Bridging The Gaps
Gender Gaps in Cardiovascular Disease and Cardiac Care
CSANZ Hamilton 2017

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Women are Different from Men

- Sex Differences
  - Biological
- Gender Differences
  - Social
  - Cultural
The Recognition of Coronary Disease Risk

Pre Hospital IHD Deaths
ANZACS-QI 8

Awareness of Cardiovascular Disease as Leading Cause of Death in NZ Amongst Maori Respondents

<table>
<thead>
<tr>
<th></th>
<th>Male respondent (%)</th>
<th>Female respondent (%)</th>
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<tbody>
<tr>
<td>Male mortality</td>
<td>48</td>
<td>49</td>
</tr>
<tr>
<td>Female mortality</td>
<td>14</td>
<td>19</td>
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</tbody>
</table>

Rolleston, A. Personal communication 2017

Risk Factors for Cardiovascular Events in Women
WISE Study
Risk Factors for Cardiovascular Events in Women

• Diabetes
• Metabolic syndrome (not BMI)
  + ↑hsCRP = DM risk
• ↑hsCRP
• Hb < 120g/l
• ↑SBP (premenopause) RR 5.6 (2.18 – 14.3)
• Oestrogen deficiency premenopause (anovulatory cycles)
  RR 7.4 (1.7 – 33.3)

Do we need new risk assessment tools specifically for women?
The Difficulty in Diagnosis

WISE Study
Women’s Ischaemic Syndrome Evaluation
Symptomatic Presentation

Typical symptoms
  More common in older women

Atypical Symptoms
  Fatigue
  Sleep disturbance
  SOB

Functional Limitation (≤ 4.7Mets)
  Highly predictive future cardiovascular event
  (67% events)
Persistent Chest Pain
6-year Event Rate
WISE study
Johnson BD et al. Eur Ht J 2006;27:1408-1415

Ischaemia and No Obstructive Coronary Disease
ACC, AHA, ESC working group

Definition
• Stable chronic symptoms of IHD
• Objective evidence of myocardial ischaemia
• Absence of flow limiting coronary stenosis

Mechanisms
• Coronary artery spasm
• Coronary microvascular dysfunction
• Arterial stiffness
• Diffuse coronary disease

Acute Symptoms
515 Women with AMI

- 57.9% SOB
- 54.8% weakness
- 42.9% fatigue
- 43% no chest pain
- 39% cold sweat
- 39% dizziness


Chest Pain at Presentation
515 Women with AMI

- Description – pressure, ache or severe tightness in the chest
- Location
  - 37% back
  - 27.7% high chest

NZ Acute Coronary Syndrome Rates
ANZACS-QI

NZ Acute Coronary Syndrome Angiographic Rate
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NZ Acute Coronary Syndrome Revascularisation Rate
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ACS any Revasc Age-Standardised Rates* by Sex


NZ Acute Coronary Syndrome
1 year Death Rate
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ACS Death within 1 Year, Age-Standardised Rates* by Sex

2006 2007 2008 2009 2010 2011 2012 2013 2014
Pathophysiology of Acute Coronary Syndrome in Women

Pathophysiology of AMI

• Plaque rupture causing fatal MI
  – 76% men, 55% women

• Plaque erosion
  – Younger
  – Less severe obstructive disease
  – More common in women than men (at autopsy)

• No angiographically demonstrable obstructive CAD 7-32% women with MI
Coronary Artery Dissection

- Mayo Clinic, single centre retrospective cohort
- 87 patients
- Mean age 42.6y
- 82% women, 13/71 post partum
- 49% presentation STEMI

Fibromuscular Dysplasia

- US registry
  - Mean age 51.9y ± 13
  - 91% women
  - 71% associated hypertension (renal involvement)

Michelis KC et al. JACC 2014; 64 (10); 1033-46
Takotsubo Cardiomyopathy

- In a registry study involving 1750 patients with Takotsubo cardiomyopathy
- 89.8% women
- Age 66.4y ± 13.1
- In-hospital rates of death were similar to those among patients with an acute coronary syndrome.
- 47% had an associated neurologic or psychiatric disorder
- Physical triggers were present in 36% and emotional triggers in 28%.

Secondary Prevention
Sex Related Disparities in Care after Hospitalization for CAD >65
49,358 registry patients

• Get With the Guidelines – CAD, US
  – Aspirin within 24 hours
  – Aspirin on hospital discharge
  – Beta – blocker on discharge
  – ACEI/ARB on discharge
  – Smoking cessation counselling
  – Lipid lowering medication


Sex Related Disparities in Care after Hospitalization for CAD >65

• Women
  – Less likely to receive optimal care
    OR=0.92 (0.88-0.95, p<0.0001)
  – With suboptimal care mortality women > men
    OR=1.25 (1.00-1.55, p=0.05)

• 69% of sex disparity in mortality may be reduced by providing optimal care to women

ADHB Cardiac Rehabilitation
Attendance at 8 Class Programme 2016

Females  2.5 (SD 3.0)  50% ≥ 2 classes
Males    3.8 (SD 2.8)  65% ≥ 2 classes

Reasons for women not attending
• Language barrier
• Transport
• Work commitments
• Carers for family

J Benatar: Personal communication

ADHB Cardiac Rehabilitation Exercise Programme Attendance

J Benatar: Personal communication
ADHB Cardiac Rehabilitation
Reasons for Declining Exercise Programme

Closing the Gaps
Challenges in Improving Outcomes for Women with CAD

- Educate women, their families and General Practitioners that they are at risk
- Maori and Pacifica focussed education
- Better treatment of risk factors especially BP, DM, metabolic syndrome
- Should our risk prediction tools be customised for women?

J Benatar, Personal communication
Closing the Gaps
Challenges in Improving Outcomes for Women

• Recognition of differing underlying pathology and symptom spectrum
• Recognition of the significance of ongoing chest pain with normal coronary angiography
  – Improved imaging for inducible ischaemia

Challenges in Improving Outcomes for Women with ACS

• Greater use of proven secondary prevention therapies on discharge from hospital and longterm post discharge
• Identifying and removing barriers to women receiving optimal care
Closing the Gender Gap with Heart Disease

• More research is needed in all areas of cardiology
  – Are there biological differences in the condition or its management?
  – Is our delivery of care meeting the needs of our patients?