The deadly statistics of heart failure

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- Serving in Committees of studies on Heart Failure sponsored by: Bayer, Cardiorentis, Novartis Pharma AG
Agenda

• Hospitalized HF patients
• Chronic HF patients
• Conclusions and perspectives
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• Hospitalized HF patients
  – The point of view of cardiologists
• Chronic HF patients
• Conclusions and perspectives
ESC HF Guidelines 2012: Algorithm for Management of Acute Pulmonary Edema/Congestion

Acute pulmonary edema/congestion

IV bolus of loop diuretic

Hypoxemia

Yes → Oxygen

No

Severe anxiety/distress

Yes → Consider IV opiate

No

Measure SBP

SBP < 85 mmHg or shock

Add non-vasodilating inotrope

SBP 85-110 mmHg

No additional therapy until response assessed

SBP > 110 mmHg

Consider vasodilator (e.g. NTG)

Please consult published guidelines for additional treatment information.

IV = intravenous
SBP = systolic blood pressure

IN-HF Outcome: 1-year All-Cause Mortality

Italy, 61 cardiology centers, year 2009
5610 patients: 33% HHF, 67% CHF

Days From Enrollment

Worsening HF: 27.7%
De Novo HF: 19.2%
Chronic HF: 5.9%

ESC Heart Failure Long-Term Registry: Follow-up outcomes

1 year mortality
- CHF: 6.4%
- HHF: 26.0%

From May 2011 to April 2013, 21 countries, 12,440 patients, 40.5% with acute HF (hospitalized patients) and 59.5% with chronic HF (outpatients)
Agenda

• Hospitalized HF patients
  – The point of view of cardiologists
  – The Real World Evidence

• Chronic HF patients

• Conclusions and perspectives
Incidence of HF admissions in an Italian community setting in 2010

Total population: 2,970,973

Admission for HF: 8,754 (incidence 3‰)

Median age: 79 years
Female sex: 54.3%

ARNO database 2010
Age groups of the total population (A) and of patients admitted for HF (B)

A
- <55 years: 65.7%
- 55-64 years: 10.8%
- 65-74 years: 7.6%
- 75-84 years: 3.4%
- ≥85 years: 12.4%

B
- <55 years: 34.9%
- 55-64 years: 36.8%
- 65-74 years: 17.3%
- 75-84 years: 3.7%
- ≥85 years: 7.2%

ARNO database 2010
Where are patients managed when admitted to hospital?

- Cardiology: 55.7%
- Geriatry: 18.3%
- Internal Medicine: 21.9%
- CCU/ICU: 3.8%
- Surgery: 0.3%

ARNO database 2010
In-Hospital and 1 year all-cause mortality

• In-hospital all-cause mortality: 9.8%

• 1-year all-cause mortality: 28.7%
Patients with 12-month hospital re-admissions: 4,936/8,239 = 59.9%

Total number of readmissions = 7,840

CV reasons n. 4,128 (53%)

Non CV reasons n. 3,712 (47%)

ARNO database 2010
NHS costs per year for 1 patient admitted for HF = € 10,697

- Hospitalizations (€ 9,205) - 85.7%
- CV drugs (€ 317) - 5.9%
- Non CV drugs (€ 700) - 3.7%
- Diagnostic/specialistic procedures (€ 475) - 4.7%

*ARNO database 2010*
Agenda

• Hospitalized HF patients

• Chronic HF patients
  – Patients’ outcomes from 1995 to 2014

• Conclusions and perspectives
IN-HF: Patients disposition

21,139 pts Total population

4,604 pts
- enrolled after 2012
- patients with AHF

18,474 (87.4%) With follow-up data

2,665 (12.6%) Lost to follow-up

Total Population (n. 21,139)

<table>
<thead>
<tr>
<th>Centers</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>9,755</td>
</tr>
<tr>
<td>Center</td>
<td>6,942</td>
</tr>
<tr>
<td>South</td>
<td>4,442</td>
</tr>
</tbody>
</table>
1-year all-cause mortality by years of enrollment

Overall population (n. 18,474 patients)

Multivariable analysis

<table>
<thead>
<tr>
<th>Period</th>
<th>Adjusted HR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995-2000</td>
<td>1</td>
</tr>
<tr>
<td>2001-2004</td>
<td>0.68 (0.58-0.78)</td>
</tr>
<tr>
<td>2005-2008</td>
<td>0.54 (0.46-0.64)</td>
</tr>
<tr>
<td>2009-2012</td>
<td>0.53 (0.44-0.65)</td>
</tr>
</tbody>
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INHF
1-year all-cause mortality by years of enrollment

HF reduced EF (<45%) (n. 11,050 patients)

<table>
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<tr>
<th>Years of Enrollment</th>
<th>Adjusted HR (95% CI)</th>
</tr>
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<tr>
<td>1995-2000</td>
<td>1</td>
</tr>
<tr>
<td>2001-2004</td>
<td>0.61 (0.51-0.74)</td>
</tr>
<tr>
<td>2005-2008</td>
<td>0.49 (0.39-0.61)</td>
</tr>
<tr>
<td>2009-2012</td>
<td>0.44 (0.34-0.55)</td>
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1-year all-cause mortality by years of enrollment HF preserved EF (≥45%) (n. 3,215 patients)

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<th>Adjusted HR (95%CI)</th>
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<tr>
<td>1995-2000</td>
<td>1</td>
</tr>
<tr>
<td>2001-2004</td>
<td>1.04 (0.63-1.73)</td>
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<tr>
<td>2005-2008</td>
<td>0.52 (0.28-0.96)</td>
</tr>
<tr>
<td>2009-2012</td>
<td>0.86 (0.49-1.51)</td>
</tr>
</tbody>
</table>
1A Recommended treatments by years of enrollment

- **ACE-I/ARBs**
  - 1995-2000 (n. 4749): 87.1%
  - 2001-2004 (n. 5415): 88.0%
  - 2005-2008 (n. 4643): 86.6%
  - 2009-2012 (n. 3667): 86.4%

- **Betablockers**
  - 1995-2000 (n. 4749): 24.6%
  - 2001-2004 (n. 5415): 54.1%
  - 2005-2008 (n. 4643): 59.7%

- **MRAs**
  - 1995-2000 (n. 4749): 22.9%
  - 2001-2004 (n. 5415): 33.7%
  - 2005-2008 (n. 4643): 29.2%
  - 2009-2012 (n. 3667): 27.7%

**P for trend**

- ACE-I/ARBs: 0.11
- Betablockers: <.001
- MRAs: 0.0005
Study population:
Device implantation by years of enrollment

- **ICD**
  - 1995-2000 (n. 4749): 9.4%
  - 2001-2004 (n. 5415): 13.6%
  - 2005-2008 (n. 4643): 16.1%
  - 2009-2012 (n. 3667): 23.2%

- **CRT-P**
  - 1995-2000 (n. 4749): 5.2%
  - 2001-2004 (n. 5415): 0.4%
  - 2005-2008 (n. 4643): 0.6%
  - 2009-2012 (n. 3667): 1.1%

- **CRT-D**
  - 1995-2000 (n. 4749): 0.6%
  - 2001-2004 (n. 5415): 1.1%
  - 2005-2008 (n. 4643): 1.5%
  - 2009-2012 (n. 3667): 6.4%

*P for trend <.0001*
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Conclusions

• Due to the relevant advances in patients’ treatment, outcomes in patients with chronic HF and reduced EF seem to be improved in the last decades

• Patients hospitalized for HF have generally a more severe clinical profile than those with chronic HF and a still unacceptably high rate of events

• Real world data confirm the clinical relevance of HF and the related burden on public health
Perspectives

• Further efforts should be focused on:
  – Widespread application of recommended treatments in patients with chronic HFrEF
  – New treatments (and trial methodology) for HHF and HFpEF patients

• Research projects should involve not only cardiology centers but also intensive care and internal medicine centers

• Due to multiplicity of causes of readmission, to concretely reduce the burden of HF, a multidisciplinary approach is needed