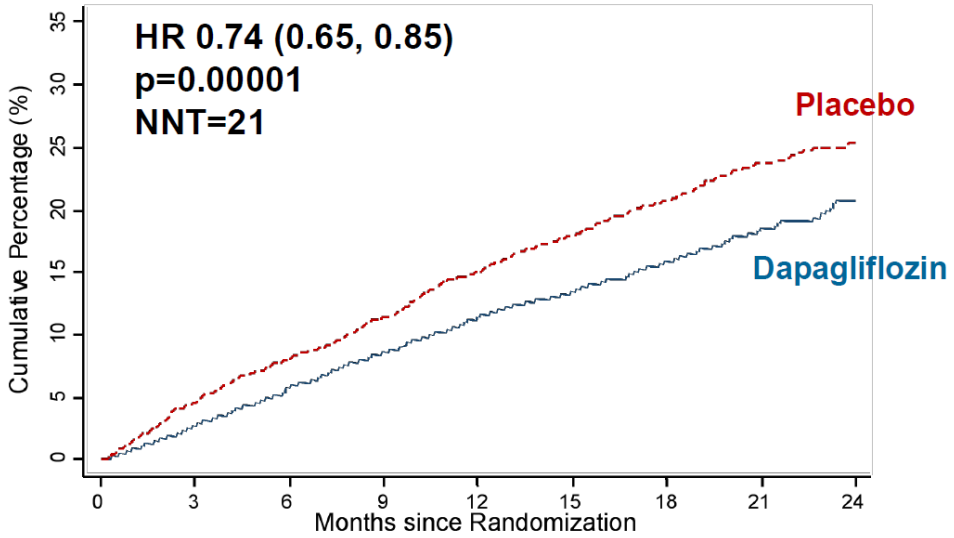
- Icke farmakologisk
- Farmakologisk (järn)
- Pacemaker
- Kirurgisk intervention
- Hjärtpump, hjärttransplantation

Framtiden!

- 2373 dapagliflozin (Forxiga) vs 2371 placebo
- 66 år
- 76-77 % män
- EF 31 %
- T2D 42-45 %
- NYHA II/III=68/31%
- RAAS blockad 94%
- MRA 71 %

Primary composite outcome

CV Death/HF hospitalization/Urgent HF visit



Number at Risk

Dapagliflozin	2373	2305	2221	2147	2002	1560	1146	612	210
Placebo	2371	2258	2163	2075	1917	1478	1096	593	210

McMurray et al. Eur. J Heart Fail. 2019 Jul 15.
Doi 10.1002/ejhf.1548

Tack

Patric Karlström

2019-10-02

Region Jönköpings län