Yoram Barak, MD, MHA

Yoram Barak is Professor of Psychiatry at the Sackler School of Medicine, Tel-Aviv University, and Director of the Psychogeriatric Department at the Arbarbanel Mental Health Center in Bat Yam, Israel.

Professor Barak trained in medicine and psychiatry at the Sackler School of Medicine. In 1993 he became an Israel Medical Scientific Council Specialist in Psychiatry, and in 2004 he was awarded a Master in Health Administration from Ben-Gurion University, Beer-Sheva, Israel.

Professor Barak has held numerous positions at the Arbarbanel Mental Health Center, including Deputy Director of the Outpatient Clinic and Deputy Director of the Day Hospitalization Department. He has also been a visiting investigator at the Institute of Psychiatry in London.

Professor Barak is a consultant for the National Multiple Sclerosis Center at the Sheba Medical Center in Israel. He is also a special consultant on positive psychology for the Israel Defence Forces and Head of the section for ‘positive psychiatry’ within the Israel Psychiatric Association.

Professor Barak is President of the Israeli Association of Old-Age Psychiatry and is on the editorial board of the Israel Journal of Psychiatry. He is a lecturer on Gestalt psychology at the Tel-Aviv University School of Social Work.

Professor Barak’s research interests include multiple sclerosis, brain food, a wide range of psychiatric conditions (such as depression, schizophrenia, and dementia), old-age psychiatry, the Holocaust, and suicide. He has published extensively in these areas and is author or co-author of over 150 peer-reviewed journal articles as well as book chapters and reviews.
BREAKING AWAY FROM THE BLEAK PICTURE PREVIOUSLY PAINTED ABOUT A LACK OF EFFECTIVE WAYS TO PREVENT DEMENTIA, THE NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE (USA) SAID IN A NEW REPORT THAT THREE INTERVENTIONS OFFER "ENCOURAGING" EVIDENCE OF STAVING OFF COGNITIVE DECLINE.
EPIDEMIOLOGY
BASED IN PART ON:
SERIES UPDATE BY PROF H FILLIT, FOUNDER OF ALZHEIMER’S DRUG DISCOVERY FOUNDATION.

- 1 in 9 people over 65 years of age suffer from dementia.
- When our grandchildren become elderly it is predicted that 1 in 3 will suffer from dementia.
- The prevention of dementia, and particularly of Alzheimer’s disease, is a major challenge for researchers and clinicians.
CURE ???

- Currently there are 1,278 clinical trials listed on ClinicalTrials.gov.
- They will all fail.
  - In the last 30 years not a single new molecule was approved by the FDA for Alzheimer’s disease.
  - In the period 2001-2011 years 1,274 trials failed.
Based on 1,719 articles on potentially modifiable risk factors for dementia, the authors concluded that for the primary prevention of AD, there is good evidence for controlling vascular risk factors, especially hypertension (grade A).

Weak or insufficient evidence for prescribing of medications (grade C).

The group calculated that systolic hypertension, elevated serum cholesterol and current smoking increased the relative risk for developing AD.

Moderate wine consumption, high level of physical activity and education reduced the relative risk for AD.
DISAPPOINTMENT
Taking antioxidant supplements vitamin E and selenium for 5 years did not show any effect on the prevention of dementia during a total follow-up of 11 years in a large population of older men in the PREADViSE (Prevention of Alzheimer’s Disease by Vitamin E and Selenium) trial.
In an accompanying editorial it was noted that the PREADViSE trial joins several other studies that have failed to show any effect of various interventions — including:

1) gingko biloba
2) anti-inflammatory medications
3) statins
4) hormone therapy
NEED FOR A NEW MODEL OF PREVENTION...
Dementia prevention, intervention, and care


www.thelancet.com Published online July 20, 2017 http://dx.doi.org/10.1016/S0140-6736(17)31363-6
Key messages

1 The number of people with dementia is increasing globally Although incidence in some countries has decreased.

2 Be ambitious about prevention We recommend active treatment of hypertension in middle aged (45-65 years) and older people (aged older than 65 years) without dementia to reduce dementia incidence. Interventions for other risk factors including more childhood education, exercise, maintaining social engagement, reducing smoking, and management of hearing loss, depression, diabetes, and obesity might have the potential to delay or prevent a third of dementia cases.

3 Treat cognitive symptoms To maximise cognition, people with Alzheimer’s disease or dementia with Lewy bodies should be offered cholinesterase inhibitors at all stages, or memantine for severe dementia. Cholinesterase inhibitors are not effective in mild cognitive impairment.

4 Individualise dementia care Good dementia care spans medical, social, and supportive care; it should be tailored to unique individual and cultural needs, preferences, and priorities and should incorporate support for family carers.

5 Care for family carers Family carers are at high risk of depression. Effective interventions, including STrAtegies for RelaTives (START) or Resources for Enhancing Alzheimer’s Caregiver Health intervention (REACH), reduce the risk of depression, treat the symptoms, and should be made available.

6 Plan for the future People with dementia and their families value discussions about the future and decisions about possible attorneys to make decisions. Clinicians should consider capacity to make different types of decisions at diagnosis.

7 Protect people with dementia People with dementia and society require protection from possible risks of the condition, including self-neglect, vulnerability (including to exploitation), managing money, driving, or using weapons. Risk assessment and management at all stages of the disease is essential, but it should be balanced against the person’s right to autonomy.

8 Manage neuropsychiatric symptoms Management of the neuropsychiatric symptoms of dementia including agitation, low mood, or psychosis is usually psychological, social, and environmental, with pharmacological management reserved for individuals with more severe symptoms.

9 Consider end of life A third of older people die with dementia, so it is essential that professionals working in end-of-life care consider whether a patient has dementia, because they might be unable to make decisions about their care and treatment or express their needs and wishes.

10 Technology Technological interventions have the potential to improve care delivery but should not replace social contact.
Figure 4: Life-course model of contribution of modifiable risk factors to dementia.
Numbers are rounded to nearest integer. Figure shows potentially modifiable or non-modifiable risk factors.
Figure 5: Potential brain mechanisms for preventive strategies in dementia
THE NEW MODEL
LIFESTYLE FOR BRAIN HEALTH (LIBRA): A NEW MODEL FOR DEMENTIA PREVENTION.

* The ‘Lifestyle for Brain Health’ (LIBRA) score, reflecting a person’s potential for dementia prevention, was studied in a large longitudinal population-based sample with respect to predicting cognitive change over an observation period of up to 16 years.

Methods: LIBRA was calculated at baseline for 949 participants 50–81 years of age.

Results: LIBRA predicted future risk of dementia, as well as risk of cognitive impairment.
**Lifestyle for Brain Health (LIBRA): A New Model for Dementia Prevention.**
*Int J Ger Psychiatry, 2017.*

<table>
<thead>
<tr>
<th>Modifiable risk factor</th>
<th>Relative risk (RR)</th>
<th>Ln (RR)/beta weight</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low/moderate alcohol consumption</td>
<td>0.74</td>
<td>-0.30 (reference)</td>
<td>-1.0</td>
</tr>
<tr>
<td>Coronary heart disease</td>
<td>1.36</td>
<td>0.31</td>
<td>+1.0</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>1.39</td>
<td>0.33</td>
<td>+1.1</td>
</tr>
<tr>
<td>Renal dysfunction</td>
<td>1.39</td>
<td>0.33</td>
<td>+1.1</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1.47</td>
<td>0.39</td>
<td>+1.3</td>
</tr>
<tr>
<td>High cholesterol</td>
<td>1.54</td>
<td>0.43</td>
<td>+1.4</td>
</tr>
<tr>
<td>Smoking</td>
<td>1.59</td>
<td>0.46</td>
<td>+1.5</td>
</tr>
<tr>
<td>Obesity</td>
<td>1.60</td>
<td>0.47</td>
<td>+1.6</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1.61</td>
<td>0.48</td>
<td>+1.6</td>
</tr>
<tr>
<td>Mediterranean diet</td>
<td>0.60</td>
<td>0.51</td>
<td>+1.7</td>
</tr>
<tr>
<td>Depression</td>
<td>1.85</td>
<td>0.62</td>
<td>+2.1</td>
</tr>
<tr>
<td>High cognitive activity</td>
<td>0.38</td>
<td>-0.97</td>
<td>-3.2</td>
</tr>
<tr>
<td>Low unsaturated fat intake&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Ln, natural logarithm; MAAS, Maastricht Ageing Study.

<sup>a</sup>LIBRA score represents the sum of the scores assigned to the individual risk factors.

<sup>b</sup>RR not available from meta-analyses.
LONELINESS
THE “SOCIAL BRAIN”

- Much of the neurological basis of social relations lies in the limbic and associational cortical and subcortical brain regions.
- These areas of our brain also support episodic memory, semantic memory, and other cognitive functions.
- Thus, it is possible that the cognitive processing that allows people to develop and maintain large social networks provides a reserve against the development of cognitive impairment despite the increasing pathology of Alzheimer’s disease.
SOCIAL ISOLATION IN OLD AGE HAS BEEN ASSOCIATED WITH RISK OF DEVELOPING DEMENTIA.

- Researchers at the Rush Alzheimer’s Disease Center, Chicago recruited 823 older persons free of dementia assessing their level of loneliness with a structured rating scale every year for five years.

- The risk of Alzheimer's disease was more than doubled in lonely persons.
  - Loneliness did not change significantly over the study period so that lonely elderly in essence remained lonely for many years.
PURPOSE IN LIFE

- Defined as “a central, self-organizing life aim that organizes and stimulates goals, manages behaviours, and provides a sense of meaning”
  
  (J Positive Psychology, 2016)

- It is hard to imagine a purpose in life, especially for older adults, that does not involve a social aspect.
  
  - Indeed, when researchers looked at the purpose in life of nearly 1,000 people over a seven-year period those with a high score on the purpose in life measure were approximately 2.4 times more likely to remain free of Alzheimer's disease.
Forever Young(er): potential age-defying effects of long-term meditation on gray matter atrophy

Eileen Luders¹, Nicolas Cherbuin² and Florian Kurth¹

¹ Department of Neurology, School of Medicine, University of California, Los Angeles, Los Angeles, CA, USA
² Centre for Research on Ageing Health and Wellbeing, Australian National University, Canberra, ACT, Australia
PRIMARY PREVENTION OF CARDIOVASCULAR DISEASE WITH A MEDITERRANEAN DIET

Estruch R et al.
The New England Journal of Medicine, Feb 2013
<table>
<thead>
<tr>
<th>Food</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mediterranean diet</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Recommended</strong></td>
<td></td>
</tr>
<tr>
<td>Olive oil$^a$</td>
<td>≥4 tbsp/day</td>
</tr>
<tr>
<td>Tree nuts and peanuts$^f$</td>
<td>≥3 servings/wk</td>
</tr>
<tr>
<td>Fresh fruits</td>
<td>≥3 servings/day</td>
</tr>
<tr>
<td>Vegetables</td>
<td>≥2 servings/day</td>
</tr>
<tr>
<td>Fish (especially fatty fish), seafood</td>
<td>≥3 servings/wk</td>
</tr>
<tr>
<td>Legumes</td>
<td>≥3 servings/wk</td>
</tr>
<tr>
<td>Sofrito$^g$</td>
<td>≥2 servings/wk</td>
</tr>
<tr>
<td>White meat</td>
<td>Instead of red meat</td>
</tr>
<tr>
<td>Wine with meals (optionally, only for habitual drinkers)</td>
<td>≥7 glasses/wk</td>
</tr>
<tr>
<td><strong>Discouraged</strong></td>
<td></td>
</tr>
<tr>
<td>Soda drinks</td>
<td>&lt;1 drink/day</td>
</tr>
<tr>
<td>Commercial bakery goods, sweets, and pastries$^f$</td>
<td>&lt;3 servings/wk</td>
</tr>
<tr>
<td>Spread fats</td>
<td>&lt;1 serving/day</td>
</tr>
<tr>
<td>Red and processed meats</td>
<td>&lt;1 serving/day</td>
</tr>
<tr>
<td><strong>Low-fat diet (control)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Recommended</strong></td>
<td></td>
</tr>
<tr>
<td>Low-fat dairy products</td>
<td>≥3 servings/day</td>
</tr>
<tr>
<td>Bread, potatoes, pasta, rice</td>
<td>≥3 servings/day</td>
</tr>
<tr>
<td>Fresh fruits</td>
<td>≥3 servings/day</td>
</tr>
<tr>
<td>Vegetables</td>
<td>≥2 servings/wk</td>
</tr>
<tr>
<td>Lean fish and seafood</td>
<td>≥3 servings/wk</td>
</tr>
<tr>
<td><strong>Discouraged</strong></td>
<td></td>
</tr>
<tr>
<td>Vegetable oils (including olive oil)</td>
<td>≤2 tbsp/day</td>
</tr>
<tr>
<td>Commercial bakery goods, sweets, and pastries$^f$</td>
<td>≤1 serving/wk</td>
</tr>
<tr>
<td>Nuts and fried snacks</td>
<td>≤1 serving/wk</td>
</tr>
<tr>
<td>Red and processed fatty meats</td>
<td>≤1 serving/wk</td>
</tr>
<tr>
<td>Visible fat in meats and soups$^f$</td>
<td>Always remove</td>
</tr>
<tr>
<td>Fatty fish, seafood canned in oil</td>
<td>≤1 serving/wk</td>
</tr>
<tr>
<td>Spread fats</td>
<td>≤1 serving/wk</td>
</tr>
<tr>
<td>Sofrito$^g$</td>
<td>≤2 servings/wk</td>
</tr>
</tbody>
</table>

Figure 1.
Kaplan–Meier Estimates of the Incidence of Outcome Events in the Total Study Population

Among persons at high cardiovascular risk, a Mediterranean diet supplemented with extra-virgin olive oil or nuts reduced the incidence of major cardiovascular events.

- The multivariable-adjusted hazard ratios were 0.70 (95% CI, 0.54 to 0.92) for the group assigned to a Mediterranean diet with extra-virgin olive oil.

DOES THAT EFFECT COGNITION?
Mediterranean Diet and Age-Related Cognitive Decline
A Randomized Clinical Trial

Design, Setting, and Participants
Parallel-group randomized clinical trial of 447 cognitively healthy volunteers from Barcelona, Spain mean age, 66.9 years, at high cardiovascular risk.
Nutrition intervention trial from 2003, through 2009.

Interventions
- Mediterranean diet supplemented with extra virgin olive oil (1 L/wk)
- Mediterranean diet supplemented with mixed nuts (30 g/d)
- A control diet (advice to reduce dietary fat)
Figure 2. Changes in Cognitive Function Measured With Composites by Intervention Group

Error bars indicate 95% CIs. $P$ values by analysis of covariance were adjusted for sex, baseline age, years of education, marital status, $APOE \varepsilon 4$ genotype, ever smoking, baseline body mass index, energy intake, physical activity, type 2 diabetes mellitus, hyperlipidemia, ratio of total cholesterol to high-density lipoprotein cholesterol, statin treatment, hypertension, use of anticholinergic drugs, and time of follow-up, with the Bonferroni post hoc test. For each cognitive composite, the changes between the 2 Mediterranean arms were not statistically different ($P > .99$ for all). The changes for memory between the Mediterranean diet plus olive oil and control groups and for frontal and global cognition between the Mediterranean diet plus nuts and control groups had values of $P < .25$.

$^a P < .05$.

$^b P < .01$. 
CONCLUSIONS AND RELEVANCE

In an older population, a Mediterranean diet supplemented with olive oil or nuts is associated with improved cognitive function.

HOPE AT LAST!
Demographics will drive an increase in the number of dementia cases.

Population-based community studies or survey data point to *declining* age-specific prevalence or incidence rates among people born later in the first half of the 20th century.
<table>
<thead>
<tr>
<th>Study</th>
<th>Outcome</th>
<th>Data Source</th>
<th>Key Findings</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manton et al. (United States)(^1)</td>
<td>Prevalence of severe cognitive impairment</td>
<td>National long-term care survey interviews, 1982–1999</td>
<td>Decline in dementia prevalence among people ≥65 yr of age (5.7% to 2.9%)</td>
<td>Higher educational level, decline in stroke incidence</td>
</tr>
<tr>
<td>Langa et al. (United States)(^2)</td>
<td>Prevalence of cognitive impairment</td>
<td>Ongoing population-based survey of people ≥51 yr of age</td>
<td>Prevalence of cognitive impairment among people ≥70 yr of age (12.2% in 1993 vs. 8.7% in 2002)</td>
<td>Higher educational level; combination of medical, lifestyle, demographic, and social factors</td>
</tr>
<tr>
<td>Schrijvers et al. (Rotterdam)(^3)</td>
<td>Incidence of dementia</td>
<td>Population-based cohort ≥55 yr of age in 1990, extended in 2000</td>
<td>Incidence rate ratios (6.56 per 1000 person-yr in 1990 vs. 4.92 per 1000 person-yr in 2000)</td>
<td>Higher educational level, reduction in vascular risk, decline in stroke incidence</td>
</tr>
<tr>
<td>Qiu et al. (Stockholm)(^4)</td>
<td>Prevalence of DSM-III-R dementia*</td>
<td>Cross-sectional survey of people ≥75 yr of age, 1987–1989 and 2001–2004</td>
<td>Age- and sex-standardized dementia prevalence (17.5% in 1987–1989 vs. 17.9% in 2001–2004); lower hazard ratio for death in later cohort suggests decreased dementia incidence</td>
<td>Favorable changes in risk factors, especially vascular risk; healthier lifestyles</td>
</tr>
<tr>
<td>Matthews et al. (England)(^5)†</td>
<td>Prevalence of dementia in 3 regions</td>
<td>Survey interviews of people ≥65 yr of age, 1989–1994 (in CFAS I) and 2008–2011 (in CFAS II)</td>
<td>Dementia prevalence (8.3% in CFAS I vs. 6.5% in CFAS II)</td>
<td>Higher educational level, better prevention of vascular disease</td>
</tr>
</tbody>
</table>

* In the study by Qiu et al., dementia was diagnosed according to the criteria provided in the *Diagnostic and Statistical Manual of Mental Disorders*, third edition, revised (DSM-III-R).
† CFAS denotes Cognitive Function and Ageing Study.
Populations born later ("younger" elderly) have a lower risk of dementia than those born earlier, probably because of:

- higher education levels
- better prevention of vascular disease

That is even in the face of countervailing factors such as diabetes and survival after stroke, which could increase age-specific dementia prevalence.
ANTIHYPERTENSIVE MEDICATIONS: THE FUTURE?

- Timing:

  For each additional year of antihypertensive treatment in middle-age there is a reduction in the risk of incident dementia.
  - In one large study the risk for dementia in subjects with more than 12 years of treatment was lower than for hypertensive participants (hazard ratio for AD: 0.35; 95% CI: 0.16–0.78), and was similar to the normotensives

- Specificity of Drugs
ANTIHYPERTENSIVE MEDICATIONS: ARE ARBS THE FUTURE?

**Specificity of Drugs:**

- 1: Chiu et al. Angiotension receptor blockers reduce the risk of dementia. J Hypertens. 2014
- 3: Kovács T. The effect of angiotensin receptor blockers in cerebrovascular disorders and dementia: bonus in addition to the antihypertensive effect. Ideggyogy Sz. 2014
HOPE AT LAST!

- The study in England and Wales published in July of 2013 made the headline in the New York Times:
  
  "Dementia Rate Is Found to Drop Sharply..."

- At the close of the article Dr. Anderson, of the National Institute on Aging, said the news was good. “we are beginning to see that more and more of us will have a chance to reach old age cognitively intact, postponing dementia or avoiding it altogether. That is a happy prospect.”
THANK YOU FOR YOUR ATTENTION...
The secret to increasing brain function is growing neurons. 'More neurons means a better ability to learn and to remember,' says Max Cynader of Vancouver's Djavad Mowafaghian Centre for Brain Health.
YOU LEARN, YOU GROW NEURAL CONNECTIONS IN YOUR BRAIN. THEN AT NIGHT, YOU REPLAY THE DAY'S MEMORIES WHILE YOU SLEEP, HELPING NEUR-ONS TO WIRE AND FIRE TOGETHER.
How Long to Nap

10 to 20 Minutes
This power nap is ideal for a boost in alertness and energy, experts say. This length usually limits you to the lighter stages of non-rapid eye movement (NREM) sleep, making it easier to hit the ground running after waking up.

30 Minutes
Some studies show sleeping this long may cause sleep inertia, a hangover-like groggy feeling that lasts for up to 30 minutes after waking up, before the nap’s restorative benefits become apparent.

60 Minutes
This nap is best for improvement in remembering facts, faces and names. It includes slow-wave sleep, the deepest type. The downside: some grogginess upon waking up.

90 Minutes
This is a full cycle of sleep, meaning the lighter and deeper stages, including REM (rapid eye movement) sleep, typically likened to the dreaming stage. This leads to improved emotional and procedural memory (i.e. riding a bike, playing the piano) and creativity. A nap of this length typically avoids sleep inertia, making it easier to wake up.
A 2010 study published in Cognitive, Affective & Behavioral Neuroscience showed people with depression performed worse on cognitive tasks than their non-depressed counterparts. 'Treat the depression and you can improve the cognitive function,' says Aaron Newman, a neuroscientist and associate professor at Halifax's Dalhousie University.
When we're agitated, our bodies flood our brains with cortisol. The hormone attaches to receptors in our neurons, which allows more calcium to pass through their membranes. Neurons overloaded with calcium fire too rapidly. That hyper firing kills neurons.
HUMAN DEVELOPMENT AND TWO OTHER GERMAN INSTITUTIONS SHOWED THAT REGULARLY PLAYING SUPER MARIO 64 INCREASED STUDY PARTICIPANTS' BRAIN VOLUME IN THE REGIONS THAT CONTROL MEMORY AND SPATIAL THINKING.
BREAK A SWEAT
ONE-HOUR WEIGHTLIFTING SESSIONS, TWICE A WEEK, HAVE BEEN SHOWN TO SLOW THE PROGRESS OF MILD COGNITIVE IMPAIRMENT
**Drink Your Coffee**

Coffee contains polyphenols, antioxidant compounds that may protect the hippocampus and the cortex, areas that are important for memory. Three to five cups a day is ideal.
A study published in the Journal of the American Geriatrics Society found that people with none of their own teeth performed 10 per cent worse on memory tests than those with some natural teeth. Researchers have yet to determine why.
**Monitor your hearing**

A 2013 Johns Hopkins study concluded that cognitive decline progressed 30% to 40% faster for people with hearing loss than for those with normal hearing. Treating impairment can improve cognitive ability.
DON'T COUNT ON SUPERFOODS
STUDIES HAVE SHOWN THAT TURMERIC, FOR EXAMPLE, BREAKS UP BRAIN PLAQUE (WHICH HAS BEEN LINKED TO ALZHEIMER'S), BUT IT'S NO CURE-ALL. 'IT'S NOT THE FOOD THAT'S BENEFICIAL; IT'S THE CHEMICALS IN IT,' SAYS NEWMAN. IT'S IMPOSSIBLE TO GET A HIGH ENOUGH CONCENTRATION OF THOSE CHEMICALS IN YOUR DIET TO RECREATE LAB RESULTS.
AVOID SMOKING
THE CORTEX, THE BUMPY SURFACE LAYER OF THE BRAIN, NATURALLY THINS AS WE AGE. SMOKING HASTENS THIS THINNING, WHICH IS ASSOCIATED WITH COGNITIVE DECLINE.
BUILD FRIENDSHIPS
As little as 10 minutes of socializing a day improves cognitive performance.
GET ZEN
Meditating for half an hour a day, for eight weeks, has been shown to grow grey matter in the hippocampus, which may improve memory and learning.
THANK YOU FOR YOUR ATTENTION...

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