Plugging an important research gap:

Measured incidence of chronic disease from the North West Adelaide Health Study

Janet Grant, Catherine Chittleborough, Anne Taylor, Patrick Phillips, Richard Ruffin & the North West Adelaide Study Team

15th Annual Meeting of the Australian Epidemiological Association

Tuesday, 19th September 2006
The study ... in a nutshell

- A representative population cohort study
- Original cohort of approximately 4000 adults aged 18 years and over
- Cohort participants recruited from the northern and western regions of Adelaide
- Data both self-reported and biomedically measured
- Study provides baseline and ongoing information about chronic disease and health-related risk factor status
South Australia
Phases of the study

Dec 1999

Jan-Nov 2000

Timeline

Mar 2002

Sept 2002 to June 2003

May 2004 to Feb 2006

 Eligible random, representative EWP sample, NW Adelaide

 CATI recruitment interview, ages 18+

 Attended clinic
 n=2523

 Follow-up interview (of n=2523)
 n=2231

 Additional attending the clinic
 n=1537

 Follow-up assessment of cohort – Information from n=3564
 (Telephone interview 88.1%; Self report questionnaire 81.2%; Clinic 81.0%)
Methodology

- Interview – using CATI (Computer Assisted Telephone Interview)
- Self-administered questionnaire
- Clinic
Accurate measuring of participants ...
Participation and response rates

<table>
<thead>
<tr>
<th></th>
<th>Stage 1* (recruitment/baseline)</th>
<th>Stage 2 (1st follow up)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation rate</td>
<td>71.2</td>
<td>90.1</td>
</tr>
<tr>
<td>Response rate</td>
<td>49.4</td>
<td>81.0</td>
</tr>
</tbody>
</table>

Incidence & time frame

- One kind of incidence – cumulative
  - Number of new cases divided by population over time

- Time frame between Stage 1 and Stage 2
  - Median 4 years
  - Mean 3½ years
Chronic disease continuum

Improved health status / Deteriorating health status

Not at risk → Prevention
At risk → Previously undiagnosed → Delay / Early Detection
Previously undiagnosed → Diagnosed without comorbidity → Prevention / Delay / Early Detection
Diagnosed without comorbidity → Diagnosed with comorbidity → Prevention / Delay / Early Detection / Care
Diagnosed with comorbidity → Death
Cumulative incidence of diabetes - 2.3%

Progression along continuum - diabetes from Stage 1 to Stage 2

*IFG – Impaired fasting glucose

<table>
<thead>
<tr>
<th>Stage</th>
<th>No diabetes or IFG*</th>
<th>IFG* ≥ 5.6 mmol/L</th>
<th>Undiagnosed diabetes ≥ 7.0 mmol/L</th>
<th>Diagnosed diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>St 1</td>
<td>79.6%</td>
<td>13.8%</td>
<td>1.0%</td>
<td>5.6%</td>
</tr>
<tr>
<td>St 2</td>
<td>93.7%</td>
<td>5.3%</td>
<td>0.1%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>
Progression along continuum - diabetes from Stage 1 to Stage 2

*IFG – Impaired fasting glucose

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>No diabetes or IFG*</td>
<td>St 1: 79.6%</td>
</tr>
<tr>
<td>IFG* $\geq 5.6$ mmol/L</td>
<td>St 2: 65.0%</td>
</tr>
<tr>
<td>Undiagnosed diabetes $\geq 7.0$ mmol/L</td>
<td></td>
</tr>
<tr>
<td>Diagnosed diabetes</td>
<td>St 2: 5.6%</td>
</tr>
</tbody>
</table>

- IFG – Impaired fasting glucose
- St 1
- St 2
Characteristics of those participants who progressed from IFG to diabetes (Stage 1 to Stage 2)
Characteristics of those participants who progressed from IFG to diabetes (Stage 1 to Stage 2)

<table>
<thead>
<tr>
<th>Family history diabetes</th>
<th>BP</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Yes</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>&lt; 130/85</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>≥ 130/85</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>&lt; 30</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>≥ 30</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>
Characteristics of those participants who progressed from IFG to diabetes (Stage 1 to Stage 2)

<table>
<thead>
<tr>
<th>Proportion (%)</th>
<th>Triglycerides</th>
<th>HDL</th>
<th>Smoker</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 1.7</td>
<td>7</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>&gt; 1.7</td>
<td>12</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>≥ 0.9 men, ≥ 1.1 women</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>&lt;0.9 men, &lt;1.1 women</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Yes</td>
<td>15</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>
Respiratory conditions - Stage 1 to Stage 2

ASTHMA: Incidence of 17.1 cases per 1000 population

No asthma 5.2% Asthma

COPD: Incidence of 5.2 cases per 1000 population

No COPD 1.7% COPD
Risk factors
Central adiposity – defined by waist circumference

Incidence of 30.8 cases per 1000 population

- Normal waist circum

  - 10.3%

- High waist circum

  - ≥ 95cm Men;
  - ≥ 80cm Women

- Normal waist circum

  - 3.9%

- High waist circum

  - ≥ 95cm Men;
  - ≥ 80cm Women
Obesity – defined by Body Mass Index (BMI)

Incidence of 18.3 cases per 1000 population

Non Obese → Obese ≥ BMI 30
5.9%

Non Obese ← Obese ≥ BMI 30
3.0%
Conclusion

- Longitudinal studies provide valuable measure of incidence
- Biomedical measurement of participants enhances self-reported measures
- More people developing chronic conditions and unhealthy risk factors – a major public health concern …

… but there are some encouraging results
Contact details

- North West Adelaide Health Study website
  http://www.nwadelaidehealthstudy.org

- Population Research & Outcome Studies Unit (SA Department of Health)