Burden of Heart Failure

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### Background on U.S. Heart Failure

<table>
<thead>
<tr>
<th>Population Group</th>
<th>Prevalence</th>
<th>Incidence</th>
<th>Mortality</th>
<th>Hospital Discharges</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>5,300,000</td>
<td>660,000</td>
<td>284,965</td>
<td>1,084,000</td>
<td>$34.8 billion</td>
</tr>
</tbody>
</table>

VA prevalence near 140,000 or 2.6%

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Projected Prevalence of Heart Failure

Heidenreich, Circulation 2011
U.S. HF Hospitalization Rate
Principal Diagnosis

Admissions per 1000


NHDS
Stable Number of Veteran Outpatients with Heart Failure
Increasing VA Burden: Outpatient Encounters for Heart Failure
Estimated Direct and Indirect Costs of HF in US

- Hospitalization: $18.8 (53%)
- Nurses: $4.3 (14%)
- Lost Productivity/Mortality*: $3.1 (8%)
- Home Healthcare: $3.2 (8%)
- Drugs/Other Medical Durables: $3.1 (10%)
- Physicians/Other Professionals: $2.3 (7%)

Total Cost: $34.8 billion

*Lost future earnings of persons who will die in 2008, discounted by 3% AHA. Heart Disease and Stroke Statistics—2008 Update
Cost Following HF Diagnosis: Surviving < 12 months

Dunlay, Circ CQO, 2011
Cost Following Diagnosis: Long Term Survivors

Dunlay, Circ CQO, 2011
Increasing Burden of Heart Failure in the U.S.

AHA, 1998 Heart and Statistical Update
NCHS, National Center for Health Statistics
Projected Costs of Heart Failure

Heidenreich, Circulation 2011
Mortality: US Medicare

Unadjusted mortality rates

- 30-day
- Post-discharge
- In-hospital

Percentage

Year

1993 1996 1997 1999 2001 2003 2005

Buenos, Circulation 2009
VA Trends in Mortality

- In Hospital
- 30-Day
- 90-Day

Mortality

Year

2002  2003  2004  2005  2006

Heidenreich JACC, 2010
30-Day Readmission Rate: US Medicare
VA Trends in Readmission

- All Cause
- HF Primary or Secondary
- HF Primary

30 Day Rehospitalization

Year

0.0% 4.0% 8.0% 12.0% 16.0% 20.0%

2002 2003 2004 2005 2006

Heidenreich JACC, 2010
30-Day Readmissions (HF Principal Dx) Distribution for VA Facilities

Excludes Facilities with < 100 HF discharges over 2 years.
30-Day Mortality Distribution for VA Facilities

Excludes Facilities with < 100 HF discharges over 2 years.
VISN 30-Day Outcome Following a Heart Failure Discharge

Any Readmission  HF Readmission  Mortality
Heart failure 30-day Risk-Standardized Readmission Rate Distribution

Goal
Mortality and Readmissions

Gorodeski, NEJM 2010, 363 (3) 297
Mortality vs. Readmissions

Adjusted Odds Ratio for Outcome

Decreased                  Increased

2002 2003 2004 2005 2006

30-Day HF Rehospitalization

30-Day Mortality

Heidenreich, JACC 2010
Hospital HF Volume, Outcome, Cost

Joynt, Annals of Internal Medicine 2011
These percentages were calculated from Medicare data on patients discharged between July 01, 2007 and June 30, 2010. They don’t include people in Medicare Advantage Plans (like an HMO or PPO) or people who don’t have Medicare.

**Rate of Readmission for Heart Failure Patients**

Lower Percentages Are Better

10%  15%  20%  25%  30%  35%  40%

U.S. National 30-Day Rate of Readmission for Heart Failure Patients = 24.8%

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Rate</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palo Alto VA Medical Center</td>
<td>22.7</td>
<td>No Different than U.S. National Rate</td>
</tr>
<tr>
<td>Sequoia Hospital</td>
<td>23.1</td>
<td>No Different than U.S. National Rate</td>
</tr>
<tr>
<td>Stanford Hospital</td>
<td>24.2</td>
<td>No Different than U.S. National Rate</td>
</tr>
</tbody>
</table>

Number of Medicare Patients Admitted for Heart Failure

- **Palo Alto VA Medical Center**: Based on 289 patients
- **Sequoia Hospital**: Based on 428 patients
- **Stanford Hospital**: Based on 453 patients

Range of uncertainty around estimated death rate

(interval estimate)

**Legend**

\[ x\% \leftrightarrow \text{Estimated death rate (risk-adjusted)} \]

This column shows the number of patients with Original Medicare who were admitted to the hospital for Rate of Readmission for Heart Failure Patients. The hospital may also have treated additional Medicare patients in Medicare health plans (like an HMO or PPO).

What does this show you? "Readmission" is when patients who have had a recent hospital stay need to go back into a hospital again. Medicare looks at how many Heart Failure patients need to be readmitted to the hospital within 30 days of their discharge. The information above tells you how the hospitals...
Mortality at 30 Days

- Palo Alto VA
- Stanford
- Sequoia

Hospital Compare 2012
Treatments for Heart Failure

- Hydralazine-nitrates
- ACE inhibitors
- Diuretics
- Digoxin
- Beta blockers
- Aldo blockers
- ARBs
- VADs
- CRT
- ICDs
2005 Performance data for VA and Non-VA (Joint Commission mean) for Heart Failure Mission Critical Measures.
Improvement in Medicare Process of Care

Fonarow, Peterson, JAMA 2009
2007 Performance Data for VA and the Non-VA (Joint Commission mean) for HF Mission Critical Measures.
2005 Performance data for VA and Non-VA (Joint Commission mean) for Heart Failure Mission Critical Measures.
2007 Performance Data for VA and the Non-VA (Joint Commission mean) for HF Mission Critical Measures.
Summary

- VA burden of heart failure care is growing
- Aging of the population will likely continue/accelerate this growth
- VA led in process of care but the rest of the country has caught up.
- Finding “preventable” costs/admissions is increasingly difficult