CẬP NHẬT ĐIỀU TRỊ SUY TIM MẠN TÍNH

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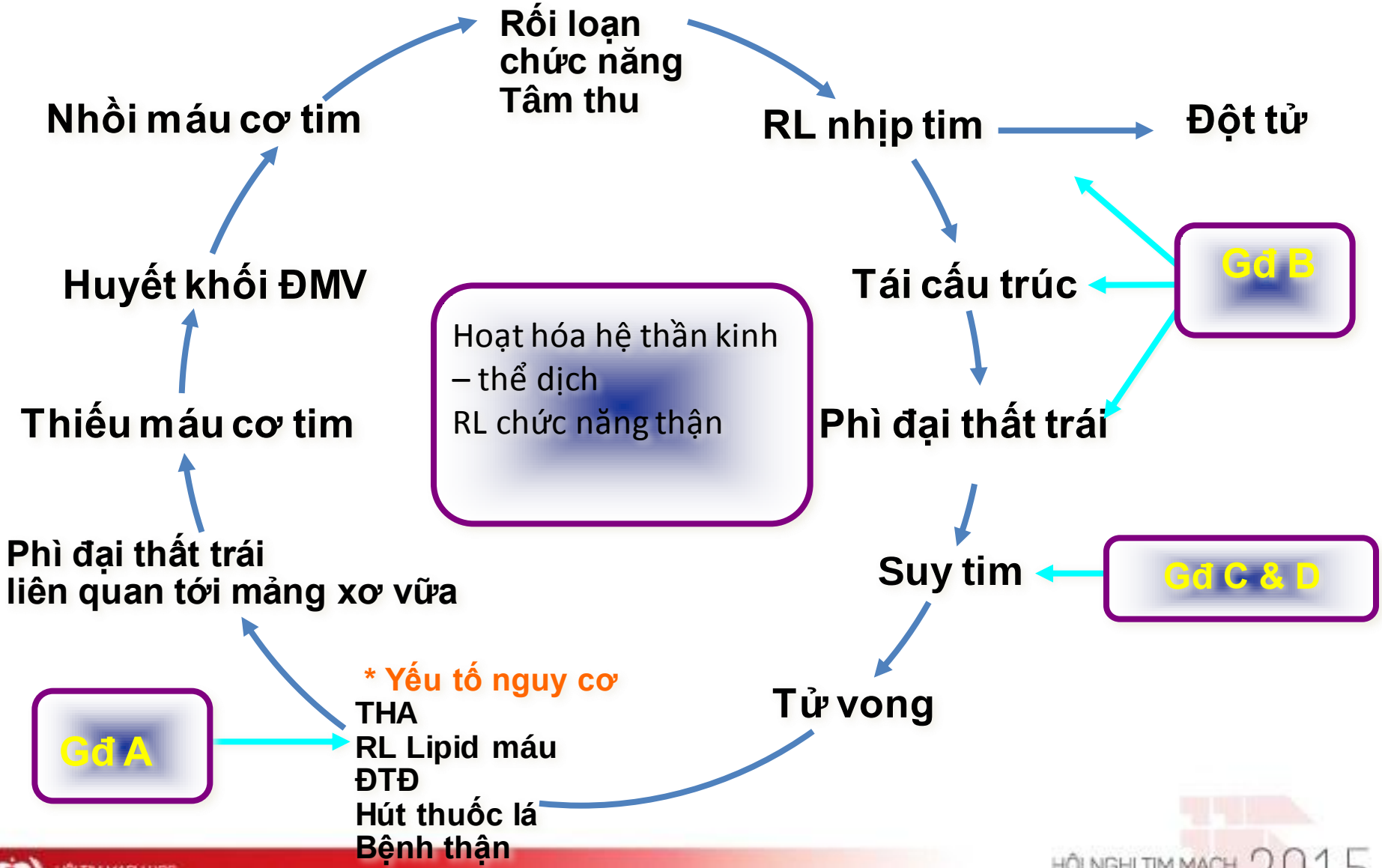
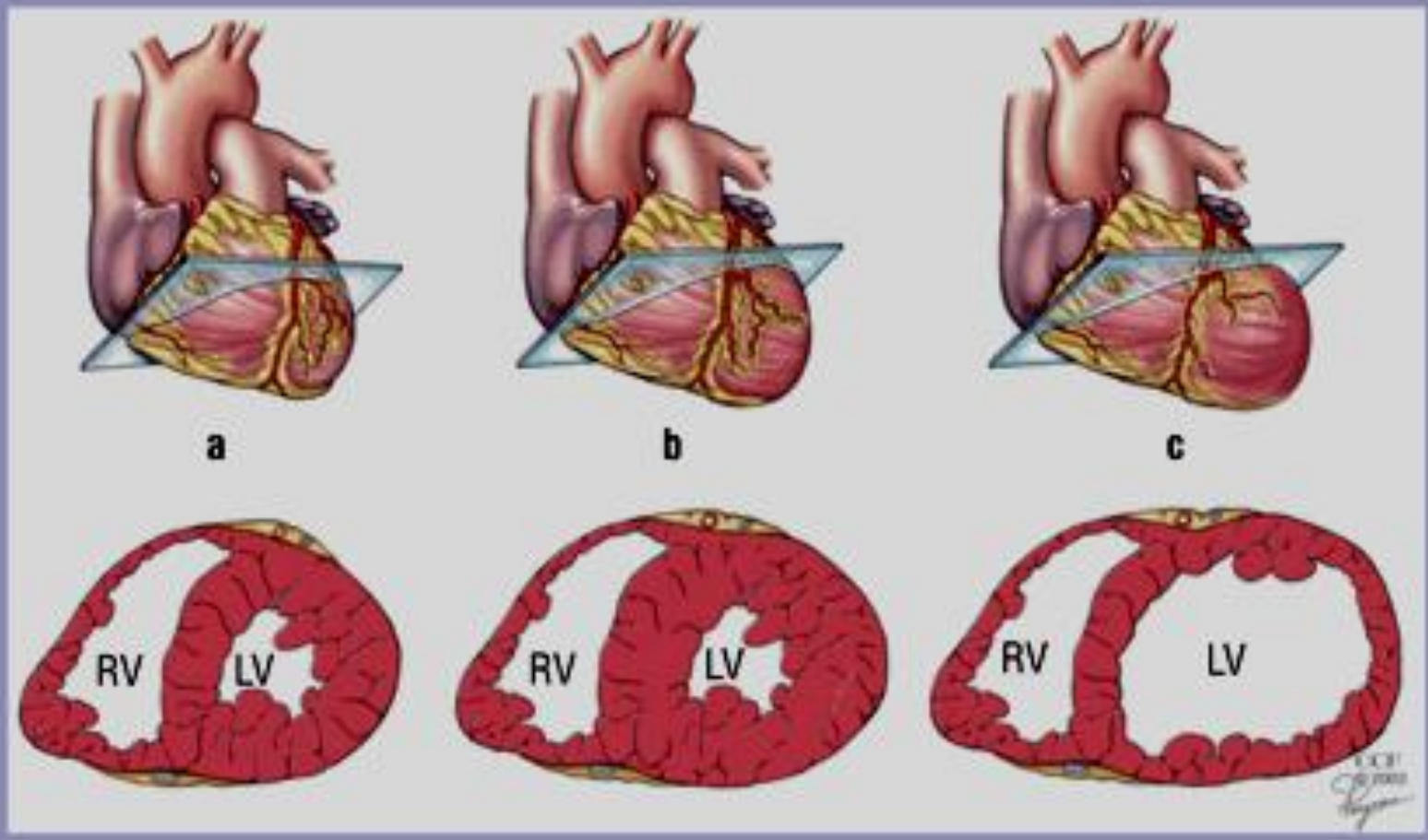
Viện Tim mạch Việt Nam

TỪ CÁC YẾU TỐ NGUY CƠ ĐẾN SUY TIM TÂM THU



TÁI CẤU TRÚC CƠ TIM



Abbreviations: LV, left ventricle; RV, right ventricle.
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Chẩn đoán suy tim

The diagnosis of HF-REF requires three conditions to be satisfied:
1. Symptoms typical of HF
2. Signs typical of HF[a]
3. Reduced LVEF
The diagnosis of HF-PEF requires four conditions to be satisfied:
1. Symptoms typical of HF
2. Signs typical of HF[a]
3. Normal or only mildly reduced LVEF and LV not dilated
4. Relevant structural heart disease (LV hypertrophy/LA enlargement) and/or diastolic dysfunction (see Section 4.1.2)

HF = heart failure; HF-PEF = heart failure with 'preserved' ejection fraction; HF-REF = heart failure and a reduced ejection fraction; LA = left atrial; LV = left ventricular; LVEF = left ventricular ejection fraction.

[a]Signs may not be present in the early stages of HF (especially in HF-PEF) and in patients treated with diuretics (see Section 3.6).

European Heart Journal (2012) 33, 1787–1847
European Journal of Heart Failure (2012) 14, 803–869

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Symptoms and signs typical of heart failure (1)

Symptoms	Signs
Typical	***More specific***
Breathlessness	Elevated jugular venous pressure
Orthopnoea	Hepatojugular reflux
Paroxysmal nocturnal dyspnoea	Third heart sound (gallop rhythm)
Reduced exercice tolerance	Laterally displaced apical impulse
Fatigue, tiredness, increased time to recover after exercise	Cardiac murmur
Ankle swelling	

European Heart Journal (2012) 33, 1787–1847
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Symptoms and signs typical of heart failure (2)

Symptoms	Signs
Less typical	***Less specific***
Nocturnal cough	Peripheral oedema (ankle, sacral, scrotal)
Wheezing	Pulmonary crepitations
Weight gain (>2 kg/week)	Reduced air entry and dullness to percussion at lung bases (pleural effusion)
Weight loss (in advanced heart failure)	Tachycardia
Bloated feeling	Irregular pulse
Loss of appetite	Tachypnoea (>16 breaths/min)
Confusion (especially in the elderly)	Hepatomegaly
Depression	Ascites
Palpitations	Tissue wasting (cachexia)
Syncope	

European Heart Journal (2012) 33, 1787–1847
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Linking diagnostic recommendations to value of tests

Recommendations	Class	Level
Investigations to consider in all patients		
Transthoracic echocardiography is recommended to evaluate cardiac structure and function, including diastolic function (Section 4.1.2), and to measure LVEF to make the diagnosis of HF, assist in planning and monitoring of treatment, and to obtain prognostic information.	I	C
A 12-lead ECG is recommended to determine heart rhythm, heart rate, QRS morphology, and QRS duration, and to detect other relevant abnormalities *(Table 5)*. This information also assists in planning treatment and is of prognostic importance. A completely normal ECG makes systolic HF unlikely.	I	C
Measurement of blood chemistry (including sodium, potassium, calcium, urea/blood urea nitrogen, creatinine/estimated glomerular filtration rate, liver enzymes and bilirubin, ferritin/TIBC) and thyroid function is recommended to: (i) Evaluate patient suitability for diuretic, renin–angiotensin–aldosterone antagonist, and anti-coagulant therapy (and monitor treatment) (ii) Detect reversible/treatable causes of HF (e.g. hypocalcaemia, thyroid dysfunction) and co-morbidities (e.g. iron deficiency) (iii) Obtain prognostic information.	I	C
A complete blood count is recommended to: (i) Detect anaemia, which may be an alternative cause of the patient's symptoms and signs and may cause worsening of HF (ii) Obtain prognostic information.	I	C

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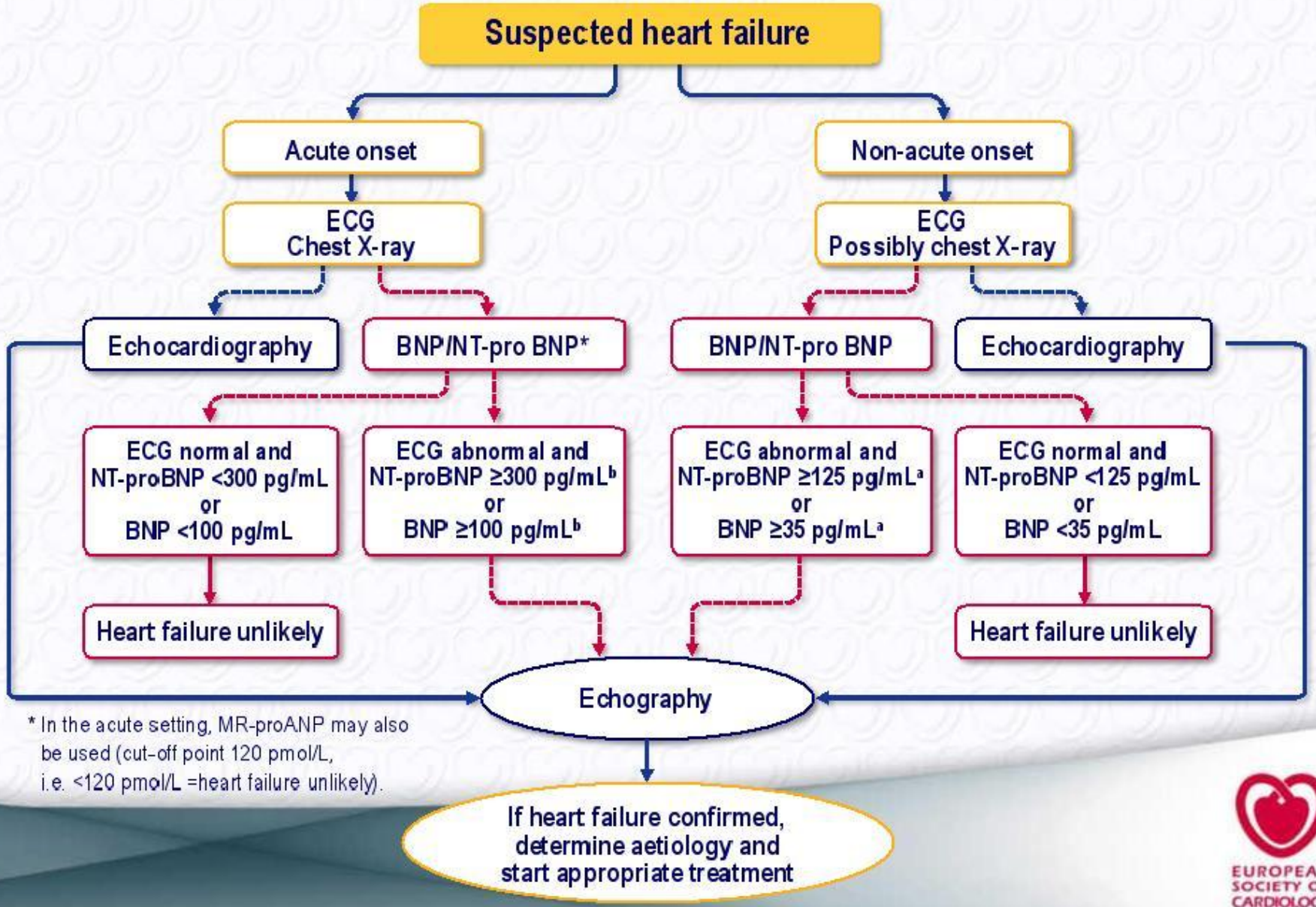
Diagnostic flowchart for patients with suspected heart failure-showing alternative 'echocardiography first' (blue) or 'natriuretic peptide first' (red) approaches.



* In the acute setting, MR-proANP may also be used (cut-off point 120 pmol/L, i.e. <120 pmol/L =heart failure unlikely).

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NT-proBNP testing for diagnosis and short-term prognosis in acute destabilized heart failure: an international pooled analysis of 1256 patients

The International Collaborative of NT-pro-BNP Study

Optimal NT-proBNP cut-points for the diagnosis or exclusion of acute HF among dyspnoeic patients

Category	Optimal cut-point	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Accuracy (%)
Confirmatory ('rule in') cut-points						
< 50 years (n=184)	450 pg/mL	97	93	76	99	94
50-75 years (n=537)	900 pg/mL	90	82	83	88	85
> 75 years (n=535)	1800 pg/mL	85	73	92	55	83
Rule in, overall		90	84	88	66	85
Exclusionary ('rule out') cut-point						
All patients (n=1256)	300 pg/mL	99	60	77	98	83

Januzzi et al. EHJ 2006

Functional or Structural Cardiac abnormalities related to HF-PEF

- Abnormalities of the mitral inflow pattern, tissue velocities (e'), or the E/e' ratio (Indicate degree of LV filling dysfunction and estimate filling pressures).
- Left atrial volume index: increased (volume >34 mL/m^2) Increased LV filling pressure (past or present) or mitral valve disease.
- LV mass index: increased: >95 g/m^2 in women and >115 g/m^2 in men.

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Đánh giá mức độ suy tim

Theo NYHA

Dựa trên mức độ hoạt động thể lực hàng ngày và hạn chế về tr/c cơ năng.

1. Có bệnh tim, nhưng không có tr/c cơ năng. Sinh hoạt và hoạt động thể lực gần như thường.
2. Tr/c cơ năng chỉ xuất hiện khi gắng sức nhiều. Giảm nhẹ các hoạt động thể lực.
3. Tr/c cơ năng xuất hiện kể cả khi gắng sức rất ít. Hạn chế nhiều các hoạt động thể lực.
4. Tr/c cơ năng tồn tại thường xuyên kể cả khi nghỉ ngơi.

Phân loại trên lâm sàng

Khuyến cáo của Hội Nội khoa Việt nam.

1. Bệnh nhân có khó thở nhẹ, nhưng gan chưa sờ thấy.
2. Bệnh nhân khó thở vừa, gan to dưới bờ sườn vài cm.
3. Bệnh nhân khó thở nhiều, gan to gần sát rốn nhưng khi được điều trị có thể nhỏ lại.
4. Bệnh nhân khó thở thường xuyên, gan luôn to mặc dù đã được điều trị.

PHÂN LOẠI SUY TIM

Giai đoạn Suy tim theo ACC/AHA		Phân độ suy tim theo NYHA	
A	Có Nguy cơ cao suy tim song không có bệnh tim thực tổn hoặc không có biểu hiện suy tim		
B	Có bệnh tim thực tổn nhưng không có biểu hiện suy tim	I	Không có triệu chứng cơ năng
C	Bệnh tim thực tổn đã hoặc đang có biểu hiện suy tim	II	Có triệu chứng khi gắng sức vừa
		III	Có triệu chứng khi gắng sức nhẹ
D	Suy tim kháng trị, đòi hỏi phải có các biện pháp điều trị đặc biệt	IV	Có triệu chứng ngay cả lúc nghỉ

ĐIỀU TRỊ SUY TIM

ACEI & diuretic:
Reduces the number of sacks on the wagon

ß-Blockers

Limit the donkey's speed, thus saving energy

DIGOXIN

Like the carrot placed in front of the donkey

Bằng chứng điều trị thuốc đối với suy tim CNTT giảm (HFrEF-C)

Recommendations	COR	LOE
Diuretics		
Diuretics are recommended in patients with HFrEF with fluid retention	I	C
ACE Inhibitors		
ACE inhibitors are recommended for all patients with HFrEF	I	A
ARBs		
ARBs are recommended in patients with HFrEF who are ACE inhibitor intolerant	I	A
ARBs are reasonable as alternatives to ACE inhibitor as first line therapy in HFrEF	IIa	A
The addition of an ARB may be considered in persistently symptomatic patients with HFrEF on GDMT	IIb	A
Routine *combined* use of an ACE inhibitor, ARB, and aldosterone antagonist is potentially harmful	III: Harm	C
Beta Blockers		
Use of 1 of the 3 beta blockers proven to reduce mortality is recommended for all stable patients	I	A
Aldosterone Antagonists		
Aldosterone receptor antagonists are recommended in patients with NYHA class II-IV HF who have LVEF ≤35%	I	A
Aldosterone receptor antagonists are recommended in patients following an acute MI who have LVEF ≤40% with symptoms of HF or DM	I	B
Inappropriate use of aldosterone receptor antagonists may be harmful	III: Harm	B
Hydralazine and Isosorbide Dinitrate		
The combination of hydralazine and isosorbide dinitrate is recommended for African-Americans, with NYHA class III–IV HFrEF on GDMT	I	A
A combination of hydralazine and isosorbide dinitrate can be useful in patients with HFrEF who cannot be given ACE inhibitors or ARBs	IIa	B

J Am Coll Cardiol, 2013: 10.1016/j.jacc.2013.05.020.

Bằng chứng điều trị thuốc đối với suy tim CNTT giảm (HFrEF-C)

Recommendations	COR	LOE
Digoxin		
Digoxin can be beneficial in patients with HFrEF	IIa	B
Anticoagulation		
Patients with chronic HF with permanent/persistent/paroxysmal AF and an additional risk factor for cardioembolic stroke should receive chronic anticoagulant therapy*	I	A
The selection of an anticoagulant agent should be individualized	I	C
Chronic anticoagulation is reasonable for patients with chronic HF who have permanent/persistent/paroxysmal AF but without an additional risk factor for cardioembolic stroke*	IIa	B
Anticoagulation is not recommended in patients with chronic HFrEF without AF, prior thromboembolic event, or a cardioembolic source	III: No Benefit	B
Statins		
Statins are not beneficial as adjunctive therapy when prescribed solely for HF	III: No Benefit	A
Omega-3 Fatty Acids		
Omega-3 PUFA supplementation is reasonable to use as adjunctive therapy in HFrEF or HFpEF patients	IIa	B
Other Drugs		
Nutritional supplements as treatment for HF are not recommended in HFrEF	III: No Benefit	B
Hormonal therapies other than to replete deficiencies are not recommended in HFrEF	III: No Benefit	C
Drugs known to adversely affect the clinical status of patients with HFrEF are potentially harmful and should be avoided or withdrawn	III: Harm	B
Long-term use of an infusion of a positive inotropic drug is not recommended and may be harmful except as palliation	III: Harm	C
Calcium Channel Blockers		
Calcium channel blocking drugs are not recommended as routine in HFrEF	III: No Benefit	A

J Am Coll Cardiol, 2013: 10.1016/j.jacc.2013.05.020.

Bằng chứng điều trị bằng các thiết bị đối với suy tim CNTT giảm (HFrEF-C)

Recommendations	COR	LOE
ICD therapy is recommended for primary prevention of SCD in selected patients with HFrEF at least 40 days post-MI with LVEF ≤35%, and NYHA class II or III symptoms on chronic GDMT, who are expected to live ≥1 year*	I	A
CRT is indicated for patients who have LVEF ≤35%, sinus rhythm, LBBB with a QRS ≥150 ms	I	A B
ICD therapy is recommended for primary prevention of SCD in selected patients with HFrEF at least 40 days post-MI with LVEF ≤30%, and NYHA class I symptoms while receiving GDMT, who are expected to live ≥1 year*	I	B
CRT can be useful for patients who have LVEF ≤35%, sinus rhythm, a non-LBBB pattern with a QRS ≥150 ms, and NYHA class III/ambulatory class IV symptoms on GDMT.	IIa	A
CRT can be useful for patients who have LVEF ≤35%, sinus rhythm, LBBB with a QRS 120 to 149 ms, and NYHA class II, III or ambulatory IV symptoms on GDMT	IIa	B
CRT can be useful in patients with AF and LVEF ≤35% on GDMT if a) the patient requires ventricular pacing or meets CRT criteria and b) AV nodal ablation or rate control allows near 100% ventricular pacing with CRT	IIa	B
CRT can be useful for patients on GDMT who have LVEF ≤35%, and are undergoing new or replacement device with anticipated (>40%) ventricular pacing	IIa	C
An ICD is of uncertain benefit to prolong meaningful survival in patients with high risk of nonsudden death such as frequent hospitalizations, frailty, or severe comorbidities *	IIb	B
CRT may be considered for patients who have LVEF ≤35%, sinus rhythm, a non-LBBB pattern with QRS 120 to 149 ms, and NYHA class III/ambulatory class IV on GDMT	IIb	B
CRT may be considered for patients who have LVEF ≤35%, sinus rhythm, a non-LBBB pattern with a QRS ≥150 ms, and NYHA class II symptoms on GDMT	IIb	B
CRT may be considered for patients who have LVEF ≤30%, ischemic etiology of HF, sinus rhythm, LBBB with a QRS ≥150 ms, and NYHA class I symptoms on GDMT	IIb	C
CRT is not recommended for patients with NYHA class I or II symptoms and non-LBBB pattern with QRS <150 ms	III: No Benefit	B
CRT is not indicated for patients whose comorbidities and/or frailty limit survival to <1 year	III: No Benefit	C

J Am Coll Cardiol, 2013: 10.1016/j.jacc.2013.05.020.

Thuốc dùng cho suy tim CNTT giảm (HFrEF-C)

Thuốc	Liều khởi đầu hàng ngày	Liều tối đa	Liều trung bình qua các TNLS
Ức chế men chuyển (ACE Inhibitors)			
Captopril	6.25mg X 3 lần/ngày	50mg X 3 lần/ngày	122.7mg/ngày
Enalapril	2.5mg X 2 lần/ngày	10-20mg X 2 lần/ngày	16.6mg/ngày
Fosinopril	5-10 mg X 1 lần/ngày	40mg X 1 lần/ngày	---
Lisinopril	2.5-5 mg X 1 lần/ngày	20-40mg X 1 lần/ngày	32.5-35.0mg/ngày
Perindopril	2mg X 1 lần/ngày	8-16 mg X 1 lần/ngày	---
Quinapril	5mg X 2 lần/ngày	20mg X 2 lần/ngày	---
Ramipril	1.25-2.5mg X 1 lần/ngày	10mg X 1 lần/ngày	---
Trandolapril	1mg X 1 lần/ngày	4mg X 1 lần/ngày	---
Chẹn thụ thể angiotensin (ARBs)			
Candesartan	4-8mg X 1 lần/ngày	32mg X 1 lần/ngày	24mg/ngày
Losartan	25-50mg X 1 lần/ngày	50-150 mg X13 lần/ngày	129mgngày
Valsartan	20-40mg X 2 lần/ngày	160mg X 2 lần/ngày	254mg/ngày
Kháng aldosterine (Aldosterone Antagonists)			
Spironolactone	12.5-25 mg X 1 lần/ngày	25mg X 1-2 lần/ngày	26mg/ngày
Eplerenone	25mg X 1 lần/ngày	50mg X 1 lần/ngày	42.6mg/ngày
Chẹn beta giao cảm (Beta Blockers)			
Bisoprolol	1.25mg X 1 lần/ngày	10mg X 1 lần/ngày	8.6mg/ngày
Carvedilol	3.125mg X 2 lần/ngày	50mg X 2 lần/ngày	37mg/ngày
Carvedilol CR	10mg X 1 lần/ngày	80mg X 1 lần/ngày	---
Metoprolol succinate (CR/XL)	12.5-25mg X 1 lần/ngày	200mg X 1 lần/ngày	159mg/ngày
Phối hợp Hydralazine (HDR) & Isosorbide Dinitrate (ISDN)			
Phối hợp liều cố định	HDR 37.5mg+ISDN 20mg X 3l/ng	HDR 75mg/ISDN 40mg X 3lần/ng	~175mg HDR+90mg ISDN/ng
Hydralazine và ISDN	HDR 25-50mg X 3- 4l/ngày và ISDN 20-30 mg X 3-4 lần/ngày	HDR 300mg/ng và ISDN 120mg/ng chia nhỏ liều	---

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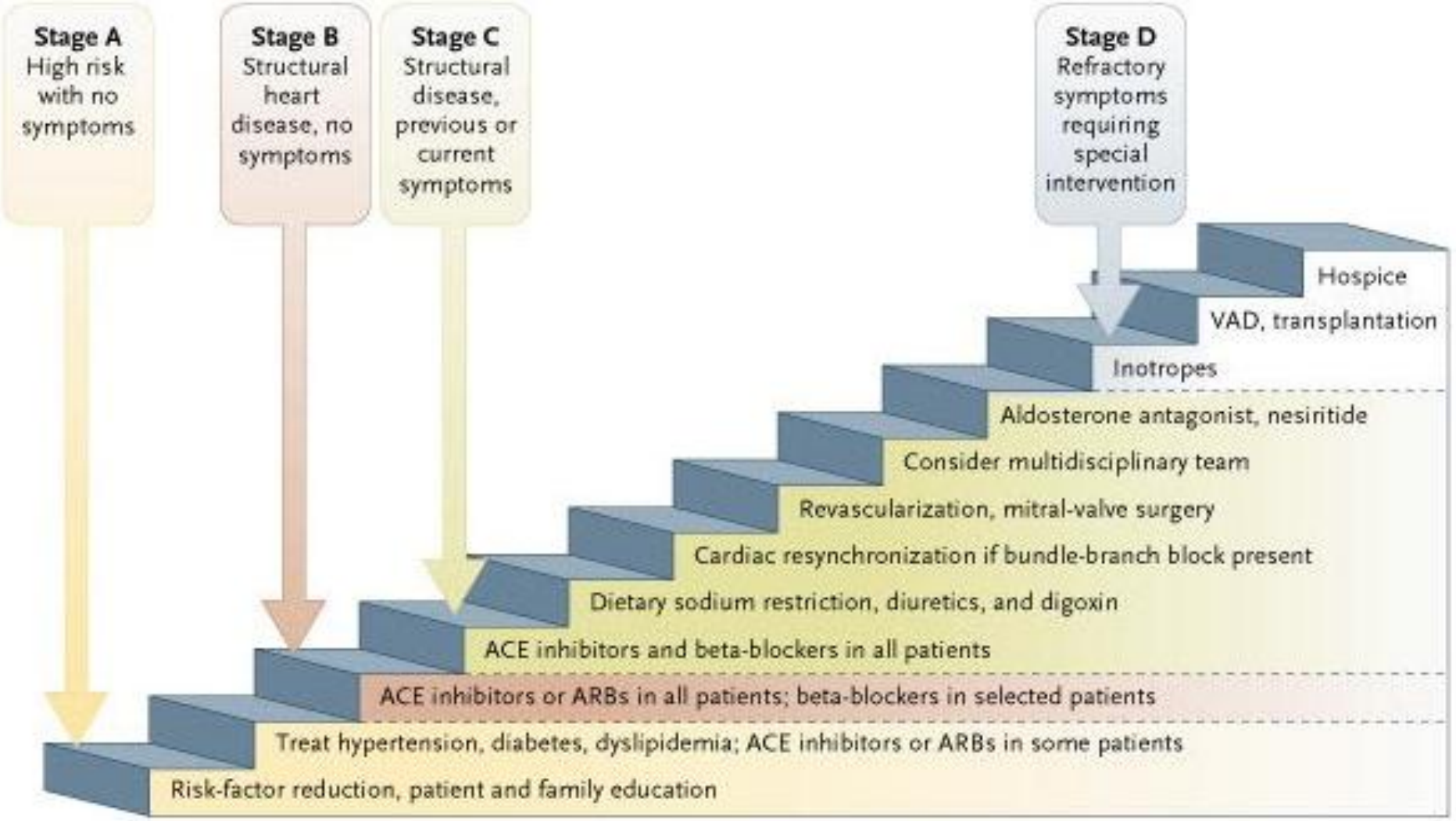
Thử nghiệm lâm sàng (năm công bố kết quả n/cứu)	N=	Mức độ suy tim	Điều trị nền tảng	Điều trị mới	Thời gian năm	Tiêu chí nghiên cứu	Giảm RR (%)	Số biến cố dự phòng được/1000 bệnh nhân điều trị		
								tử vong	vviện STim	tử vong/ vviện ST
Ức chế men chuyển dạng (ACEI)										
CONSENSUS,1987	253	gđoạn cuối	spiro	enalapril 20mg bid	0,54	tử vong	40	146	-	-
SOLVD-T, 1991	2569	nhẹ-nặng	-	enalapril 20mg bid	3,5	tử vong	16	45	96	108
Chẹn beta giao cảm (BB)										
CIBIS-2, 1999	2647	tbình-nặng	ACEI	bisoprolol 10mg qd	1,3	tử vong	34	55	56	-
MERIT-HF, 1999	3991	nhẹ-nặng	ACEI	metoprolol CR/XL 200mg qd	1,0	tử vong	34	36	46	63
COPERNICUS,2001	2289	nặng	ACEI	carvedilol 25mgbid	0,87	tử vong	35	55	65	81
SENIORS, 2005	2128	nhẹ-nặng	ACEI+spiro	nebivolol 10mg qd	1,75	tử vong/ vviện BTM	14	23	0	-
Ức chế thụ thể angiotensin (ARB)										
Val-HeFT, 2001	5010	nhẹ-nặng	ACEI	valsartan 160mg bid	1,9	chết/biến chứngBTM	13	0	35	33
CHARM-Alternative, 2003	2028	nhẹ-nặng	BB	candesartan 32mg qd	2,8	chết BTM/ vviện STim	23	30	31	60
CHARM-Added, 2003	2548	tbình-nặng	ACEI+BB	candesartan 32mg qd	3,4	chết BTM/ vviện STim	15	28	47	39
Hydralazine-ISDN										
V-HeFT-1, 1986	459	nhẹ-nặng	-	hydralazine 75mg tid &ISDN 40mgqid	2,3	tử vong	34	52	0	-
A-HeFT, 2004	1050	tbình-nặng	ACEI+BB + spiro	hydralazine 75mg tid & ISDN 40mgtid	0,83	biến cố gộp	-	40	80	-

Thử nghiệm lâm sàng (năm công bố kết quả n/cứu)	N=	Mức độ suy tim	Điều trị nền tảng	Điều trị mới	Thời gian năm	Tiêu chí nghiên cứu	Giảm RR (%)	Số biến cố dự phòng được/1000 bệnh nhân điều trị		
								tử vong	vviện STim	tử vong/ vviện ST
Digitalis trợ tim										
DIG, 1997	6800	nhẹ-nặng	ACEI	digoxin	3,1	tử vong	0	0	79	73
n-3 PUFA										
GISSI-HF, 2008	6975	nhẹ-nặng	ACEI+BB +spiro	n-3 PUFA 1g qd	3,9	tử vong chết/vvTM	9 8	18 0	0 -	- -
Điều trị tái đồng bộ thất (CRT và CRT-ICD)										
COMPANION, 2004	925	tbình-nặng	ACEI+BB +spiro	CRT	1,35	tử vong/vviệ nbấtkỳ	19	38	-	87
CARE-HF, 2005	813	tbình-nặng	ACEI+BB +spiro	CRT	2,45	tử vong/ vviện TM	37	97	151	184
COMPANION, 2004	903	tbình-nặng	ACEI+BB+ spiro	CRT-ICD	1,35	tử vong/vviệ nbấtkỳ	20	74	-	114
MADIT-CRT, 2009	1820	nhẹ	ACEI+BB+ spiro+ICD	CRT-ICD	2,4	tử vong/biến cố ST	34	5	-	-
Cấy máy phá rung (ICD)										
SCD-HeFT, 2005	1676	nhẹ-nặng	ACEI+BB	ICD	3,8	tử vong	23	-	-	-
Thiết bị hỗ trợ thất trái (LAVD)										
REMATCH, 2001	129	gđoạn cuối	ACEI + spiro	LAVD	1,8	tử vong	48	282	-	-

Xử trí theo từng giai đoạn suy tim



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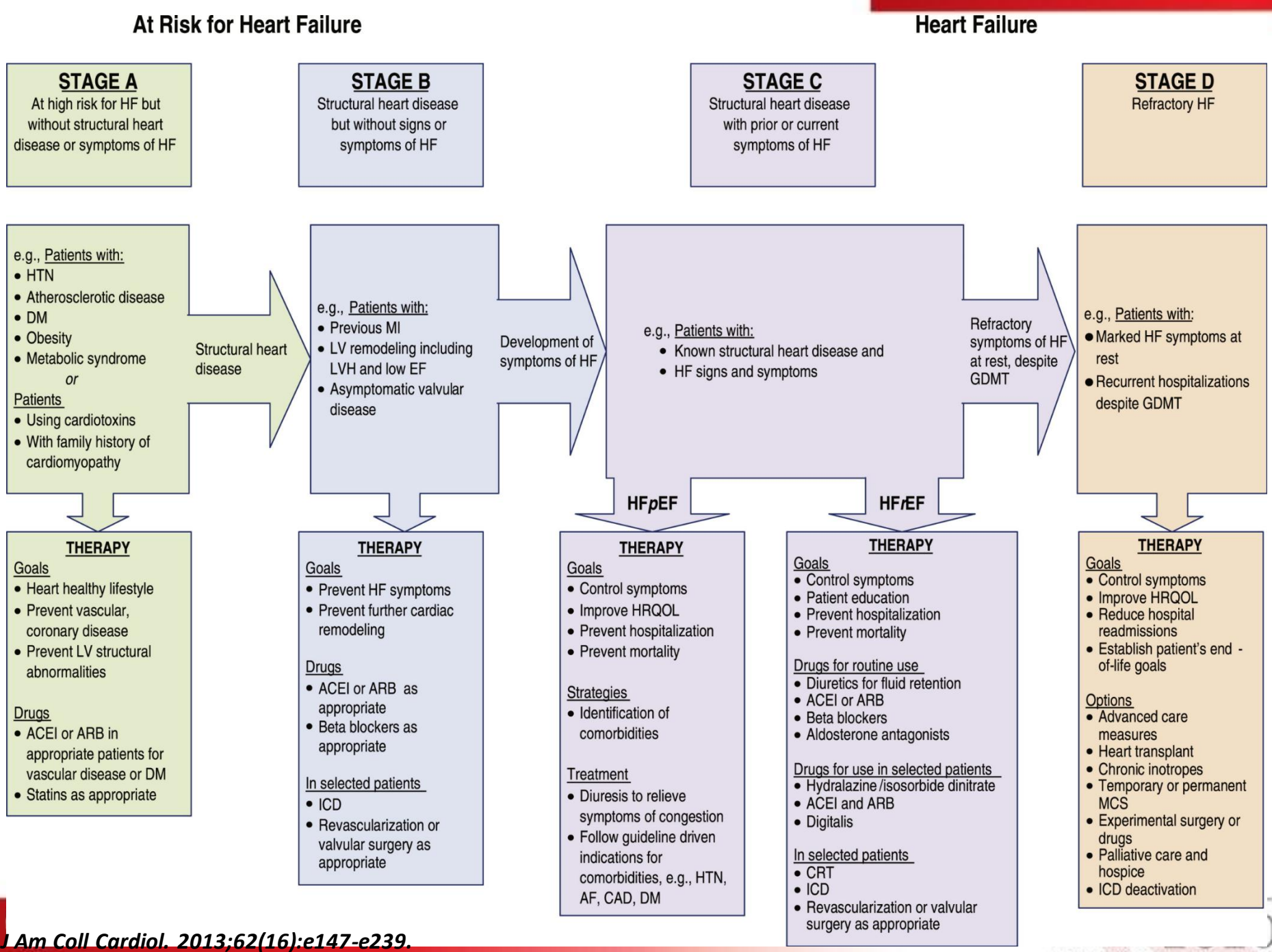
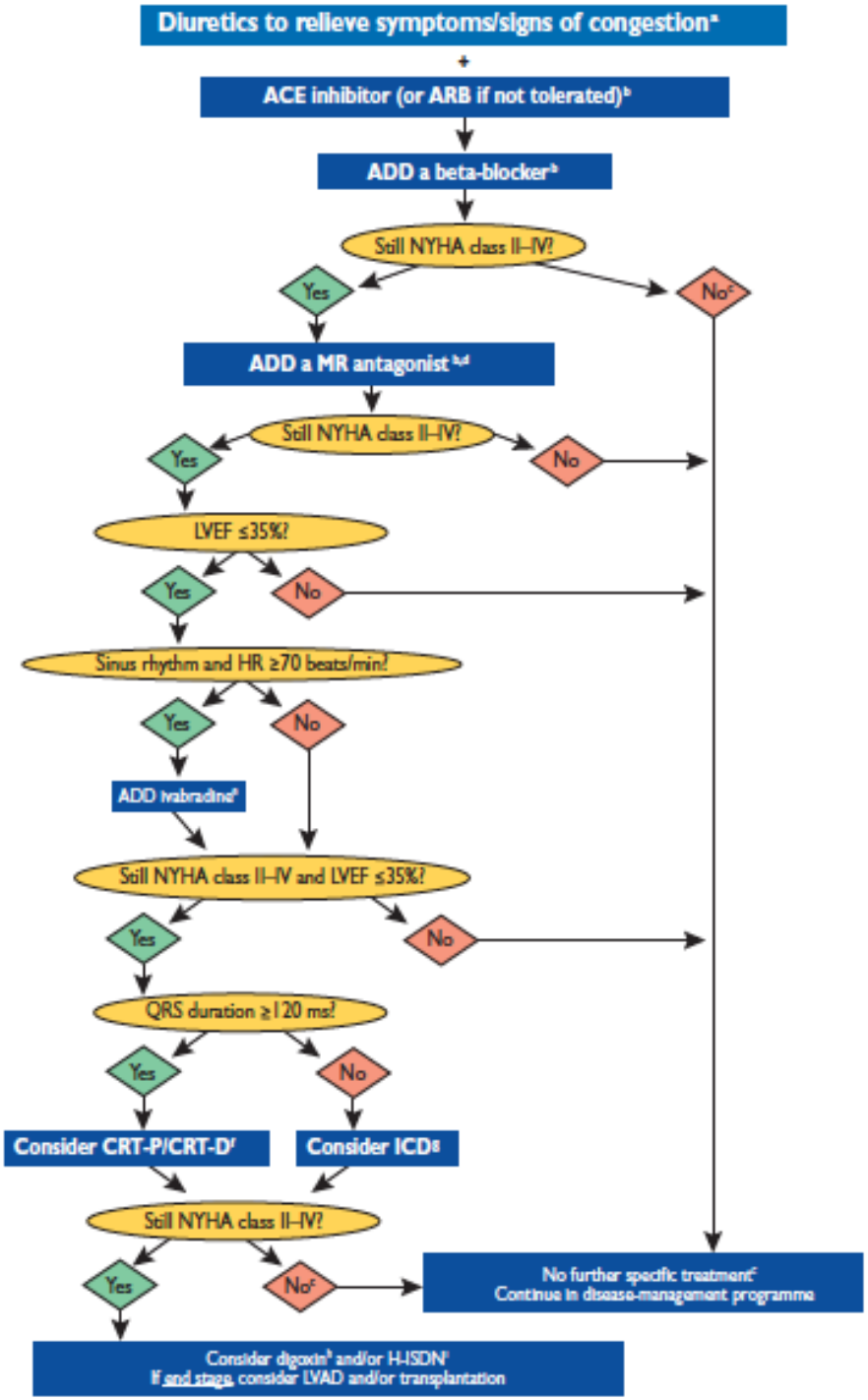


J Am Coll Cardiol. 2013;62(16):e147-e239.

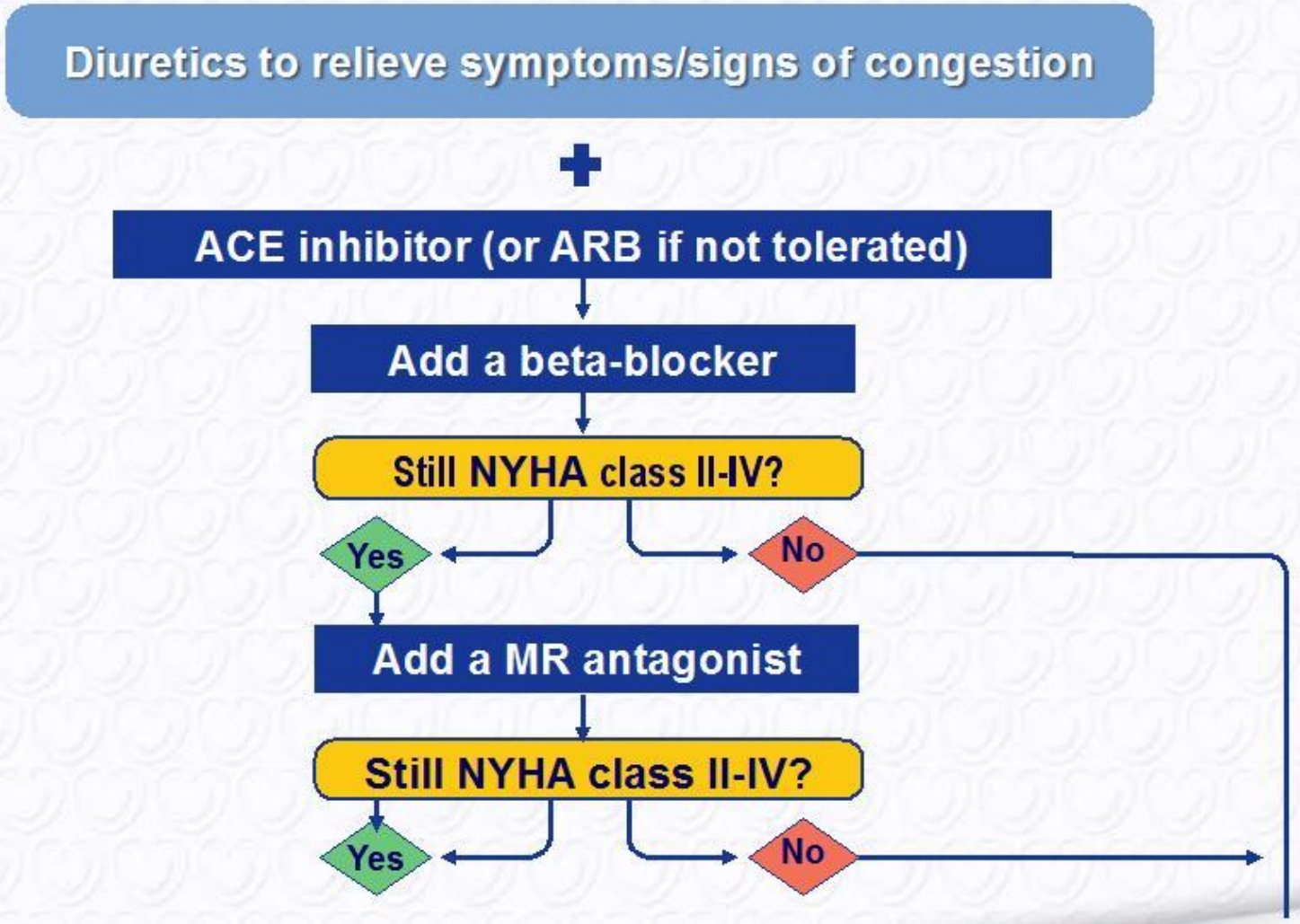
Điều trị suy tim 2012

- Lợi tiểu
- Ức chế men chuyển (hoặc ức chế thụ thể AT1)
- Chẹn beta giao cảm
- Kháng aldosterone
- Ivabradine
- Tái đồng bộ thất, máy phá rung tự động
- Digoxine
- Hydralazine-ISDN
- …



Eur Heart J 2012;33:1787–1847.

Initial pharmacological therapy



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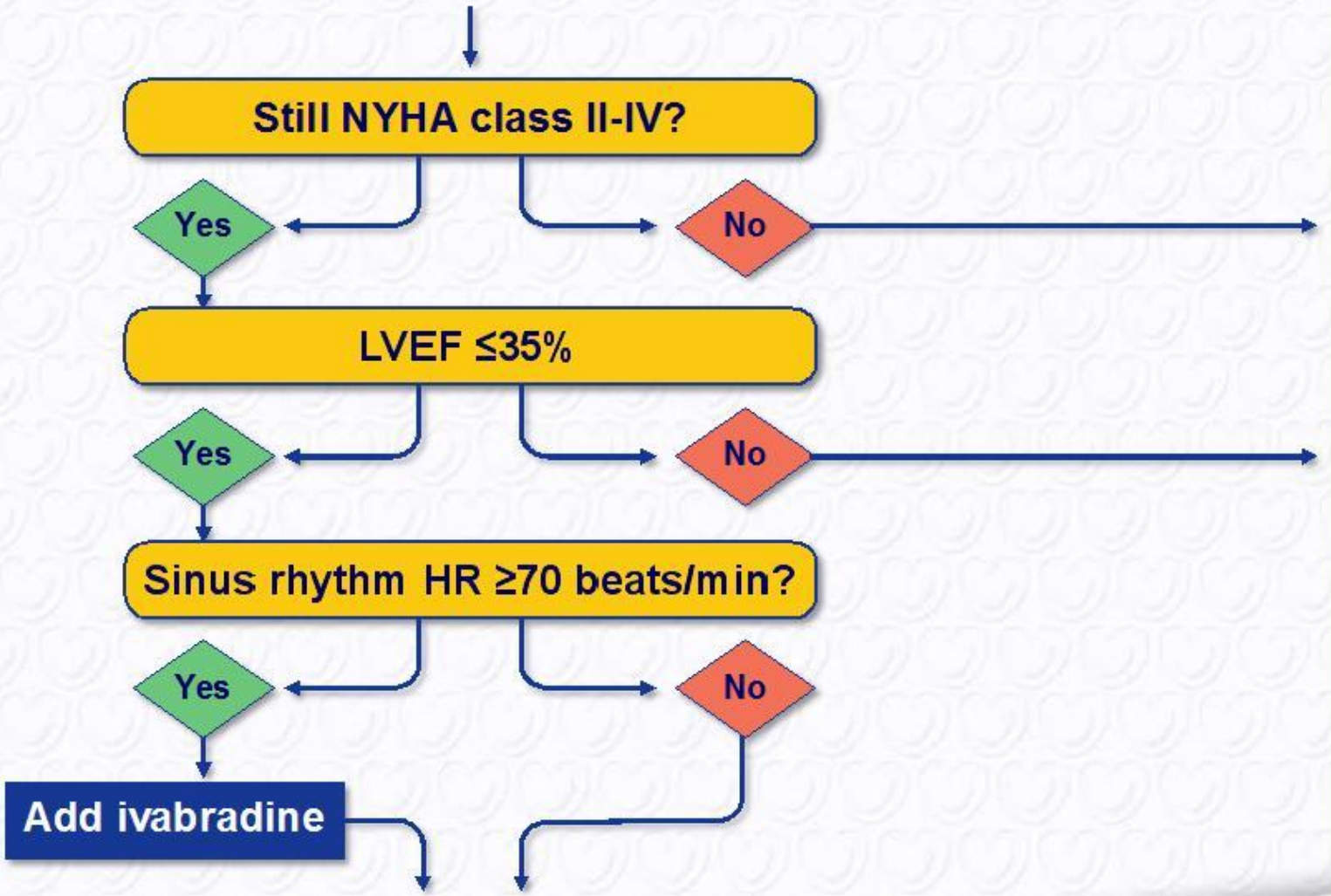
Pharmacological therapy – Next step



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When to consider CRT and ICD

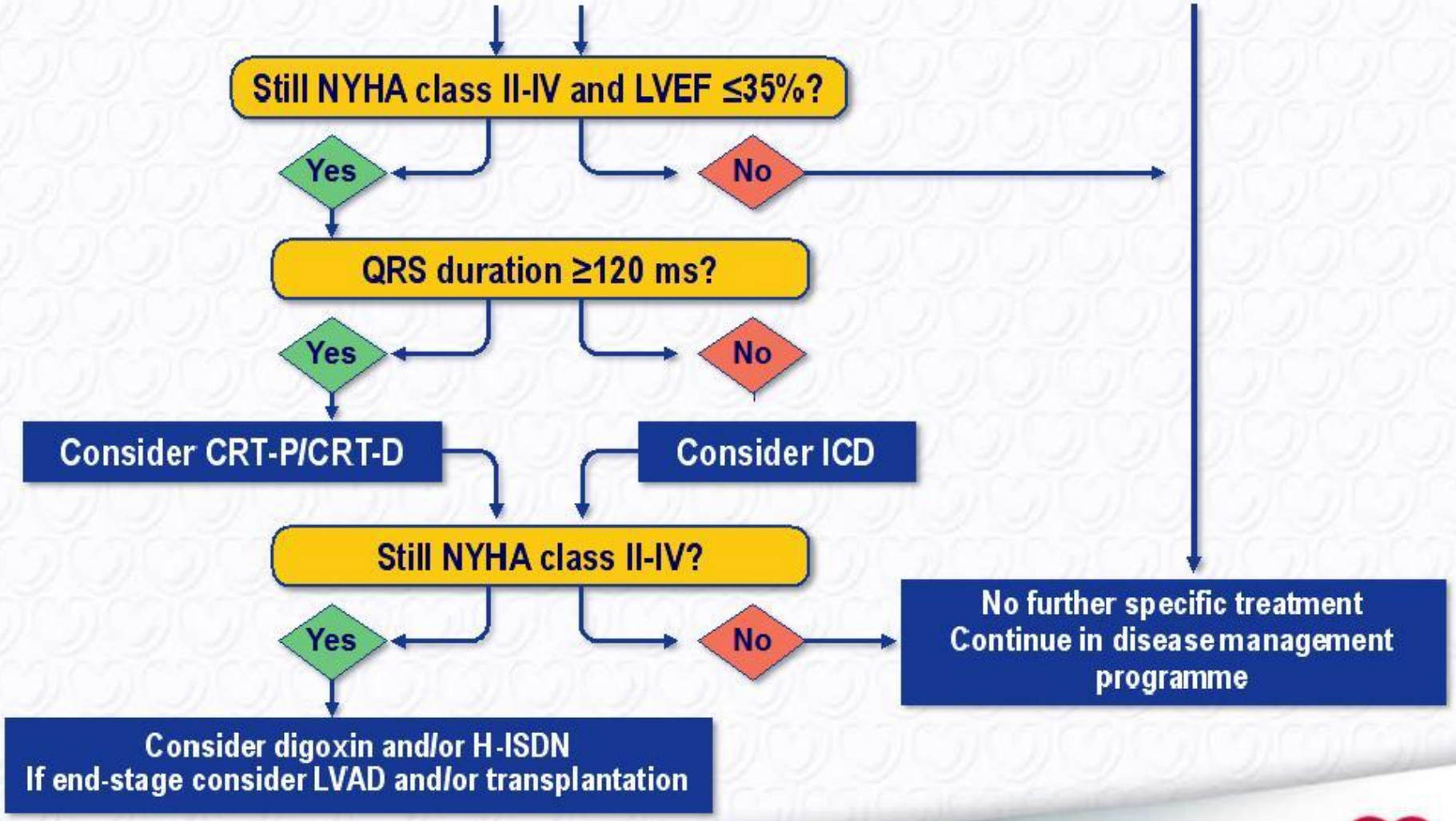

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Table 14 **Evidence-based doses of disease-modifying drugs used in key randomized trials in heart failure (or after myocardial infarction)**

	Starting dose (mg)	Target dose (mg)
ACE inhibitor		
Captopril[a]	6.25 t.i.d.	50 t.i.d.
Enalapril	2.5 b.i.d.	10–20 b.i.d.
Lisinopril[b]	2.5–5.0 o.d.	20–35 o.d.
Ramipril	2.5 o.d.	5 b.i.d.
Trandolapril[a]	0.5 o.d.	4 o.d.
Beta-blocker		
Bisoprolol	1.25 o.d.	10 o.d.
Carvedilol	3.125 b.i.d.	25–50 b.i.d.
Metoprolol succinate (CR/XL)	12.5/25 o.d.	200 o.d.
Nebivolol[c]	1.25 o.d.	10 o.d.
ARB		
Candesartan	4 or 8 o.d.	32 o.d.
Valsartan	40 b.i.d.	160 b.i.d.
Losartan[b,c]	50 o.d.	150 o.d.
MRA		
Eplerenone	25 o.d.	50 o.d.
Spironolactone	25 o.d.	25–50 o.d.

Other treatments with less-certain benefits in patients with symptomatic (NYHA class II–IV) systolic heart failure

Recommendations	Class[a]	Level[b]	Ref[c]
ARB			
Recommended to reduce the risk of HF hospitalization and the risk of premature death in patients with an EF ≤40% and unable to tolerate an ACE inhibitor because of cough (patients should also receive a beta-blocker and an MRA).	I	A	108, 109
Recommended to reduce the risk of HF hospitalization in patients with an EF ≤40% and persisting symptoms (NYHA class II–IV) despite treatment with an ACE inhibitor and a beta-blocker who are unable to tolerate an MRA.[d]	I	A	110, 111
Ivabradine			
Should be considered to reduce the risk of HF hospitalization in patients in sinus rhythm with an EF ≤35%, a heart rate remaining ≥70 b.p.m., and persisting symptoms (NYHA class II–IV) despite treatment with an evidence-based dose of beta-blocker (or maximum tolerated dose below that), ACE inhibitor (or ARB), and an MRA (or ARB).[e]	IIa	B	112
May be considered to reduce the risk of HF hospitalization in patients in sinus rhythm with an EF ≤35% and a heart rate ≥70 b.p.m. who are unable to tolerate a beta-blocker. Patients should also receive an ACE inhibitor (or ARB) and an MRA (or ARB).[e]	IIb	C	–
Digoxin			
May be considered to reduce the risk of HF hospitalization in patients in sinus rhythm with an EF ≤45% who are unable to tolerate a beta-blocker (ivabradine is an alternative in patients with a heart rate ≥70 b.p.m.). Patients should also receive an ACE inhibitor (or ARB) and an MRA (or ARB).	IIb	B	113
May be considered to reduce the risk of HF hospitalization in patients with an EF ≤45% and persisting symptoms (NYHA class II–IV) despite treatment with a beta-blocker, ACE inhibitor (or ARB), and an MRA (or ARB).	IIb	B	113
H-ISDN			
May be considered as an alternative to an ACE inhibitor or ARB, if neither is tolerated, to reduce the risk of HF hospitalization and risk of premature death in patients with an EF ≤45% and dilated LV (or EF ≤35%). Patients should also receive a beta-blocker and an MRA.	IIb	B	114, 115
May be considered to reduce the risk of HF hospitalization and risk of premature death in patients in patients with an EF ≤45% and dilated LV (or EF ≤35%) and persisting symptoms (NYHA class II–IV) despite treatment with a beta-blocker, ACE inhibitor (or ARB), and an MRA (or ARB).	IIb	B	116
An *n*-3 PUFA[f] preparation may be considered to reduce the risk of death and the risk of cardiovascular hospitalization in patients treated with an ACE inhibitor (or ARB), beta-blocker, and an MRA (or ARB).	IIb	B	117

Treatments (or combinations of treatments) that may cause harm in patients with symptomatic (NYHA class II–IV) systolic heart failure

Recommendations	Class[a]	Level[b]	Ref[c]
Thiazolidinediones (glitazones) should not be used as they cause worsening HF and increase the risk of HF hospitalization.	III	A	131–133
Most CCBs (with the exception of amlodipine and felodipine) should not be used as they have a negative inotropic effect and can cause worsening HF.	III	B	134
NSAIDs and COX-2 inhibitors should be avoided if possible as they may cause sodium and water retention, worsening renal function and worsening HF.	III	B	135, 136
The addition of an ARB (or renin inhibitor) to the combination of an ACE inhibitor AND a mineralocorticoid antagonist is NOT recommended because of the risk of renal dysfunction and hyperkalaemia.	III	C	–

Lifestyle and non-pharmacological / device / surgical interventions

Recommendations	Class	Level
It is recommended that regular aerobic exercise is encouraged in patients with heart failure to improve functional capacity and symptoms.	I	A*
It is recommended that patients with heart failure are enrolled in a multidisciplinary-care management programme to reduce the risk of heart failure hospitalization.	I	A*

* O'Connor CM, Whellan DJ, Lee KL, Keteyian SJ, Cooper LS, Ellis SJ, Leifer ES,Kraus WE, Kitzman DW, Blumenthal JA, Rendall DS, Miller NH, Fleg JL, Schulman KA, McKelvie RS, Zannad F, Pin˜a IL; HF-ACTION Investigators. Efficacy and safety of exercise training in patients with chronic heart failure: HFACTION randomized controlled trial. JAMA 2009;301:1439–1450.
Piepoli MF, Conraads V, Corra U, Dickstein K, Francis DP, Jaarsma T, McMurray J, Pieske B, Piotrowicz E, Schmid JP, Anker SD, Solal AC, Filippatos GS, Hoes AW, Gielen S, Giannuzzi P, Ponikowski PP. Exercise training in heart failure: from theory to practice. A consensus document of the Heart Failure Association and the European Association for Cardiovascular Prevention and Rehabilitation. Eur J Heart Fail 2011;13:347–357.

Indications for myocardial revascularization

- CABG indicated in symptomatic patients with left main or multivessel disease.
- No indication for revascularization in asymptomatic patients without viable myocardium (scar).

Recommendations	Class	Level
CABG is recommended for patients with angina and significant left main stenosis, who are otherwise suitable for surgery and expected to survive >1 year with good functional status, to reduce the risk of premature death.	I	C
CABG is recommended for patients with angina and two- or three-vessel coronary disease, including a left anterior descending stenosis, who are otherwise suitable for surgery and expected to survive >1 year with good functional status, to reduce the risk of hospitalization for cardiovascular causes and the risk of premature death from cardiovascular causes.	I	B
Alternative to CABG: PCI may be considered as an alternative to CABG in the above categories of patients unsuitable for surgery.	IIb	C
CABG and PCI are NOT recommended in patients without angina AND without viable myocardium.	III	C

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Indications for MCS

Upgrade of LVAD indication for destination therapy

Recommendations	Class	Level	Ref
An LVAD or BiVAD is recommended in selected patients with end-stage HF despite optimal pharmacological and device treatment and who are otherwise suitable for heart transplantation, to improve symptoms and reduce the risk of HF hospitalization for worsening HF and to reduce the risk of premature death while awaiting transplantation.	I	B	254 255 258
An LVAD should be considered in highly selected patients who have end-stage HF despite optimal pharmacological and device therapy and who are not suitable for heart transplantation, but are expected to survive >1 year with good functional status, to improve symptoms, and reduce the risk of HF hospitalization and of premature death.	IIa	B	254

Patients eligible for LVAD or BiVAD implantation

Patients with >2 months of severe symptoms despite optimal medical and device therapy and more than one of the following:

- LVEF <25% and, if measured, peak VO_2 <12 mL/kg/min.
- ≥3 HF hospitalizations in previous 12 months without an obvious precipitating cause.
- Dependence on i.v. inotropic therapy
- Progressive end-organ dysfunction (worsening renal and/or hepatic function) due to reduced perfusion and not to inadequate ventricular filling pressure (PCWP ≥20 mmHg and SBP ≤80–90 mmHg or CI ≤2 L/min/m^2).
- Deteriorating right ventricular function.

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Indications for Valve Surgery

- **Aortic stenosis**
  - If mean gradient is >40 mmHg, there is no lower EF limit for AVR in symptomatic patients.
  - Optimization of treatment should not delay surgical decision-making.
  - In patients who are not medically fit for surgery TAVI should be considered.

Recommendations	Class	Level
AVR should be considered in symptomatic patients with low flow, low gradient (<40 mmHg) AS with normal EF only after carreful confirmation of severe AS.	IIa	C
AVR should be considered in symptomatic patients with severe AS, low flow, low gradient with reduced EF, and evidence of flow reserve.	IIa	C
AVR may be considered in symptomatic patients with severe AS low flow, low gradient, and LV dysfunction without flow reserve.	IIb	C

Table taken from ESC GL on VHD 2012

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Indications for Valve Surgery

- **Secondary mitral insufficiency**
  - The role of isolated MVR in patients with severe functional MI and severe LV systolic dysfunction who cannot be revascularized or have non-ischaemic cardiomyopathy is questionable.
  - In selected cases, repair may be considered in order to avoid or postpone transplantation.

Recommendations	Class	Level
Surgery is indicated in patients with severe MR undergoing CABG, and LVEF >30%.	I	C
Surgery should be considered in patients with moderate MR undergoing CABG.	IIa	C
Surgery should be considered in symptomatic patients with severe MR, LVEF <30%, option for revascularisation, and evidence of viability.	IIa	C
Surgery may be considered in patients with severe MR, LVEF >30%, who remain symptomatic despite optimal medical management (including CRT if indicated) and have low co-morbidity, when revascularization is not indicated.	IIb	C

Table taken from ESC GL on VHD 2012

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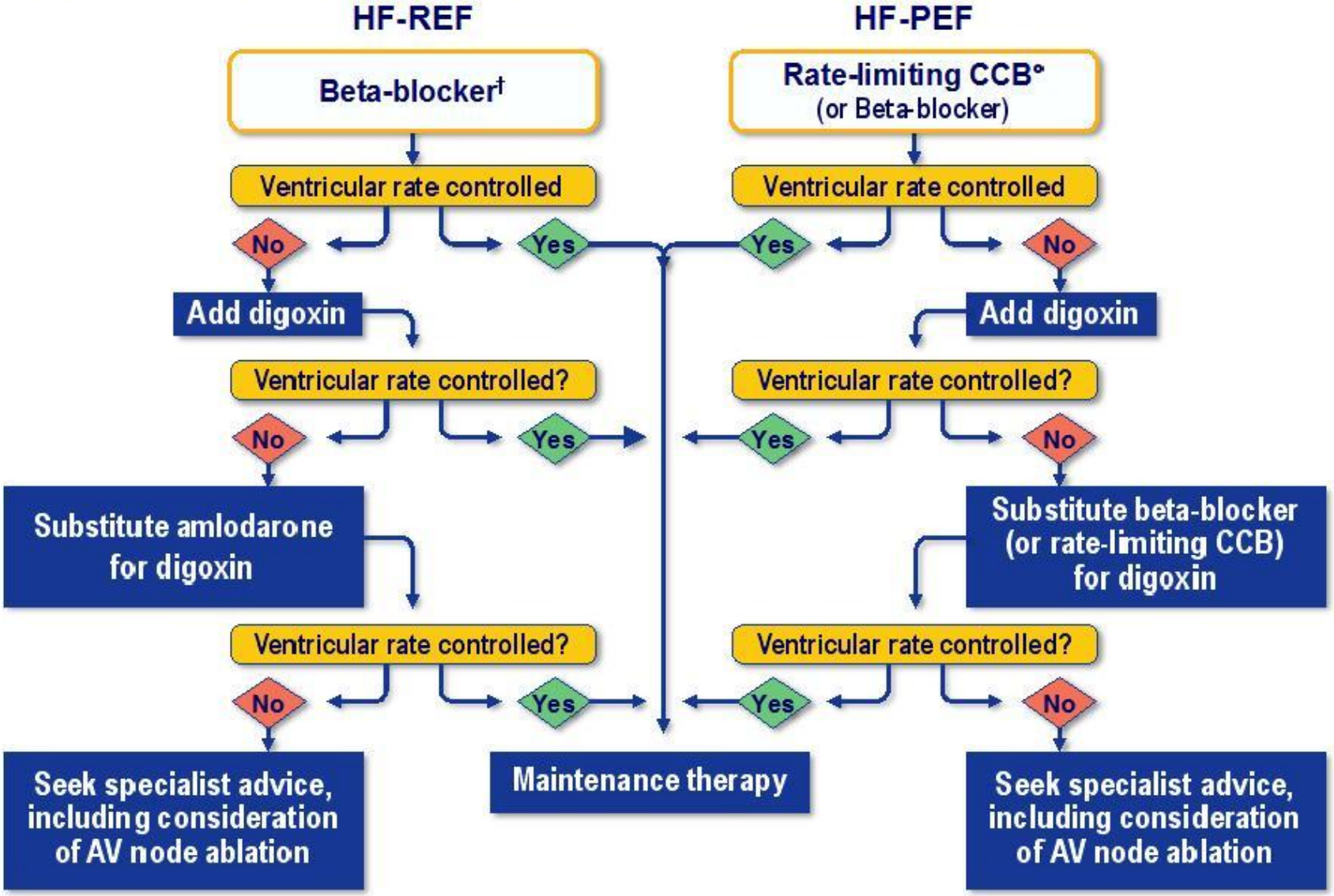
Ventricular rate-control in persistent/permanent atrial fibrillation



*Thrombo-embolism prophylaxis should also be considered in parallel.

† Beta-blocker treatment can cause worsening in acutely decompensated patients with HF-REF (see section on acute heart failure). - ° Rate-limiting CCBs should be avoided in HF-REF.

AV = atrioventricular; CCB = calcium-channel blocker; HF-PEF = heart failure with preserved ejection fraction; HF-REF = heart failure with reduced ejection fraction.

Thromoembolism prophylaxis in atrial fibrillation

Recommendations	Class	Level
The CHA_2DS_2-VASc and HAS-BLED scores *(Tables 17 and 18)* are recommended to determine the likely risk–benefit (thrombo-embolism prevention vs. risk of bleeding) of oral anticoagulation.	I	B
An oral anticoagulant is recommended for all patients with paroxysmal or persistent/ permanent AF and a CHA_2DS_2-VASc score ≥1, without contraindications, and irrespective of whether a rate- or rhythm-management strategy is used (including after successful cardioversion).	I	A
In patients with AF of ≥48 h duration, or when the known duration of AF is unknown, an oral anticoagulant is recommended at a therapeutic dose for ≥3 weeks prior to electrical or pharmacological cardioversion.	I	C
Intravenous heparin or LMWH is recommended for patients who have not been treated with an anticoagulant and require urgent electrical or pharmacological cardioversion.	I	C
Alternative to i.v. heparin or LMWH A TOE-guided strategy may be considered for patients who have not been treated with an anticoagulant and require urgent electrical or pharmacological cardioversion.	IIb	C
Combination of an oral anticoagulant and an antiplatelet agent is not recommended in patients with chronic (>12 months after an acute event) coronary or other arterial disease, because of a high risk of serious bleeding. Single therapy with an oral anticoagulant is preferred after 12 months.	III	A

AF = atrial fibrillation; CHA_2DS_2-VASc = Cardiac failure, Hypertension, Age ≥75 (Doubled), Diabetes, Stroke (Doubled), Vascular disease, Age 65–74 and Sex category (Female); EF = ejection fraction; HAS-BLED = Hypertension, Abnormal renal/liver function (1 point each), Stroke, Bleeding history or predisposition, Labile international normalized ratio, Elderly (.65), Drugs/alcohol concomitantly (1 point each); HF = heart failure; i.v. = intravenous; LMWH = low molecular weight heparin; LV = left ventricular; NYHA = New York Heart Association; TOE = transoesophageal echocardiography.
[A] Class of recommendation – [b] Level of evidence –

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Management of ventricular arrhythmias

Recommendations	Class	Level
It is recommended that potential aggravating/precipitating factors (e.g. electrolyte disorders, use of proarrhythmic drugs, myocardial ischaemia) should be sought and corrected in patients with ventricular arrhythmias.	I	C
It is recommended that treatment with an ACE inhibitor (or ARB), beta-blocker, and MRA should be optimized in patients with ventricular arrhythmias.	I	A
It is recommended that coronary revascularization is considered in patients with ventricular arrhythmias and coronary artery disease (see Section 13.2).	I	C
It is recommended that an ICD is implanted in a patient with symptomatic or sustained ventricular arrhythmia (ventricular tachycardia or ventricular fibrillation), reasonable functional status, and in whom a goal of treatment is to improve survival.	I	A
Amiodarone is recommended in patients with an ICD, who continue to have symptomatic ventricular arrhythmias or recurrent shocks despite optimal treatment and device re-programming.	I	C
Catheter ablation is recommended in patients with an ICD who continue to have ventricular arrhythmias causing recurrent shocks not preventable by optimal treatment device re-programming and amiodarone.	I	C
Amiodarone may be considered as a treatment to prevent recurrence of sustained symptomatic ventricular arrhythmias in otherwise optimally treated patients in whom an ICD is not considered appropriate.	IIb	C
Routine use of amiodarone is not recommended in patients with non-sustained ventricular arrhythmias because of lack of benefit and potential drug toxicity.	III	A
Other antiarrhythmic drugs (particularly class IC agents and dronedarone) should not be used in patients with systolic HF because of safety concerns (worsening HF, proarrhythmia, and death).	III	A

ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker; HF = heart failure; ICD = implantable cardioverter defibrillator; MRA = mineralocorticoid receptor antagonist. [a] Class of recommendation - [b] Level of evidence -.

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Management of co-morbidities

- Anaemia
- Angina
- Asthma/COPD
- Cachexia
- Cancer
- Depression
- Diabetes mellitus
- Erectile dysfunction
- Gout
- Hyperlipidaemia
- Hypertension
- Iron deficiency
- Kidney dysfunction
- Obesity
- Prostatic obstruction
- Sleepdisturbance/ sleep disordered breathing

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TRÂN TRỌNG CẢM ƠN

Suy tim cấp

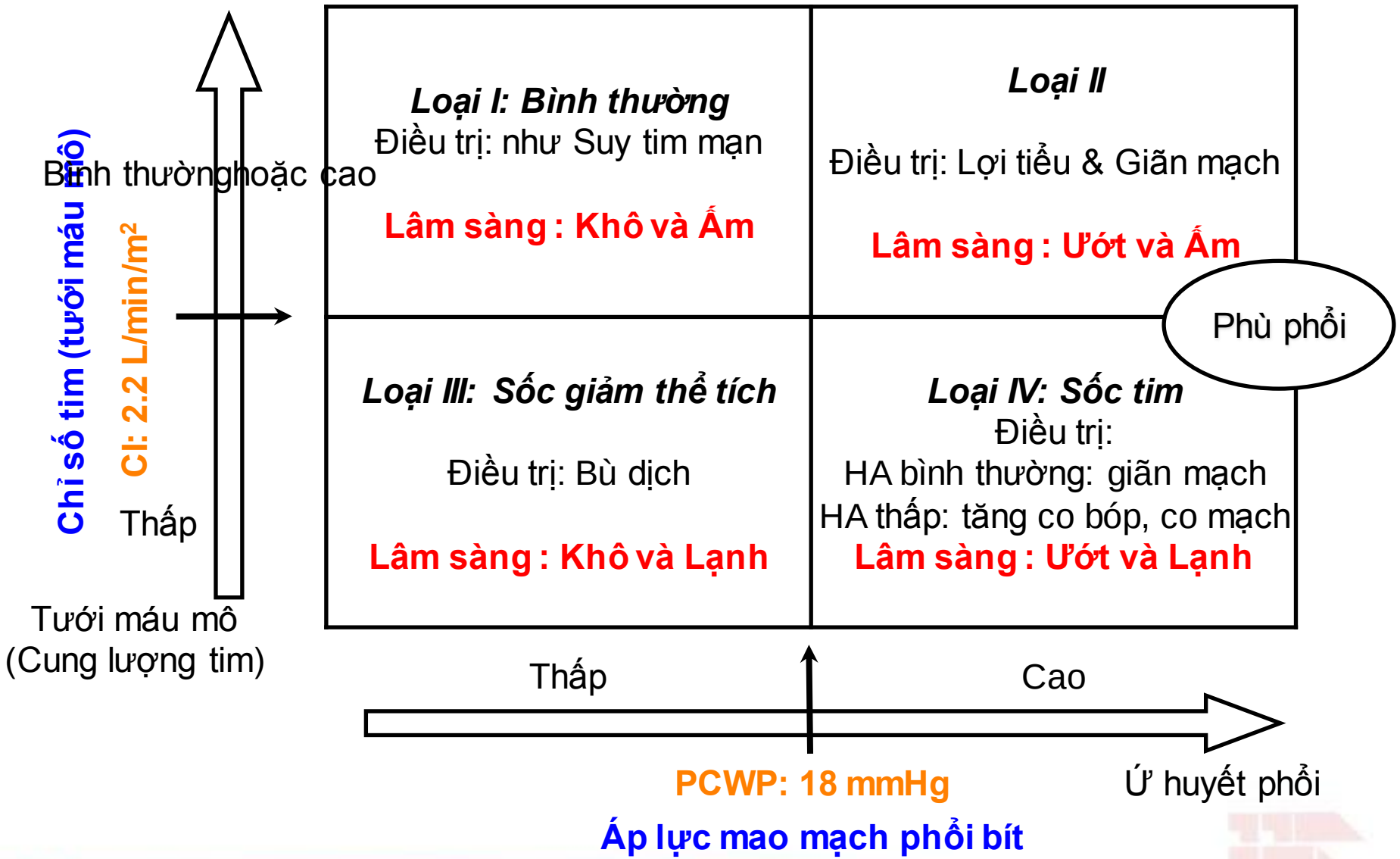

Suy tim cấp do Tăng huyết áp
Đợt mất bù cấp của Suy tim mạn
Hội chứng vành cấp
Phù phổi cấp
Sốc tim
Suy tim phải

Phân biệt Suy tim cấp

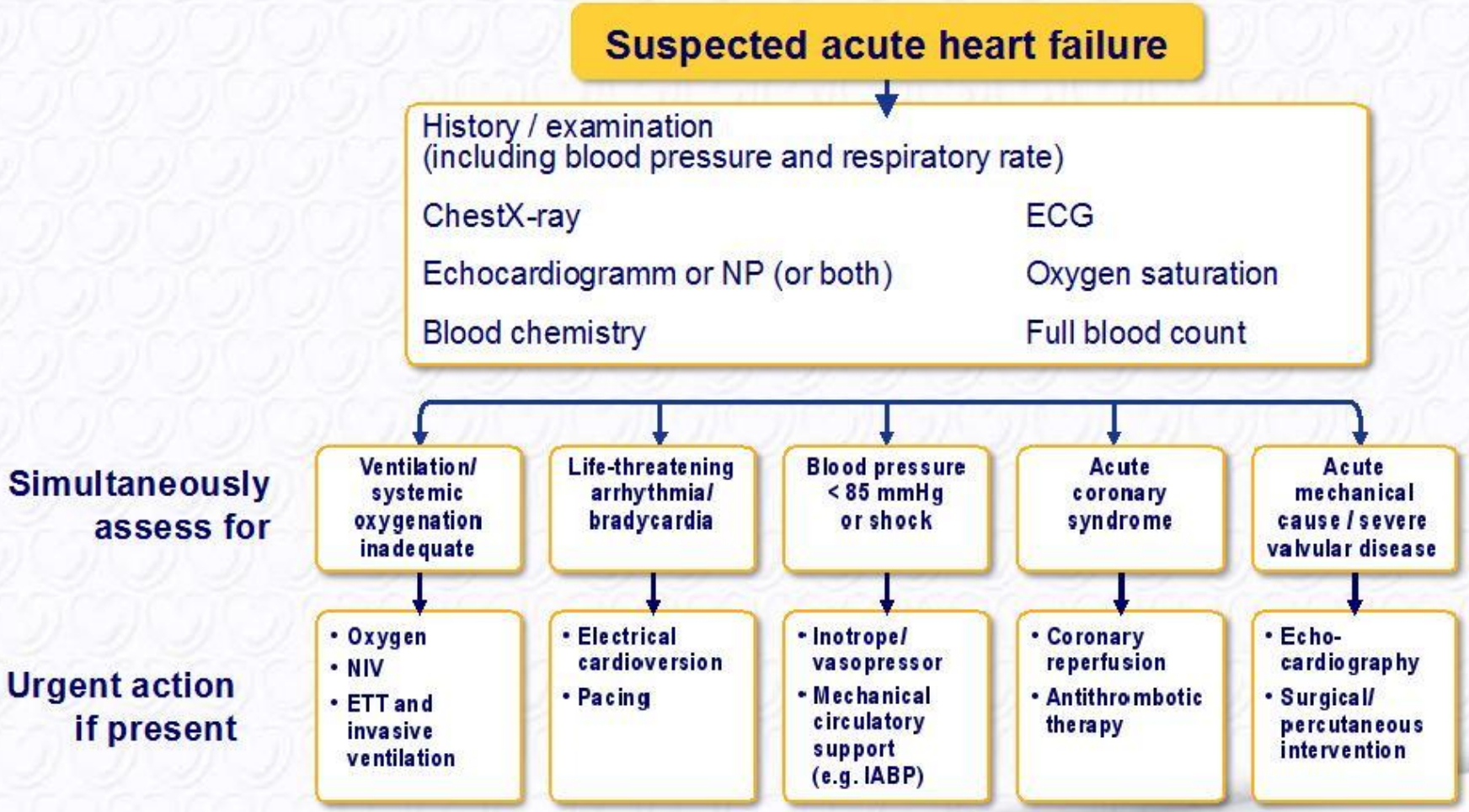
Table 20.11 Differential diagnosis of acute, acutely decompensated, and chronic heart failure (modified from Givertz et al. In: Braunwald, Zipes, Libby [eds.] Heart Disease, 6th ed.)

Symptom or finding	Acute heart failure	Acutely decompensated heart failure	Chronic heart failure
Symptom severity	severe	severe	mild
Pulmonary edema	frequent	frequent	rare
Peripheral edema	rare	frequent	frequent
Weight gain	little or none	frequent	frequent
Fluid retention	little	marked to severe	little to marked
Cardiomegaly	unusual	typical (except with diastolic dysfunction)	typical (except with diastolic dysfunction)
Systolic ventricular function (ejection fraction)	impaired, normal or hypercontractile	impaired	impaired
Sympathetic nervous system activation	severe	severe	slight (to pronounced)
Reversible cause	in most cases	frequent	occasional

Phân loại Forrester cho Suy tim cấp



Initial assessment of patient with suspected acute heart failure



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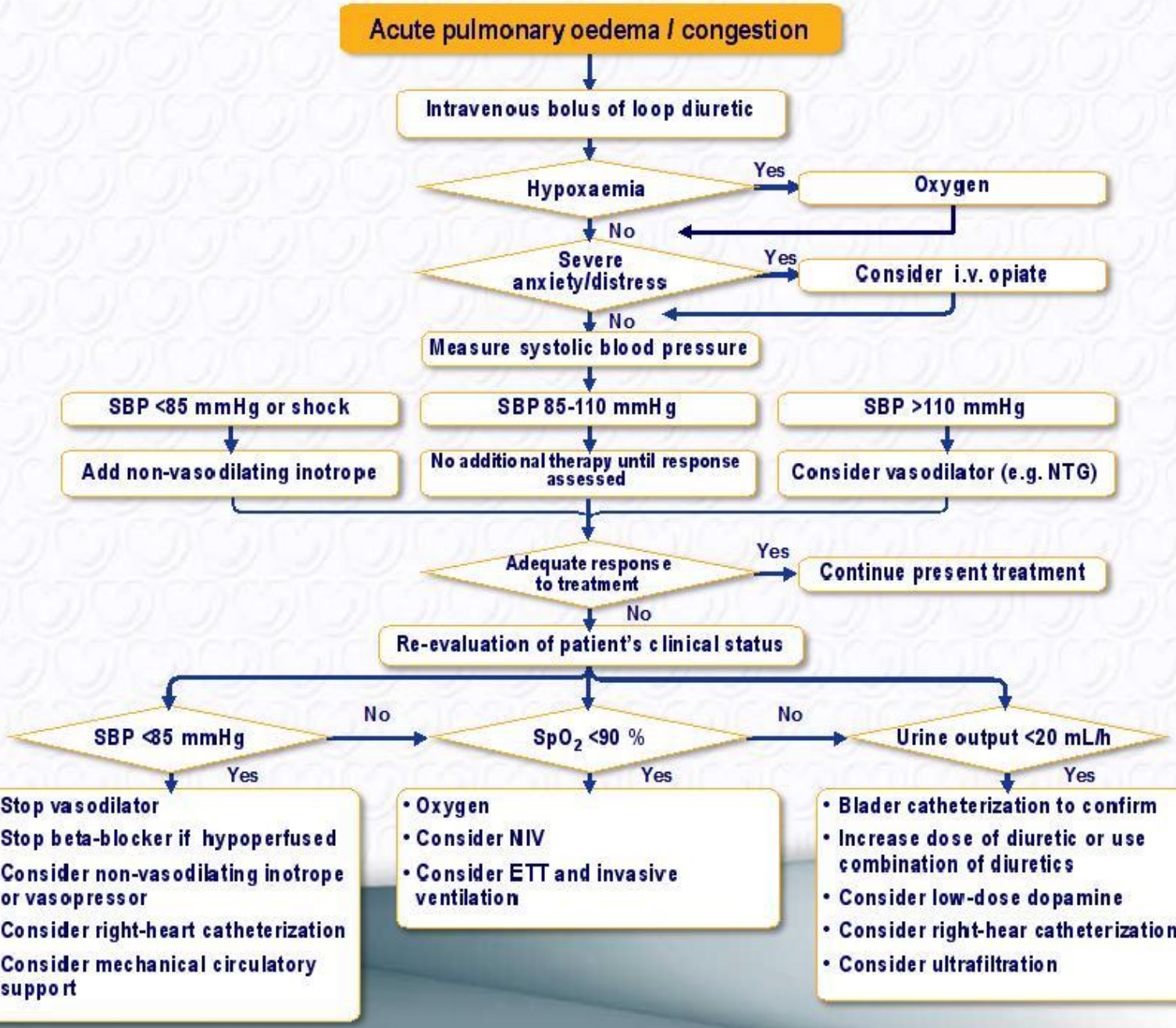
Algorithm for management of acute pulmonary oedema/congestion



Algorithm for management of acute pulmonary oedema/congestion

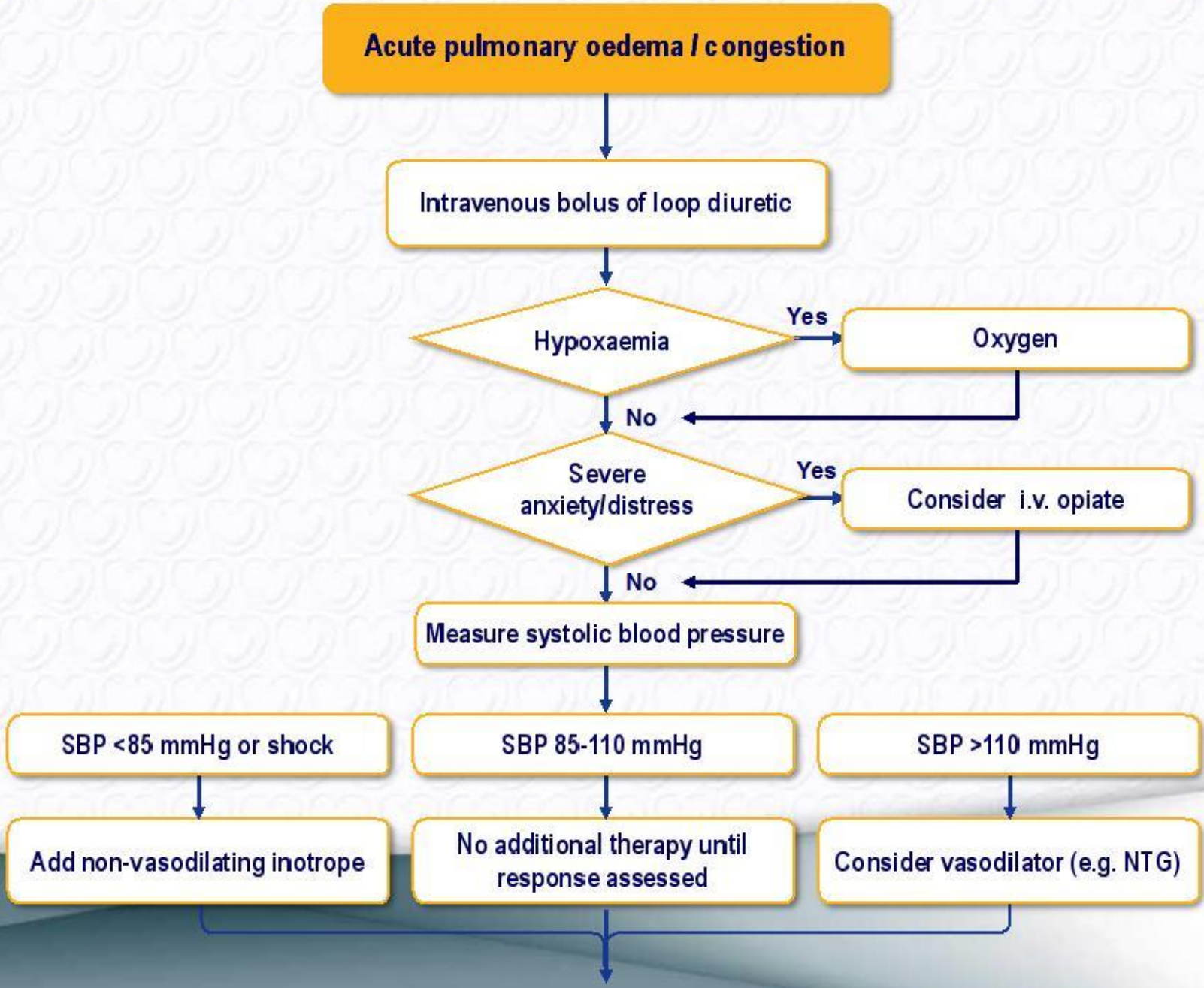


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Table 16 **Doses of diuretics commonly used to treat heart failure (with and without a preserved ejection fraction, chronic and acute)**

Diuretics	Initial dose (mg)		Usual daily dose (mg)	
Loop diuretics[a]				
Furosemide	20–40		40–240	
Bumetanide	0.5–1.0		1–5	
Torasemide	5–10		10–20	
Thiazides[b]				
Bendroflumethiazide	2.5		2.5–10	
Hydrochlorothiazide	25		12.5–100	
Metolazone	2.5		2.5–10	
Indapamide[c]	2.5		2.5–5	
Potassium-sparing diuretics[d]				
	+ACEi/ ARB	−ACEi/ ARB	+ACEi/ ARB	−ACEi/ ARB
Spironolactone/ eplerenone	12.5–25	50	50	100–200
Amiloride	2.5	5	5–10	10–20
Triamterene	25	50	100	200

Table 20 **Intravenous vasodilators used to treat acute heart failure**

Vasodilator	Dosing	Main side effects	Other
Nitroglycerine	Start with 10–20 μg/min, increase up to 200 μg/min	Hypotension, headache	Tolerance on continuous use
Isosorbide dinitrate	Start with 1 mg/h, increase up to 10 mg/h	Hypotension, headache	Tolerance on continuous use
Nitroprusside	Start with 0.3 μg/kg/min and increase up to 5 μg/kg/min	Hypotension, isocyanate toxicity	Light sensitive
Nesiritide[a]	Bolus 2 μg/kg + infusion 0.01 μg/kg/min	Hypotension	

Table 19 Precipitants and causes of acute heart failure

Events usually leading to rapid deterioration
• Rapid arrhythmia or severe bradycardia/conduction disturbance
• Acute coronary syndrome
• Mechanical complication of acute coronary syndrome (e.g. rupture of interventricular septum, mitral valve chordal rupture, right ventricular infarction)
• Acute pulmonary embolism
• Hypertensive crisis
• Cardiac tamponade
• Aortic dissection
• Surgery and perioperative problems
• Peripartum cardiomyopathy
Events usually leading to less rapid deterioration
• Infection (including infective endocarditis)
• Exacerbation of COPD/asthma
• Anaemia
• Kidney dysfunction
• Non-adherence to diet/drug therapy
• Iatrogenic causes (e.g. prescription of an NSAID or corticosteroid; drug interactions)
• Arrhythmias, bradycardia, and conduction disturbances not leading to sudden, severe change in heart rate
• Uncontrolled hypertension
• Hypothyroidism or hyperthyroidism
• Alcohol and drug abuse