SCREEn-HF –
SCReening Evaluation of the Evolution of New Heart Failure: a study in the early detection of chronic heart failure

Dr Umberto Boffa, Medical Services, Bupa Australia

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Heart failure (HF) occurs when the heart pumps blood less effectively – a result of heart attack, high blood pressure, damaged heart valves, arrhythmia, obesity, metabolic causes.

Heart failure (HF) Australia’s third largest cause of cardiovascular deaths in Australia (after CAD and stroke)

2.5% of Australians aged 55–64 years have HF increasing to 8.2% for those aged 75 years or over #.

300,000 Australians are living with chronic HF

30,000 new cases diagnosed each year*

50% HF undiagnosed

Once symptoms develop prognosis is poor

Recently reported five–year survival estimates are 41% in men and 55% in women; prognosis particularly poor in the elderly

#2004–05, AIHW; *Heart failure: what of the future? 26/6/03, AIHW
AIHW (2004–05):

- Cardiovascular disease in Indigenous Australians is 30% more common than in non-Indigenous Australians.
- Coronary heart disease in Indigenous Australians is twice as common as in non-Indigenous Australians.
- Deaths from cardiovascular disease in Indigenous Australians were over 2 times as high as in non-Indigenous Australians in 2007.
- Risk factors for cardiovascular disease are more common among Indigenous Australians than in non-Indigenous Australians:
  - diabetes is 4 times as common, smoking daily and obesity are twice as common.
HF in indigenous population

- Unpublished Alice Springs Hospital HF audit 1995–98 (Tristan Smithe)
  - Indigenous Australians admitted with HF were 18 years younger: 55 yr vs. 73 yr
  - had poorer median survival 587 days versus 800 days
  - More likely not to have the underlying cause documented
Heart of the Heart study (McGrady et al. 2012) indicated burden of heart failure and associated risk factors extremely high in Aboriginal population assessed – of 436 participants (mean age 44±14 years; 64% women), 5.3% (95% CI 3.2% to 7.5%) had HF.

Results highlight the importance of screening strategies and resource allocation to prevent heart failure for high risk Aboriginal populations.
To define left ventricular systolic and diastolic function in a population at high risk for developing heart failure

To determine if NT-proBNP will facilitate early diagnosis

High risk defined
- Age $\geq$ 60 years
- HF risk factor (IHD/Stroke/DM/HT/AF)
- Highest quintile NT-proBNP
Study Design

Volunteers ≥60 years of age

3500 respondents with one or more risk factors (confirmed by telephone)
No previous heart failure diagnosis

Screening visit
Demographic information
PMH
BP & Anthropomorphic data
Pathology
<table>
<thead>
<tr>
<th>NT-proB Natriuretic Peptide</th>
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<tbody>
<tr>
<td>Lowest 4 quintiles</td>
<td>Highest quintile</td>
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<tr>
<td>N=2800</td>
<td>N=700</td>
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Subgroup N=51

Echo to Assess Prevalence of asymptomatic LV systolic and diastolic dysfunction
ECG + Clinical Assessment
Study Results

- Invitation and questionnaire were posted to 44,000 Victorian HBA health fund members over age 60 between June 2007 and December 2009.

- Just over 25% of questionnaires (n= 11,046) were returned

- Consecutive respondents were telephone screened until planned no. of 3550 willing participants meeting inclusion criteria reached (telephoned=9,256)
  - 3,550 met criteria and attended baseline visit 1 (38% inclusion)
  - 4,527 did not meet criteria or had exclusion criteria (49% exclusion)
  - 1,179 respondents met criteria but declined to enroll in study (13% declined)
Study Results

- 3550 enrolled participants
  - mean age 70.4 years (SD 6.7 years; range 59 – 92 years)
  - 55% were male
- 665 participants from the top NT-proBNP quintile and 51 participants from the bottom quintile attended for echocardiography
- 45 participants (5.9%) withdrew from study following the first study visit
Ventricular Dysfunction

- Systolic dysfunction high to low quintile
  - 5.2% (95%CI:3.9–6.9%) vs. 0% p<0.001
  - significant after adjustment HF risk factor

- Diastolic dysfunction high to low quintile
  - 28% vs. 4% p=0.03
  - significant after adjustment HF risk factor
Summary SCREEN HF

- Population well documented HF risk factors
  - Age
  - Underlying disease process
  - Elevated NT–proBNP

- A large burden of asymptomatic ventricular dysfunction was observed in those with elevated natriuretic peptide
Conclusion

- Asymptomatic left ventricular systolic and diastolic dysfunction is a common problem in high risk populations.

- NT-proBNP combined with HF risk factors may be an effective approach to screening.

- BUPA Australia has implemented these findings in a world first HF screening program in Victoria.

- Similar program in Indigenous Controlled Health services may facilitate early diagnosis and treatment.
  - Improved outcomes.