Top Ten Things to Know
Defining Optimal Brain Health in Adults

1. Life expectancy is projected to continue to increase in developed countries around the world. An increase in life expectancy creates an important public health challenge to plan for health and social services, housing and pensions for the elderly, and care for those at risk for cognitive impairment and dementia.

2. It is estimated that there are 47 million persons with dementia worldwide and that this will increase to 75 million in 2030 and 131 million by 2050.

3. The purpose of this paper is to identify metrics to define optimal brain health in adults based on inclusion of factors that could be measured, monitored and modified. Defining brain health should not be focused only on the absence of disease.

4. The public health impact of cognitive impairment, dementia, stroke, and cardiovascular and stroke risks are discussed in this paper. Cognitive impairment and dementia are common in the population, and there is a substantial economic and personal toll associated with it.

5. Optimal brain health is complex and depends on many basic physiologic functions for execution of the optimal state. Optimal brain health can theoretically be defined as an optimal capacity to function adaptively in the environment. This could be assessed in terms of competencies across the domains of thinking, moving, and feeling, such as: 1) paying attention, perceiving and recognizing sensory input; 2) learning and remembering; 3) communicating; 4) problem solving and making decisions; 5) having mobility; and 6) regulating emotional status.

6. There are parallels between cardiovascular and cerebrovascular health and the brain. The health of the brain is inextricably related to cardiovascular and cerebrovascular health, and interventions aimed at promoting cardiovascular health are also expected to promote brain health and vice versa.

7. "Vital signs of the brain" such as sleep, continence, and appetite are impacted by the brain. These constructs should be used as early warning signs of brain health to be monitored and addressed at an at-risk stage for the brain.

8. Several risk factors have been identified in healthy brain aging;
   - High fasting glucose or diabetes mellitus has been associated with cognitive impairment.
   - Dementia, smoking, obesity, dyslipidemia and high blood pressure are major contributors to poor vascular health.
   - Adherence to the DASH or Mediterranean diet has been associated with reduced cognitive decline.

9. From the data reviewed for this paper, the American Heart Association's Life's Simple 7 (LS7) has been chosen as the metric to define optimal brain health and includes:
   - 4 ideal health behaviors (physical activity at goal levels, healthy diet, nonsmoking and body mass index <25kg/m2); and
   - 3 health factors (untreated total cholesterol <220mg/dL, fasting blood glucose <100mg/dL, and untreated BP <120/<80 mm Hg). Primary outcomes for these include stroke and dementia.

10. Healthcare providers should use LS7 as an aspirational tool for patients to control or modify those factors that are not at ideal levels for the maintenance of brain health and prevention of poor brain health.

Gorelick PB, Furie KL, Iadecola C, Smith EE, Waddy SP, Lloyd-Jones DM, Bae H-J, Bauman MA, Dichgans M, Duncan PW, Girgus M, Howard VJ, Lazar RM, Seshadri S, Testai FD, van Gaal S, Yaffe K, Wasiak H, Zerna C; on behalf of the American Heart Association/American Stroke Association. Defining optimal brain health in adults: a presidential advisory from the American Heart Association/American Stroke Association [published online ahead of print September 7, 2017]. *Stroke*. doi: 10.1161/STR.0000000000000148.