**Supplemental Digital Content 1**

Measuring allostatic load

Allostatic load was measured using nine biomarker measures obtained during nurse visits in wave 2 and 4. Five of the biomarkers were derived from blood samples: HDL/ total cholesterol ratio (mg/dL) (index of risk for cardiovascular disease), triglycerides (mg/dL) (index of lipid metabolism), glycosylated haemoglobin (HbA1c, %) (index of glucose metabolism over the previous 30-90 days), fibrinogen (index of inflammation and cardiovascular disease, mg/dL), and C-reactive protein (index of inflammation and cardiovascular disease, mg/dL). Blood samples were taken from all wave 2 participants, except for those who had a clotting or bleeding disorder (*n* = 302), had ever had a fit (*n* = 116), were not willing to give their consent in writing (*n* = 596), or were on anti-coagulant medication (*n* = 54). A fasting blood sample was taken whenever possible, but those over age 80 or those who had medical conditions were not asked to fast. About 45% of the sample in wave 2 and 48% in wave 4 fasted for at least 5 hours before the blood sample was taken. Fasting was adjusted for in the models by using a binary variable (0 = no fasting, 1 = the respondent had fasted for at least 5 hours before the blood sample was taken).

Three of the biomarkers were obtained from anthropometric measures (waist to hip ratio), blood pressure measures (systolic and diastolic blood pressure), and lung function (peak expiratory flow rate). Waist circumference was measured at the mid-point between the lower rib and the upper margin of the iliac crest and hip circumference was measured at the maximal buttocks. The measures was taken twice, using the same tape, and was recoded to the nearest even millimetre. The mean of the two valid measures was used. A total of 74 individuals refused to have waist and hip circumferences measured. Waist to hip ratio is considered a better measure than body mass index to identify those with a health risk from their body shape. This is especially the case at older ages, when the fat distribution changes and abdominal fat tends to be greater than at younger ages ([1](#_ENREF_1)).

Blood pressure (mmHg) was measured using three readings collected at one-minute intervals. The mean of valid readings was used. Respondents were asked not to eat, smoke, drink alcohol, or take vigorous exercise 30 minutes before the blood pressure measure was taken. Eleven individuals in wave 2 and 18 individual in wave 4 refused to participate in blood pressure measurement. Lung function was measured using spirometer Vitalograph Micro. Lung function was not taken if the respondent had abdominal, tracheotomy, or chest surgery in the preceding three weeks (*n* = 32), had been admitted to hospital with a heart complaint in the preceding six weeks (*n* = 78), had eye surgery in the preceding four weeks (*n* = 57), or refused to participate (*n* = 70). Lung function was also not tested if the room temperature was less than 15 or more than 35 degrees Celsius (*n* = 2). Three measurements of peak expiratory flow rate, the fastest rate of exhalation (in litres per minute), were taken and the highest satisfactory score was used as the valid one.

For all nine measures, individuals belonging to the highest 25 percentile indicating health risk were identified using the sample distributions for men and women. Age and a number of other factors (e.g. fasting) were adjusted for in the models. Because use of medicine could change biochemical values, current medication was taken into account so that an individual was given the value 1 (indicating health risk) for diastolic and systolic blood pressure if they used blood pressure lowering medication; for fibrinogen if they used anticoagulants; for triglycerides and HDL cholesterol ratio if they used lipid lowering medication; for glycosylated haemoglobin if they used diabetes medication, for peak expiratory flow if they used lung function medication. Moreover, because the literature suggests that diabetic, cholesterol, and blood pressure lowering medication reduced the values of C-reactive protein between 25 - 30% ([2](#_ENREF_2)), the values in the second highest 25 percentile were given value 1 to indicate health risk.

A mean score for each of the five subsystems considered (inflammation, cardiovascular, metabolic, body fat, and respiratory) was calculated using the number of biomarkers where the individual belonged to the risk group. This was done to weight the score by the number of biomarkers in the five systems. The sum score of the five subsystems was calculated so that the weighted score range between 0 and 5. Information on at least four out of five subsystems had to be available to calculate the score.

**References**

1. de Oliveira C, Shankar A, Kumari M, Nunn S, Steptoe A. Health risk and health protective biological measures in later life. In: Banks J, Lessof C, Nazroo J, Rogers N, Stafford M, Steptoe A, eds. Financial circumstances, health and well-being of the older population in England: The 2008 English Longitudinal Study of Ageing. London: The Institute of Fiscal Studies; 2010:275-347.

2. Prasad K. C-Reactive Protein (CRP)-Lowering Agents.Cardiovascular Drug Reviews.2006;**24**:33-50.

Table S1. Allostatic load 25th percentile high risk cut-off points for all men and women aged 60+ in the English Longitudinal Study of Ageing wave 2 (2004) and wave 4 (2008).

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| --- | --- | --- | --- | --- | --- |
|  | Wave 2 | | | Wave 4 | |
|  | Men | Women | | Men | Women |
| *Inflammation* | (*n* = 1853) | | (*n* = 2187-2194) | (*n* = 1885-1958) | (*n* = 2218-2360) |
| C-reactive protein (mg/dL) | >3.3 | | >3.8 | >3.3 | >3.5 |
| Fibrinogen (mg/dL) | >3.6 | | >3.8 | >3.7 | >3.8 |
| *Cardiovascular* | (*n* = 2072) | | (*n* = 2616) | (*n* = 2554) | (*n* = 3033) |
| Systolic blood pressure (mmHg) | >148 | | >149 | >145 | >145 |
| Diastolic blood pressure (mmHg) | >81 | | >80 | >79 | >80 |
| *Lipid metabolism* | (*n* = 1821-1855) | | (*n* = 2171-2196) | (*n* = 1993-2017) | (*n* = 2385-2419) |
| HDL/Total cholesterol ratio (mg/dL) | >4.73 | | >4.46 | >4.45 | >4.15 |
| Triglycerides (mg/dL) | >2.2 | | >2.1 | >2.1 | >2.0 |
| Glycosylated haemoglobin (%) | >5.8 | | >5.8 | >6.1 | >6.1 |
| *Body fat* | (*n* = 2304) | | (*n* = 2850) | (*n* = 2653) | (*n* = 3152) |
| Waist/hip ratio | >1.00 | | >0.89 | >1.00 | >0.90 |
| *Respiratory* | (*n* = 2199) | | (*n* = 2642) | (*n* = 2461) | (*n* = 2882) |
| Peak expiratory flow (L/min) | <323 | | <208 | <334 | <214 |