Supplemental Material

Determination of the time spent in each menopausal stage (pre, early peri-, late peri-, and post-menopausal stages):

To estimate rates of change in IMT and AD within each of the 4 stages of the menopausal transition, 4 separate time variables were created. For each woman, at each visit, the amount of time that the woman had spent in each stage since baseline scan was estimated. In order to divide the total time since baseline scan between the 4 menopausal stages information about when each woman transitioned from one stage to the next were needed. Because the exact time at which a woman transitioned from a certain stage to the next cannot be precisely determined, the timing of each transition was estimated via an algorithm similar to a previous algorithm that was used before in calculating rate of change in bone mineral density within the SWAN cohort. [1] The current algorithm utilized all available data on menstrual bleeding, menopausal stage, and carotid scan date for each woman at each study visit.

For women who became postmenopausal, all time after their final menstrual period (FMP) was allocated to the postmenopausal stage. All observed time before the FMP was allocated to pre-, early peri- and late peri-menopausal stages. Cumulative time in premenopause was set to zero for participants who were early peri-menopausal at baseline scan. The timing of transitions between menopausal stages was determined as follows:

1. If a woman was classified as premenopausal at one visit and early peri-menopausal at the next, the transition from pre- to early peri-menopause was assumed to occur midway between the two visits.

2. If a woman was classified as early peri-menopausal at one visit and late peri-menopausal at the next we used menstrual bleeding data to identify the earliest and latest possible dates at which the transition between stages could have occurred. The transition was then estimated to have occurred at the midpoint of these two dates.

3. If a woman was classified as late peri-menopausal at one visit and postmenopausal at the next the transition between the two stages occurred at the date of her FMP.

Algorithms of a similar nature were used to determine the transition between stages for participants who transitioned across 2 menopausal stages between consecutive visits. If a participant missed 2 or more consecutive visits, and over that period her menopausal stage changed, then her data were censored from the analysis from that point on.

References:

1. Finkelstein JS, Brockwell SE, Mehta V, et al. Bone mineral density changes during the menopause transition in a multiethnic cohort of women. *J Clin Endocrinol Metab*. 2008;93(3):861-868.