2016 ESC Guidelines for the Diagnosis and Treatment of Acute & Chronic Heart Failure

Take-home summary

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Disclosures

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Heart Failure ESC guidelines: 20 years of history

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

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1. Apply a novel algorithm for the diagnosis of heart failure in the non-acute setting based on clinical probability of the disease (derived from medical history, physical examination and resting ECG), the assessment of circulating natriuretic peptides and transthoracic echocardiography.
PATIENT WITH SUSPECTED HF (non-acute onset)

ASSESSMENT OF HF PROBABILITY

1. Clinical history:
   History of CAD (MI, revascularization)
   History of arterial hypertension
   Exposition to cardiotoxic drug/radiation
   Use of diuretics
   Orthopnoea / paroxysmal nocturnal dyspnoea

2. Physical examination:
   Rales
   Bilateral ankle oedema
   Heart murmur
   Jugular venous dilatation
   Laterally displaced/broadened apical beat

3. ECG:
   Any abnormality
PATIENT WITH SUSPECTED HF (non-acute onset)

ASSESSMENT OF HF PROBABILITY
1. Clinical history; 2. Physical examination; 3. ECG

≥1 present

NATRIURETIC PEPTIDES
• NT-proBNP ≥125 pg/mL
• BNP ≥35 pg/mL

yes

ECHOCARDIOGRAPHY

all absent

HF unlikely: consider other diagnosis

Assessment of natriuretic peptides not routinely done in clinical practice

no

normal

If HF confirmed (based on all available data): determine aetiology and start appropriate treatment
ESC Heart Failure Guidelines: Ten Commandments

2. Use transthoracic echocardiography in patients with suspected or established HF for the assessment of myocardial structure and function along with the measurement of LVEF to establish the diagnosis of HF with reduced (HFrEF, LVEF<40%), mid-range (HFmrEF, LVEF: 40-49%) or preserved ejection fraction (HFpEF, LVEF≥50%).
### Definition of heart failure with preserved (HFpEF), mid-range (HFmrEF) and reduced ejection fraction (HFrEF)

<table>
<thead>
<tr>
<th>Type of HF</th>
<th>HFrEF</th>
<th>HFmrEF</th>
<th>HFpEF</th>
</tr>
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<tbody>
<tr>
<td><strong>CRITERIA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Symptoms ± Signs(^a)</td>
<td>Symptoms ± Signs(^a)</td>
<td>Symptoms ± Signs(^a)</td>
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<tr>
<td>2</td>
<td>LVEF &lt;40%</td>
<td>LVEF 40–49%</td>
<td>LVEF ≥50%</td>
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</table>
| 3 | 1. Elevated levels of natriuretic peptides\(^b\); 2. At least one additional criterion: 
   a. relevant structural heart disease (LVH and/or LAE),  
   b. diastolic dysfunction (for details see Section 4.3.2). | 1. Elevated levels of natriuretic peptides\(^b\); 2. At least one additional criterion: 
   a. relevant structural heart disease (LVH and/or LAE),  
   b. diastolic dysfunction (for details see Section 4.3.2). |  |

\(^a\)Signs may not be present in the early stages of HF (especially in HFpEF) and in patients treated with diuretics.  
\(^b\)BNP >35 pg/ml and/or NT-proBNP >125 pg/mL.

Identifying HFmrEF as a separate group will stimulate research into underlying characteristics, pathophysiology and treatment of this population.
ESC Heart Failure Guidelines: Ten Commandments

3. To prevent or delay onset of HF and prolong life, treatment of arterial hypertension, use of statins in patients with or at high risk of coronary artery disease, use of ACE-I in patients with asymptomatic left ventricular dysfunction and beta-blockers in those with asymptomatic left ventricular dysfunction and a history of myocardial infarction are recommended.
Recommendations to prevent or delay the development of overt HF or prevent death before the onset of symptoms

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Class</th>
<th>Level</th>
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<tbody>
<tr>
<td>Treatment of hypertension is recommended to prevent or delay the onset of HF and prolong life.</td>
<td>I</td>
<td>A</td>
</tr>
<tr>
<td>Treatment with statins is recommended in patients with or at high-risk of CAD whether or not they have LV systolic dysfunction, in order to prevent or delay the onset of HF and prolong life.</td>
<td>I</td>
<td>A</td>
</tr>
<tr>
<td>ACE-I is recommended in patients with asymptomatic LV systolic dysfunction and a history of myocardial infarction in order to prevent or delay the onset of HF and prolong life.</td>
<td>I</td>
<td>A</td>
</tr>
<tr>
<td>ACE-I is recommended in patients with asymptomatic LV systolic dysfunction without a history of myocardial infarction, in order to prevent or delay the onset of HF.</td>
<td>I</td>
<td>B</td>
</tr>
<tr>
<td>Beta-blocker is recommended in patients with asymptomatic LV systolic dysfunction and a history of myocardial infarction, in order to prevent or delay the onset of HF or prolong life.</td>
<td>I</td>
<td>B</td>
</tr>
</tbody>
</table>
4. Implement **life-saving pharmacotherapy** in patients with symptomatic HFrEF, containing a **combination** of an **ACE-I** (or ARB if ACE-I not tolerated), a **β-blocker** and a **MRA**. If a patient still remains symptomatic, **sacubitril/valsartan** is recommended to replace ACE-I. Use diuretics in order to improve symptoms and exercise capacity in patients with signs and/or symptoms of congestion.
ESC Heart Failure Guidelines: Ten Commandments

5. Ensure an **ICD implantation** in HF patients who either have recovered from a ventricular arrhythmia causing haemodynamic instability or in those with symptomatic HF, LVEF ≤35% (despite at least 3 months of OMT), in order to reduce the risk of sudden death and all-cause mortality. ICD implantation is not recommended within 40 days of an MI as implantation at this time does not improve prognosis.
6. Implant a cardiac resynchronization therapy in symptomatic patients with HF, LVEF ≤35% (despite at least 3 months of OMT), in sinus rhythm with a QRS duration ≥130 msec and LBBB QRS morphology, in order to improve symptoms and reduce morbidity and mortality. CRT is contra-indicated in patients with a QRS duration < 130 msec.
Therapeutic algorithm for a patient with symptomatic HFrEF

Patient with symptomatic HFrEF

Therapy with ACE-I and beta-blocker (Up-titrate to maximum tolerated evidence-based doses)

Still symptomatic and LVEF ≤35%

No

Yes

Add MR antagonist** (up-titrate to maximum tolerated evidence-based dose)

Still symptomatic and LVEF ≤35%

No

Yes

If LVEF <35% despite OMT or a history of symptomatic VT/VF, implant ICD

Diuretics to relieve symptoms and signs of congestion

Able to tolerate ACEI (or ARB)³⁶

Sinus rhythm, QRS duration ≥130 msec

Sinus rhythm, HR ≥70 bpm

ARNI to replace ACE-I

Evaluate need for CRT³⁴

Ivabradine

These above treatments may be combined if indicated

Resistant symptoms

Yes

Consider digoxin or H-ISDN or LVAD, or heart transplantation

No

No further action required

Consider reducing diuretic dose
7. In the management of a patient with suspected acute HF, try to shorten all diagnostic and therapeutic decisions. During an initial phase, reassure that circulatory or/and ventilatory support is provided in case of either cardiogenic shock or/and ventilatory failure, respectively.
8. In parallel, identify immediately coexisting life-threatening clinical conditions and/or precipitants (according to the CHAMP acronym - acute Coronary syndrome, Hypertension emergency, Arrhythmia, acute Mechanical cause, Pulmonary embolism) and introduce a guideline-recommended specific management.
Initial management of a patient with acute HF

Patient with suspected AHF

Immediate phase (initial 60-120 minutes)

1. Cardiogenic shock?
   - no
   - yes

2. Respiratory failure?
   - no
   - yes

Immediate stabilization and transfer to ICU/CCU

Identification of acute aetiology:
- C: acute Coronary syndrome
- H: Hypertensive emergency
- A: Arrhythmia
- M: acute Mechanical cause
- P: Pulmonary embolism

Immediate initiation of specific treatment

Follow detailed recommendations in the specific ESC guidelines

Diagnostic work-up to confirm AHF

Clinical evaluation to select optimal management
9. During an early phase of AHF for an optimal management apply the algorithm based on clinical profiles evaluating the presence of congestion and peripheral hypoperfusion. Remember that hypoperfusion is not synonymous with hypotension, but often hypoperfusion is accompanied by hypotension.
Management of patients with acute heart failure based on clinical profile during an early phase

PATIENT WITH ACUTE HEART FAILURE

Bedside assessment to identify *haemodynamic profiles*

PRESENCE OF CONGESTION?*

YES
(95% of all AHF patients)

‘Wet’ patient

NO
(5% of all AHF patients)

‘Dry’ patient

ADEQUATE PERIPHERAL PERFUSION?
Management of patients with acute heart failure based on clinical profile during an early phase

Adequate Peripheral Perfusion?

**YES**

- ‘Wet and Warm’ patient (typically elevated or normal systolic blood pressure)
  - Vascular type – fluid redistribution
    - Hypertension predominates
      - Vasodilator
      - Diuretic
  - Cardiac type – fluid accumulation
    - Congestion predominates
      - Diuretic
      - Vasodilator
      - Ultrafiltration (consider if diuretic resistance)

**NO**

- ‘Dry and warm’ Adequately perfused ≈ Compensated
  - Adjust oral therapy
- ‘Dry and cold’ Hypoperfused, Hypovolemic
  - Consider fluid challenge
  - Consider inotropic agent if still hypoperfused

**Wet and Cold’ patient**

Systolic blood pressure <90 mm Hg

**YES**

- Inotropic agent
- Consider vasopressor in refractory cases
- Diuretic (when perfusion corrected)
- Consider mechanical circulatory support if no response to drugs

**NO**

- Vasodilators
- Diuretics
- Consider inotropic agent in refractory cases
10. Enrol the patients with HF in a *multidisciplinary care management program* in order to reduce the risk of HF hospitalization and mortality.
„The best physician for a patient with HF would be one with excellent training, extensive experience, and superb judgment with regard to all aspects of the disease. He or she would not necessarily follow guidelines slavishly."

J.N. Cohn, Circ Heart Fail 2008;1:87-88