

**Additional File 2:** Additional characteristics of included review studies, grouped by ethnicity

| Reference<br>Study date   | Population type<br>Number (% female)<br>Age (years)<br>Response rate   | Population health   | %<br>with<br>HDL<br>data | Setting   | HDL assay type  | HDL-C<br>(mean $\pm$ SD)<br>mmol/L   | F:M<br>HDL-C<br>ratio                  | Study quality<br>assessment |
|---|--|---|--------------------------|---|---|--|--|-----------------------------|
| <i>Indigenous populations</i>   |  |   |                          |   |   |  |  |                             |
| [35]<br>Diabetes and related disorders in urban Indigenous people in the Darwin region (DRUID) study<br>2003-2005 | 84%AA, 6% TSI, 11% both<br>861 (68% F)<br>15-34 yrs: 394 (46%)<br>>35 yrs: 467 (54%)<br>14% of target population | In participants >35 yrs:<br>DM: M: 23.3% F: 25.2%<br>CS: M: 45.5% F: 42.9%  | 100%                     | Metropolitan Darwin, NT   | Hitachi 917Enzymatic (after shipment to clinical trials medical laboratory in SA) | 15-34 yrs:<br>M: 1.11 $\pm$ 0.30<br>F: 1.19 $\pm$ 0.33<br>>35 yrs:<br>M: 1.01 $\pm$ 0.29<br>F: 1.18 $\pm$ 0.34                       | 15-34 yrs:<br>1.07<br>>35 yrs:<br>1.17 | HIGH                        |
| [33]<br>KANYINI Audit study<br>2007-08  | 90% AA9%TSI, 1% both<br>1165 (59% F)<br>41.1 yrs (95% CI, 40.3-42.0)<br>N/A                                      | OB: M: 31% F: 47%<br>DM: M: 21% F: 22%<br>CS: M: 61% F: 29%<br>29% patients aged $\geq$ 30yrs CVD high risk <sup>1</sup>  | 48%                      | 8 health services in NSW, QLD, central Australia <sup>2</sup> in diverse settings | No standardization of methods across different laboratories/regions               | M: 1.10 (SEM 0.02)<br>F: 1.20 (SEM 0.02)   | 1.0                                    | MODERATE                    |
| <i>Aboriginal populations</i>   |  |   |                          |   |   |  |  |                             |
| [37]<br>1986  | 122 (59%F)<br>Adults > 17 yrs of age<br>>95% participation   | 11.5% with DM, 7.4% IGT<br>Mean BMI: (15-34 yrs)<br>M: 20.4 $\pm$ 0.6 kg/m <sup>2</sup><br>F: 20.5 $\pm$ 0.9 kg/m <sup>2</sup><br>(>35 yrs)<br>M: 23.5 $\pm$ 1.2 kg/m <sup>2</sup><br>F: 22.7 $\pm$ 0.9 kg/m <sup>2</sup> | 100%                     | 1 isolated community in northern Australia  | Enzymatic hydrolysis after PEG  | Mean $\pm$ SE:<br>15-34 yrs:<br>M: 1.38 $\pm$ 0.08<br>women: 1.24 $\pm$ 0.05<br>>35 yrs:<br>M: 1.15 $\pm$ 0.08<br>F: 1.23 $\pm$ 0.07 | 15-34 yrs:<br>0.90<br>>35 yrs:<br>1.07 | HIGH                        |

|                 |   |  |      |   |   |  |  |          |
|-----------------|---|--|------|---|---|--|--|----------|
| [38]<br>1987    | 353 (69%F)<br>Adults > 15 yrs<br>87% participation  | DM: (>35 yrs)<br>29.6%; (15-34 yrs) 5.3%<br>Overweight/obese ( $\geq 25$ kg/m <sup>2</sup> ): (>35 yrs) M 51% F: 75%<br>upper tertile of 2-hr insulin distribution had significantly lower HDL-C: 1.33 $\pm$ 0.48 vs. 1.20 $\pm$ 0.40 (P=0.04) | 100% | 1 community, with a long history of acculturation in central Australia              | Enzymatic hydrolysis (Cobas Bio Centrifugal Analyser) after PEG | 15-34 yrs:<br>M: 1.20 $\pm$ 0.36<br>F: 1.39 $\pm$ 0.49<br>>35 yrs:<br>M: 1.04 $\pm$ 0.23<br>F: 1.25 $\pm$ 0.35 | 15-34 yrs:<br>1.16<br>>35 yrs:<br>1.20 | HIGH     |
| [23]<br>1988    | 437 (57% F f)<br>Adults $\geq$ 15 yrs<br>80% participation                                  | With DM: 9%<br>IGT: 18%<br>Mean BMI: (15-34 yrs)<br>M: 21.8 $\pm$ 3.3 kg/m <sup>2</sup><br>F: 22.2 $\pm$ 5.3 kg/m <sup>2</sup><br>(>35 yrs)<br>M: 23.9 $\pm$ 4.6 kg/m <sup>2</sup><br>F: 24.2 $\pm$ 5.0 kg/m <sup>2</sup>                      | 100% | 1 isolated community in central NT  | Isolation after PEG   | 15-34 yrs:<br>M: 0.83 $\pm$ 0.20<br>F: 0.97 $\pm$ 0.26<br>>35 yrs:<br>M: 0.83 $\pm$ 0.22<br>F: 0.94 $\pm$ 0.23 | 15-34 yrs:<br>1.17<br>>35 yrs:<br>1.13 | HIGH     |
| [36]<br>1992-95 | 687 (48%F)<br>M: 34 $\pm$ 16 yrs<br>F: 36 $\pm$ 15 yrs<br>>80% of adults                    | With DM: M: 11% F: 16%<br>CS: M: 53% F: 16%<br>Mean BMI : M: 23.2 $\pm$ 4.6 kg/m <sup>2</sup> F: 24.1 $\pm$ 5.7 kg/m <sup>2</sup><br>Mean WC : M: 86.9 $\pm$ 13.1 cm F: 91.2 $\pm$ 14 cm   | 100% | 1 community in remote region, Tiwi Islands, NT                                      | Not stated  | M: 1.1 $\pm$ 0.2<br>F: 1.0 $\pm$ 0.2   | 0.91                                   | MODERATE |
| [24]<br>1993-95 | 852 (57% F)<br>M: 34 $\pm$ 16 yrs<br>F: 36 $\pm$ 15 yrs<br>NR                               | With DM: M: 9.3% F: 16%<br>CS: M: 83.7% F: 71%<br>Mean BMI (95% CI): M: 26 (25.4-26.7) kg/m <sup>2</sup><br>F: 27.5 (26.9-28.1) kg/m <sup>2</sup>  | 100% | 11 remote communities in Cape York, QLD and Torres Strait and central Australia, NT | Standard enzymatic techniques (Boehringer Mannheim reagents)    | M: 0.83 (95% CI 0.81, 0.95)<br>F: 0.88 (95% CI 0.85, 0.90)   | 1.06                                   | MODERATE |
| [9]<br>1994     | 51 (39% F)<br>All community (n=77): these data were restricted to age range >15 yrs<br>100% | Low HDL (NHFA guidelines): M: 67% F: 95%<br>OS: M: 11% F: 40%<br>Central obesity: M: 48% (WHR >0.9) F: 90% (WHR >0.8)<br>Faecal parasites were prevalent; chronic infections common.   | 100% | 1 isolated community in Great Sandy Desert, WA                                      | Automatic Analyser (Hitachi 747) with PEG                       | M: 0.87 (95% CI 0.79, 0.94)<br>F: 0.82 (95% CI 0.73, 0.90)   | 0.94                                   | HIGH     |

|                  |   |   |      |  |   |  |      |          |
|------------------|---|---|------|--|---|--|------|----------|
| [21]<br>1996     | 171 (55% F)<br>M: 38 yrs (95% CI, 34-42)<br>F: 37 yrs (34-41)<br>67% of eligible adults | MetS (NCEP-ATPIII)<br>M: 27% F: 51%<br>CRP (GM [95% CI]): M: 4.1 (CI 3.2-5.2) F: 6.6 (CI 5.4-8.1)<br>HDL-C inversely correlated with CRP: r= -.161 and soluble E-selectin r= -.163 (P<0.05)   | 100% | 1 remote community in north-western WA   | Standard, automated, colorimetric methods using commercial reagents (Hitachi 704 Analyser)    | M: 0.86 (95% CI 0.81, 0.91)<br>F: 0.88 (95% CI 0.84, 0.92)         | 1.09 | HIGH     |
| [8]<br>1999-2000 | 237 (56% F)<br>M: 38.5 (CI 28.9-48.7)<br>F: 35.8 (CI 28.8-46.0)<br>58% eligible adults  | Mean BMI (95% CI): M: 23.9 (22.4-24.8) kg/m <sup>2</sup> F: 23.7 (22.8-24.6) kg/m <sup>2</sup><br>DM: M: 25% F: 25%<br>CS:<br>M: 81% F: 60%<br>CRP (GM [95% CI]): M: 6.4 (5.4-7.6) mg/L F: 8.0 (6.9-9.2) mg/L<br>HDL-C inversely correlated with IgG and fibrinogen | 100% | 1 remote community, East Arnhem land, NT | Standard, automated analysers (no further details)  | GM (95% CI):<br>M: 0.83 (CI 0.78, 0.87)<br>F: 0.82 (CI 0.78, 0.86) | 0.99 | MODERATE |
| [39]<br>1987-88  | 306 (58% F)<br>M: 29.9 (SE 1.2)<br>F: 34.1 (SE 1.2) (Guest, O'Dea et al. 1992)<br>90%   | DM: M: 8.8% F: 7.2% (Guest, O'Dea et al. 1992)<br>CS: M: 66.9% F: 63.1% (Guest, O'Dea et al. 1992)  | 100% | 1 community in regional VIC              | Automated enzymatic colorimetric analysis with PEG using Boehringer Mannheim commercial kits. | M: 1.6 (SEM 0.1)<br>F: 1.5 (SEM <0.1)                              | 0.94 | MODERATE |

|  |  |  |             |   |   |   |             |                 |
|--|--|--|-------------|---|---|---|-------------|-----------------|
| <p>[32]</p> <p>1998-2001</p> <p>'Well Person's Health Check' study</p>                           | <p>1641 (54% F)</p> <p>M: 36.6 (CI 35.5-37.7)<br/>F: 37.4 (CI 36.4-38.4)</p> <p>44.5%</p>                                      | <p>DM: M: 9.5% F: 12.9%</p> <p>CS:</p> <p>M: 68.8% F: 56.0%</p> <p>OB: M: 16.8% F: 26.8%</p>   | <p>100%</p> | <p>23 rural communities in far north QLD</p>                    | <p>Photometric enzyme endpoint assay with Cobas Integra 700/400</p>   | <p>M: 1.19 (95% CI 1.17-1.22)<br/>F: 1.16 (95% CI 1.14-1.18)</p>          | <p>0.97</p> | <p>MODERATE</p> |
| <p>[34]</p> <p>Study conducted in 2001-03</p> <p>Perth Aboriginal Atherosclerosis Risk Study</p> | <p>602 (86% F)</p> <p>M: 40 (31-48)<br/>F: 40 (32-48)</p> <p>Approximately 20% of adults aged 25-64, &lt;5% for ages 18-24</p> | <p>DM: M: 25% F: 25%</p> <p>CS:</p> <p>M: 45% F: 44%</p> <p>OB M: 37% F: 68%</p> <p>History of CVD: M: 18% F: 14%</p>  | <p>100%</p> | <p>Metropolitan Perth, WA</p>                                   | <p>No information other than at 'Department of Clinical Biochemistry, Path Centre laboratories, WA' (no further info in other PAARS publications)</p> | <p>Median (IQR):<br/>M: 1.0 (0.9-1.2)<br/>F: 1.2 (1.0-1.5)</p>            | <p>1.2</p>  | <p>MODERATE</p> |
| <p>[20]</p> <p>Study conducted in 2001-03</p>  | <p>379 (54% F)</p> <p>M: 32 (CI 31-34)<br/>F: 36 (CI 34-37)</p> <p>NR</p>  | <p>Mean BMI (95% CI): M: 21.6 (20.8-22.4) kg/m<sup>2</sup> F: 23.2 (22.5-23.8) kg/m<sup>2</sup></p> <p>DM: M: 11% F: 13%</p> <p>MetS (NCEP): M: 18% F: 41%</p> <p>CS:</p> <p>M: 65% F: 54%</p> <p>CRP (geometric mean [95% CI]): M: 3.42 (2.94, 3.97) mg/L F: 4.06 (3.53, 4.66) mg/L</p> | <p>100%</p> | <p>Isolated coastal community in north-east Arnhem Land, NT</p> | <p>Standard automated colorimetric method</p>   | <p>GM (95% CI):<br/>M: 1.00 (CI 0.96-1.04)<br/>F: 0.91 (CI 0.88-0.95)</p> | <p>0.91</p> | <p>MODERATE</p> |

|      |   |                                   |      |                                  |   |  |   |          |
|------|---|-----------------------------------|------|----------------------------------|---|--|---|----------|
| [22] | <p>348 (54% F)</p> <p>152 aged 15-24 yrs<br/>87 aged 25-34 yrs<br/>109 aged &gt;35 yrs</p> <p>Study conducted in 1987</p> <p>M:-83%</p> <p>F: 90-96%</p>    | <p>OB: 22.8%</p> <p>DM: 11.6%</p> | 100% | 1 rural Aboriginal community, NT | Standard enzymatic techniques with PEG using Boehringer Mannheim commercial kits. | <p>Means (95% CI)</p> <p>15-24 yrs:<br/>M: 1.17 (1.10-1.24)<br/>F: 1.45 (1.33-1.57)</p> <p>25-34 yrs:<br/>M: 1.23 (1.10-1.36)<br/>F: 1.25 (1.12-1.38)</p> <p>&gt;35 yrs:<br/>M: 1.05 (0.96-1.14)<br/>F: 1.18 (1.10-1.27)</p> | <p>15-24 yrs:<br/>1.24</p> <p>25-34 yrs:<br/>1.02</p> <p>&gt;35 yrs:<br/>1.12</p> | HIGH     |
|      | <p>331 (58% F)</p> <p>123 aged 15-24 yrs<br/>85 aged 25-34 yrs<br/>123 aged &gt;35 yrs</p> <p>Study conducted in 1991</p> <p>M: 57-86%</p> <p>F: 76-96%</p> | <p>OB: 32.0%</p> <p>DM: 18.6%</p> | 100% |                                  |   | <p>15-24 yrs:<br/>M: 0.88 (0.82-0.94)<br/>F: 0.98 (0.91-1.05)</p> <p>25-34 yrs:<br/>M: 0.84 (0.77-0.91)<br/>F: 0.81 (0.75-0.87)</p> <p>&gt;35 yrs:<br/>M: 0.78 (0.72-0.81)<br/>F: 0.84 (0.79-0.89)</p>                       | <p>15-24 yrs:<br/>1.11</p> <p>25-34 yrs:<br/>0.96</p> <p>&gt;35 yrs:<br/>1.08</p> | MODERATE |
|      | <p>305 (58 % F)</p> <p>97 aged 15-24 yrs<br/>94 aged 25-34 yrs<br/>114 aged &gt;35 yrs</p> <p>Study conducted in 1995</p> <p>M 53-68%</p> <p>F: 52-97%</p>  | <p>OB: 37.0%</p> <p>DM: 20.7%</p> | 100% |                                  |   | <p>15-24 yrs:<br/>M: 0.83 (0.76-0.90)<br/>F: 0.88 (0.81-0.95)</p> <p>25-34 yrs:<br/>M: 0.79 (0.73-0.85)<br/>F: 0.86 (0.81-0.92)</p> <p>&gt;35 yrs:<br/>M: 0.76 (0.70-0.81)<br/>F: 0.82 (0.78-0.86)</p>                       | <p>15-24 yrs:<br/>1.06</p> <p>25-34 yrs:<br/>1.09</p> <p>&gt;35 yrs:<br/>1.04</p> | MODERATE |

| Torres Strait Islander populations                          |  |   |      |   |  |  |      |          |
|---|--|---|------|---|--|--|------|----------|
| [24]<br>1993-95   | 276 (54% F)<br>M: 36 ± 16 yrs<br>F: 38 ± 15 yrs<br><br>NR                        | DM: M: 17% F: 36%<br>CS: M: 57% F: 37%<br>Mean BMI (95% CI): M: 29.6 (28.5-30.7) kg/m <sup>2</sup><br>F: 31.1 (30.1-32.2) kg/m <sup>2</sup> | 100% | 11 remote communities in Cape York, QLD and Torres Strait and central Australia, NT | Standard enzymatic techniques (Boehringer Mannheim reagents) | M: 1.01(95% CI 0.96-1.06)<br>F: 1.00 (95% CI 0.95, 1.06) | 0.99 | MODERATE |
| [32]<br>1998-2001<br><br>'Well Person's Health Check' study | 968 (49% F)<br><br>M: 37.5 (CI 36.2-38.9)<br>F: 38.3 (CI 36.9-39.8)<br><br>44.5% | DM: M: 16.7% F: 22.7%<br>CS: M: 55.5% F: 44.8%<br>OB: M: 43.4% F: 60.6%   | 100% | 23 rural communities in far north QLD   | Photometric enzyme endpoint assay with Cobas Integra 700/400 | M: 1.13 (95% CI 1.10-1.15)<br>F: 1.11 (95% CI 1.09-1.13) | 0.98 | MODERATE |

**LEGEND:**

Abbreviations: AA: Australian Aborigine; BMI: body mass index; F: female; m, male; DM: diabetes mellitus; IGT: impaired glucose tolerance; M: male; NCEP-ATPIII: National Cholesterol Education Program, Adult Treatment Panel III; MetS (NCEP-ATPIII): Metabolic Syndrome defined according to NCEP-ATPIII guidelines; PEG: polyethylene glycol precipitation; TSI: Torres Strait Islander; WC: waist circumference; CS, current smokers; OB, obesity (body mass index >30 kg/m<sup>2</sup>); GM, geometric mean; NSW, New South Wales; QLD, Queensland; NT, Northern Territory; VIC, Victoria; WA, Western Australia

<sup>1</sup> by 2004 NHFA adjusted Framingham equation

<sup>2</sup>Seven Aboriginal Community Controlled Health Organization health services, one state government Indigenous health service