Heart Failure in Greece

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Gen. Secretary of the Hellenic Lipidology Society
Member of the EB of Hellenic Heart Foundation
Vice-President of the Hellenic College of Metabolic Diseases
Clinical Outcomes in Patients Hospitalized with Heart Failure

- 1 million admissions per year with the primary diagnosis of HF
- 3,000,000 admissions per year with primary or secondary diagnosis of HF


Clinical Outcomes in Patients Hospitalized with Heart Failure

All-cause mortality:
- In hospital* 3-7%
- At 60 - 90 days 10 - 16%

Readmissions:
- At 60 - 90 days 20 - 25%

* Fonarow GC. Rev Cardiovasc Med. 2003; 4 (Suppl. 7): 21, EuroHeart Survey II
AHF Definition
Task Force on AHF of the ESC

- Pulmonary edema
- Cardiogenic shock
- Acute Hypertensive heart failure
- High output failure
- Acute decompensated heart failure
- Acute right heart failure

Eur Heart Journal 2005
Mortality in EuroHFII
Eur Heart J 2006

- Right HF
- Hypertensive HF
- Cardiogenic shock
- Pulmonary oedema
- Decomp HF
- All

Mortality during hospitalisation

3 M mortality after discharge
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Underlying diseases (%)</strong></td>
<td></td>
</tr>
<tr>
<td>CAD</td>
<td>53.6</td>
</tr>
<tr>
<td>Hypertension</td>
<td>62.5</td>
</tr>
<tr>
<td>DM</td>
<td>32.8</td>
</tr>
<tr>
<td>AF/fl</td>
<td>38.7</td>
</tr>
<tr>
<td>Stroke or TIA</td>
<td>13.3</td>
</tr>
<tr>
<td>Renal failure</td>
<td>16.8</td>
</tr>
<tr>
<td>Anaemia</td>
<td>14.7</td>
</tr>
<tr>
<td>COPD</td>
<td>19.1</td>
</tr>
</tbody>
</table>
General population risk factor survey
Mortality in acute myocardial infarction is still particularly high among the elderly.

The HELIOS group

(HELLENIC INFARCTION OBSERVATION STUDY)

ESC & World Congress of Cardiology
Barcelona, 3 September 2006
HELIOS
Reperfusion for STEMI

P < 0.0001

80 +

< 80
HELIOS
Reasons for not using lysis in STEMI

- ECG: 25% (80+) vs 26% (<80), P=NS
- Age: 50% (80+) vs 4% (<80), P<0.001
- Too late: 42% (80+) vs 33% (<80), P<0.045
- Fear of bleed: 16% (80+) vs 15% (<80), P=NS
HELIOS

Total 30-day revascularization (PTCA&CABG - STEMI and nonSTEMI)

Note: 35% of pts admitted in hospitals with cath lab
HELIOS
In-hospital treatment

<table>
<thead>
<tr>
<th>Drug</th>
<th>80+</th>
<th>&lt;80</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA</td>
<td>86</td>
<td>93</td>
</tr>
<tr>
<td>Clopidogrel</td>
<td>52</td>
<td>72</td>
</tr>
<tr>
<td>Heparin</td>
<td>40</td>
<td>48</td>
</tr>
<tr>
<td>LMWH</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td>IIb/IIIa</td>
<td>11</td>
<td>22</td>
</tr>
</tbody>
</table>

*p<0.004

* indicates statistical significance.
HELIOS
Treatment at discharge

<table>
<thead>
<tr>
<th>Drug</th>
<th>80+</th>
<th>&lt;80</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA</td>
<td>81</td>
<td>89</td>
</tr>
<tr>
<td>Clopidogrel</td>
<td>49</td>
<td>71</td>
</tr>
<tr>
<td>b-blocker</td>
<td>65</td>
<td>82</td>
</tr>
<tr>
<td>ACEi/AT-1</td>
<td>77</td>
<td>75</td>
</tr>
<tr>
<td>Statin</td>
<td>61</td>
<td>87</td>
</tr>
</tbody>
</table>

*P<0.0001
## Hospital Discharge Status

<table>
<thead>
<tr>
<th></th>
<th>STEMI</th>
<th>NSTEMI</th>
<th>UA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death</td>
<td>8%</td>
<td>5%</td>
<td>3%</td>
</tr>
</tbody>
</table>

![Bar Chart](chart.png)
Επαναληπτική σε ασθενείς με STEMI
(59.5% του πληθυσμού της μελέτης)

- Θρομβόλυση: 40,9%
- Primary PCI: 8,9%
- None: 50,2%
EURObservational Research Programme: The Heart Failure Pilot Survey (ESC-HF Pilot)

Aldo P. Maggioni 1*, Ulf Dahlström 2, Gerasimos Filippatos 3, Ovidiu Chioncel 4, Marisa Crespo Leiro 5, Jaroslaw Drozdz 6, Friedrich Fruhwald 7, Lars Gullestad 8, Damien Logeart 9, Marco Metra 10, John Parissis 11, Hans Persson 12, Piotr Ponikowski 13, Mathias Rauchhaus 14, Adriaan Voors 15, Olav Wendelboe Nielsen 16, Faiez Zannad 17, and Luigi Tavazzi 18, on behalf of the Heart Failure Association of the ESC (HFA)

http://eurjhf.oxfordjournals.org/cgi/content/full/hfq154
METHODS

• The ESC-HF Pilot study is a prospective, multicentre, observational survey
• 136 Cardiology Centers in 12 European countries
  • 4 Western European (Austria, France, Germany, the Netherlands)
  • 2 Eastern European (Romania, Poland)
  • 3 Southern (Greece, Italy, Spain)
  • 3 Northern European (Denmark, Norway, Sweden)
METHODS: Eligibility criteria

- Out-patients with chronic HF diagnosed according to the clinical judgment of the responsible cardiologist of the participating centers
- Patients admitted to hospital for acute HF, for whom an IV therapy (inotropes, vasodilators or diuretics) was needed
- No exclusion criteria, with the exception of age that had to be higher than 18 years
Region
Northern (N) = 18 centers
Eastern (E) = 36 centers
Western (W) = 32 centers
Southern (S) = 50 centers

Enrollment period from
October 2009 - May 2010

136 participating centers
5118 patients enrolled by 136 centers

1892 (37%) In-hospital patients (AHF)

3226 (63%) Out-patients with chronic heart failure (CHF)
## Comparison between Acute and Chronic HF: baseline characteristics

<table>
<thead>
<tr>
<th></th>
<th>CHF pts (n. 3226)</th>
<th>AHF pts (n. 1892)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years), mean±SD</td>
<td>67±13</td>
<td>70±13</td>
</tr>
<tr>
<td>Females, %</td>
<td>29.7</td>
<td>37.3</td>
</tr>
<tr>
<td>Ischemic etiology, %</td>
<td>40.4</td>
<td>50.7</td>
</tr>
<tr>
<td>documented by coronary angiography, %</td>
<td>84.9</td>
<td>64.0</td>
</tr>
<tr>
<td>SBP (mmHg), mean±SD</td>
<td>125±20</td>
<td>133±29</td>
</tr>
<tr>
<td>HR (bpm), mean±SD</td>
<td>72±14</td>
<td>88±24</td>
</tr>
<tr>
<td>Treated hypertension, %</td>
<td>58.3</td>
<td>61.8</td>
</tr>
<tr>
<td>Diabetes mellitus, %</td>
<td>29.0</td>
<td>35.1</td>
</tr>
<tr>
<td>History of Atrial Fibrillation, %</td>
<td>38.6</td>
<td>43.7</td>
</tr>
<tr>
<td>Chronic kidney dysfunction, %</td>
<td>18.5</td>
<td>26.0</td>
</tr>
<tr>
<td>ICD, %</td>
<td>13.3</td>
<td>6.0</td>
</tr>
<tr>
<td>CRT, %</td>
<td>1.1</td>
<td>0.4</td>
</tr>
<tr>
<td>CRT-D, %</td>
<td>8.7</td>
<td>2.9</td>
</tr>
</tbody>
</table>
What are the prevalence and outcome rates of different clinical profiles of acute heart failure?
In-hospital patients: clinical profiles
(available for 1763 pts, 93%)

- Cardiogenic shock: 2.3%
- Pulmonary oedema: 13.3%
- Hypertension: 4.7%
- Right ventricular HF: 4.7%
- Decompensated HF: 75.0%
Acute HF: in-hospital all-cause mortality by clinical profile at entry

<table>
<thead>
<tr>
<th>Condition</th>
<th>Mortality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>3.8%</td>
</tr>
<tr>
<td>Cardiogenic shock (CS)</td>
<td>22.0%</td>
</tr>
<tr>
<td>Pulmonary edema (PE)</td>
<td>5.6%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1.2%</td>
</tr>
<tr>
<td>Right ventricular failure (RV failure)</td>
<td>6.1%</td>
</tr>
<tr>
<td>Decompensation</td>
<td>3.2%</td>
</tr>
</tbody>
</table>

p < .0001

CS = Cardiogenic shock; PE = Pulmonary edema
In-hospital patients: Causes of death (n. 71 pts)

- CV: 90.1%
- Non CV: 9.9%
93% of total death events are associated with at least one of 3 risk factors = age, eGFR, SBP.

Risk factor:
- Age ≥ 75 years OR eGFR < 50 ml/min/1.73 m² OR SBP < 110 mmHg

For 1 dead patient it’s not possible to evaluate the presence of risk factors.
When are the patients discharged and how?
### In-hospital patients: Length of stay (days) by region

<table>
<thead>
<tr>
<th>Region</th>
<th>Eastern (n. 991)</th>
<th>Southern (n. 543)</th>
<th>Northern (n. 140)</th>
<th>Western (n. 218)</th>
<th>Total (n. 1892)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICU admission %</td>
<td>56</td>
<td>34</td>
<td>73</td>
<td>31</td>
<td>48</td>
</tr>
</tbody>
</table>
In-hospital patients: clinical status at discharged (n. 1821 pts)

Pulmonary congestion

- At admission: 61.7%
- At discharge: 9.8%

Peripheral congestion

- At admission: 65.1%
- At discharge: 18.1%

Pulmonary and/or Peripheral congestion

- At admission: 82.1%
- At discharge: 24.0%
In-hospital patients:
changes in body weight, creatinine and glycemia from admission to discharge

- Body weight (kg) (n. 1501 pts) IQR [-4, 0]
- Creatinine (mg/dL) (n. 1436 pts) IQR [-0.1, 0.1]
- Glycemia (mg/dL) (n. 1488 pts) IQR [-32, 4]
In-hospital patients: pharmacological treatment

- ACE-i/ARBs
- Betablockers
- Digitalis
- Diuretics
- Aldosterone blockers

Prior hospitalization
During hospitalization
At discharge

www.escardio.org
EURObservational Research Programme
What is the rate of adherence to evidence-based treatments in patients with chronic heart failure?
### Chronic HF:
Prescribed pharmacological treatments for CHF (*n. 3226 pts*)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE-i, %</td>
<td>64.9</td>
</tr>
<tr>
<td>ARBs, %</td>
<td>27.0</td>
</tr>
<tr>
<td><strong>ACE-i/ARBs, %</strong></td>
<td><strong>88.5</strong></td>
</tr>
<tr>
<td>Betablockers, %</td>
<td>86.7</td>
</tr>
<tr>
<td>Digitalis, %</td>
<td>20.6</td>
</tr>
<tr>
<td>Diuretics, %</td>
<td>82.8</td>
</tr>
<tr>
<td><strong>Aldosterone blockers, %</strong></td>
<td><strong>43.7</strong></td>
</tr>
<tr>
<td>Nitrates, %</td>
<td>15.6</td>
</tr>
<tr>
<td>Antiplatelets, %</td>
<td>47.9</td>
</tr>
<tr>
<td>Oral anticoagulants, %</td>
<td>42.6</td>
</tr>
</tbody>
</table>
Chronic HF: Combinations of treatments for HF (n. 3226 pts)

35.3%
Betablockers + ACE-i/ARBs + Aldosterone blockers

3.0%
Betablockers + ACE-i + ARBs

86.1%
At least 2 neurohormonal blockers
## Chronic HF: Prescribed RAAS blockers and their dosages

<table>
<thead>
<tr>
<th></th>
<th>Rate of use %</th>
<th>Dosage mg/die Median [IQR]</th>
<th>Target dose %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ramipril</strong></td>
<td>50.1</td>
<td>5 [3.75-10]</td>
<td>38.2&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Enalapril</strong></td>
<td>27.8</td>
<td>10 [10-20]</td>
<td>46.2&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Other ACE-i</strong></td>
<td>22.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> target dose 10 mg/die, <sup>b</sup> target dose 20 mg/die

<table>
<thead>
<tr>
<th></th>
<th>Rate of use %</th>
<th>Dosage mg/die Median [IQR]</th>
<th>Target dose %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Candesartan</strong></td>
<td>34.7</td>
<td>16 [8-32]</td>
<td>28.0&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Losartan</strong></td>
<td>26.4</td>
<td>50 [25-50]</td>
<td>19.7&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Valsartan</strong></td>
<td>25.7</td>
<td>160 [80-160]</td>
<td>16.7&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Other ARBs</strong></td>
<td>13.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> target dose 32 mg/die, <sup>b</sup> target dose 100 mg/die, <sup>c</sup> target dose 320 mg/die
# Chronic HF: Prescribed Betablockers and Aldosterone antagonists and their dosages

<table>
<thead>
<tr>
<th>Drug</th>
<th>Rate of use %</th>
<th>Dosage mg/die Median [IQR]</th>
<th>Target dose %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carvedilol</td>
<td>42.8</td>
<td>25 [12.5-50]</td>
<td>37.3&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Bisoprolol</td>
<td>32.3</td>
<td>5 [2.5-7.5]</td>
<td>20.7&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Metoprolol</td>
<td>18.9</td>
<td>100 [50-150]</td>
<td>21.4&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Other betablockers</td>
<td>6.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> target dose 50 mg/die, <sup>b</sup> target dose 10 mg/die, <sup>c</sup> target dose 200 mg/die

<table>
<thead>
<tr>
<th>Drug</th>
<th>Rate of use %</th>
<th>Dosage mg/die Median [IQR]</th>
<th>Target dose %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spironolactone</td>
<td>59.7</td>
<td>25 [25-25]</td>
<td>22.2&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Canrenone</td>
<td>27.3</td>
<td>50 [25-50]</td>
<td>61.3&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Eplerenone</td>
<td>10.5</td>
<td>25 [25-50]</td>
<td>32.7&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Other</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> target dose 50 mg/die, <sup>b</sup> target dose 50 mg/die, <sup>c</sup> target dose 50 mg/die
Total population of out-patients with chronic HF: 2965

1109 (37.4%) NYHA II-III, EF ≤35%, at least 2 neurohormonal blockers
To be implanted with ICD according to guidelines

363 (32.7%) Actually implanted
Chronic HF: CRT

3108
Total population of out-patients with chronic HF

191 (6.2%)
NYHA III-IV, EF ≤35%, QRS ≥120, at least 2 neurohormonal blockers
To be implanted with ICD according to guidelines

43 (22.5%)
Actually implanted

EURObservational
Research Programme

www.escardio.org
EURObservational Research Program: The Heart Failure Pilot Survey (ESC-HF Pilot)

Aldo P Maggioni, Ulf Dahlström, Gerasimos Filippatos, Ovidiu Chioncel, Marisa Crespo Leiro, Jaroslaw Drozdz, Friedrich Fruhwald, Lars Gullestad, Damien Logeart, Marco Metra, John Parissis, Hans Persson, Piotr Ponikowski, Mathias Rauchhaus, Adriaan Voors, Olav Wendelboe Nielsen, Faiez Zannad, Luigi Tavazzi

on the behalf of the Heart Failure Association of the ESC (HFA)

Disclosures: None
ΗΛΙΚΙΑΚΗ ΚΑΤΑΝΟΜΗ ΑΣΘΕΝΩΝ

Hellenic Heart failure Survey 2003

ΗΛΙΚΙΑ (Έτη) Αξιολογηθέντα πεπιστατικά: 1308
ΑΙΤΙΟΛΟΓΙΑ ΚΑΡΔΙΑΚΗΣ ΑΝΕΠΑΡΚΕΙΑΣ

ΙΣΧΑΙΜΙΚΗ 58,7%
ΔΙΑΤΑΤΙΚΗ 13,3%
ΒΑΛΒΙΔΟΠΑΘΕΙΑ 10,3%
ΥΠΕΡΤΑΣΙΚΗ 8,5%
ΑΓΝΩΣΤΟ 5,1%
ΑΛΛΟ 4,1%
Απιθμόρ Αξιολογήσιμων Πεπιστατικών: 1174

ΚΛΑΣΜΑ ΕΞΩΘΗΣΗΣ

5% 10% 15% 20% 25% 30% 35% 40% 45% 50% 55% 60% 65%

60%-64% 1.8%
55%-59% 2.0%
50%-54% 2.5%
45%-49% 6.3%
40%-44% 13.4%
35%-39% 18.2%
30%-34% 19.1%
25%-29% 16.9%
20%-24% 15.4%
<20% 3.4%
ΑΝΑΣΤΟΛΕΙΣ ΕΝΖΥΜΟΥ ΜΕΤΑΤΡΟΠΗΣ ΑΓΓΕΙΟΤΕΝΣΙΝΗΣ

30%

70%

NAI ΟΧΙ
ACEi and disease severity

ΑΝΑΣΤΟΛΕΙΣ ΜΕΤΑΤΡΕΠΤΙΚΟΥ ΕΝΖΥΜΟΥ ΑΝΑ ΚΑΤΗΓΟΡΙΑ ΒΑΡΥΤΗΤΑΣ

NYHA I: 72.3%
NYHA II: 74.9%
NYHA III: 66.3%
NYHA IV: 56.9%

%: 27.7% 25.1% 33.7% 43.1%
β-ΑΝΑΣΤΟΛΕΙΣ

30%

70%

B-blockers
B-blockers and disease severity

β-ΑΝΑΣΤΟΛΕΙΣ ΑΝΑ ΚΑΤΗΓΟΡΙΑ ΒΑΡΥΤΗΤΑΣ

%  
0  10  20  30  40  50  60  70  80

NYHA I  NYHA II  NYHA III  NYHA IV

36,1  63,9  66,7  74,2  76,4

NAI  OXI