**Supplementary Material**

Supplementary Figure 1 shows an example of a late-life DSI dementia index fingerprint for one CAIDE participant: a 71-year-old woman without MCI or dementia at the first CAIDE re-examination, diagnosed with Alzheimer’s dementia at the second re-examination. The composite DSI index was 0.76, indicating high baseline similarity with the other individuals who developed dementia later on (as shown in Table 3 in the manuscript, this indicates prediction accuracy of 0.93-0.94, with specificity of 0.97-0.99, that the individual will develop dementia in the next ten years).

The fingerprint shows that the cognition profile at baseline was very similar to other subjects with subsequent dementia (DSI index for cognition 0.73). For individual cognitive domains, only executive functioning was inconclusive (DSI index for executive functioning 0.53). Baseline MMSE score was 27 (formal education level 6 years).

In the late-life vascular factors group, SBP and DBP (114/70 mmHg) had high DSI indices (0.96 for SBP and 0.80 for DBP). The subject did not have any major cardio/cerebrovascular comorbidity, so the DSI index for the Vascular group was somewhat lower (0.68). From midlife to late-life (1977-1998), there was a decline in SBP (DSI index for SBP change 0.65, indicating some similarity with other subjects with subsequent dementia). DBP had increased slightly from midlife until 1998 (DSI index for DBP change 0.16, more similar to subjects without subsequent dementia). BMI had slightly risen from midlife (late-life BMI was 22.1). Overall, the DSI index for the vascular changes group was inconclusive (0.47).

APOE genotype was 34, with DSI index 0.76 indicating high similarity to other subjects with subsequent dementia. Age (71, one year above the population mean) had a lower DSI index (0.57).

The subject had pronounced memory complaints with a high DSI index (0.76). The total Subjective Memory Questionnaire (SMQ) score was highly indicative of subsequent dementia development (DSI index 0.95), as well as the fact that the subject had almost always problems remembering phone numbers and often difficulties recalling clothing sizes, and forgetting what to say mid-sentence.

Fingerprinting of individual dementia prediction profiles could be integrated with, for example, electronic health records or large multinational online research databases. A clinician or researcher could easily obtain and visually interpret the profiles to decide whether a specific individual is in need of preventive measures or is suitable for inclusion in a dementia prevention trial. The described CAIDE participant could be a good candidate for the type of multimodal lifestyle intervention used in the FINGER trial [2].

The DSI index developed in the present study is based on data available for CAIDE participants. External validation is needed, and it is also necessary to test DSI in populations with other types of data (e.g., dietary patterns, MRI, CSF, or PET assessments). The inclusion of neuroimaging and CSF markers in the DSI index would also facilitate profiling for selecting participants in pharmacological dementia prevention trials.