

Alzheimer's Association: Public Health Perspectives & Initiatives

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alzheimer's  association®

Disclosures:

Full time employee of the Alzheimer's Association



OUR VISION:

A world without Alzheimer's disease®.

OUR MISSION: To eliminate Alzheimer's disease through the advancement of research; to provide and enhance care and support for all affected; and to reduce the risk of dementia through the promotion of brain health.

Outline

- Prevalence vs Incidence
- Changing demographics
- Overview of studies used for prevalence
- Public health implications
- Opportunity to diversify funding strategies
- Future – where do we go from here

Prevalence vs. Incidence

- Key measures for public health
- Incidence = # new cases for a given period of time
- Prevalence = # total cases at time measured
- Prevalence Number vs Prevalence Rate are defined:
 - Prevalence number = # people with the disease
 - Prevalence rate = $\frac{\text{\# people with the disease}}{\text{\# total population}}$

Decreasing Prevalence Rates with Increasing Prevalence Numbers

Percent of Population Age 65+ in Each Age Range

Age	2010	2020	2030	2040	2050
65-74	53	59	54	45	45
75-84	32	29	34	37	33
85+	14	12	12	17	22

Dementia vs. Alzheimer's

Study	Dementia	Alzheimer's disease
CHAP	Yes	Yes
ADAMS	Yes	Yes
Framingham Heart Study (FHS)	Yes	No
Health Retirement Study	Yes	No
China	Yes	No
Colombia	Yes	No
Sub-Saharan Africa	Yes	No
Alzheimer's Disease International (10/66)	Yes	No

HRS Reported Decrease in Dementia Prevalence Rate

Table 2. Cognitive Function, at Age 65 Years or Older, in the 2000 and 2012 Cohorts^a

Cognitive Function	No. (%) [95% CI]		2012 (n = 10 511) Crude Rate ^b	Age- and Sex-Standardized Rate ^{b,c}
	2000 (n = 10 546)			
Normal	6966 (67.2) [65.8-68.6]		7114 (72.4) [71.1-73.6]	7114 (72.6) [71.1-73.6]
CIND	2293 (21.2) [20.1-22.3]		2224 (18.8) [17.8-19.9]	2224 (18.8) [17.8-19.9]
Dementia	1287 (11.6) [10.7-12.7]		1173 (8.8) [8.2-9.4]	1173 (8.6) [8.1-9.3]

Abbreviation: CIND, cognitive impairment–no dementia.

^a Values in parentheses are weighted percentages (95% CIs) derived using the HRS sampling weights to adjust for the complex design of the Health and Retirement Study.¹⁶

^b $P < .001$ for difference between 2000 and 2012.

^c The age- and sex-standardized weighted percentages, after direct standardization of the 2012 cohort to the 2000 cohort.

- Reported decrease rate from 11.6% in 2000 to 8.8% in 2012, even in presence of ↑hypertension, diabetes and obesity
- Population had ↑education levels, higher net worth, ↑late life overweight or obesity
- Reported prevalence rates

ADAMS Estimates Dementia & Alzheimer's Prevalence Number & Rate in US

- Prevalence number is 2.3 million living with Alzheimer's; 4.97 million living with all-cause dementia
- Prevalence rate is 13.67% of 71 years + with all cause dementia and 9.5% with Alzheimer's disease
- Alzheimer's accounted for 69.9% of all cases of dementia

Table 3
National prevalence of dementia and Alzheimer's disease, by age categories

Age (years)	All dementia			Alzheimer's disease		
	Combined	Men	Women	Combined	Men	Women
71-79	4.97 (2.61-7.32)	5.25 (1.25-9.25)	4.76 (1.82-7.70)	2.32 (1.26-3.37)	2.30 (0.80-3.81)	2.33 (0.95-3.70)
80-89	24.19 (19.28-29.11)	17.68 (11.66-23.70)	27.84 (20.41-35.28)	18.10 (13.47-22.74)	12.33 (5.82-18.84)	21.34 (14.44-28.24)
90+	37.20 (25.36-49.03)	44.59 (21.70-67.47)	34.69 (23.36-46.02)	29.60 (18.59-40.61)	33.89 (10.00-57.77)	28.15 (17.61-38.69)
Total	13.67 (11.21-16.12)	10.80 (7.55-14.50)	15.53 (12.23-18.83)	9.51 (7.41-11.61)	6.77 (4.25-9.85)	11.29 (8.35-14.23)

Weighted percentages and (95% confidence interval).

Framingham Reported Trends in Decreased Incidence of Dementia

Variable	No. of Cases of Dementia	Total No. of Observation Periods	P Value for Interaction	5-Yr Hazard Ratio (95% CI) [†]				P Value for Trend
				Epoch 2	Epoch 3	Epoch 4	Trend [‡]	
Age at entry (yr)			0.82					
60–69	42	4418		0.43 (0.18–1.00)	0.36 (0.15–0.89)	0.38 (0.15–0.93)	0.65 (0.47–0.89)	0.008
70–79	133	3229		0.91 (0.59–1.42)	0.67 (0.42–1.07)	0.64 (0.36–1.11)	0.83 (0.68–1.00)	0.047
≥80	196	1368		0.86 (0.56–1.33)	0.72 (0.48–1.09)	0.68 (0.44–1.06)	0.86 (0.74–1.01)	0.06

- Decreasing age-specific incidence in Framingham over time
- Similar reports from Sweden, Netherlands, Germany & UK

Estimates of Prevalence

Number and Rate of Alzheimer's disease

- Based on CHAP
- 65+ estimates 5.2 million Americans living with Alzheimer's disease
 - ADAMS 71+

Table 1 Predicted number of people in the United States with Alzheimer disease (in millions) and percent of the group affected, by age group and year

Year	Aged 65–74 years		Aged 75–84 years		Aged 85 years or older		Total no.
	No.	Percent	No.	Percent	No.	Percent	
2010	0.7	3.0	2.3	17.6	1.8	32.3	4.7
2011	0.7	3.0	2.3	17.5	1.9	32.1	4.8
2012	0.7	2.9	2.3	17.4	1.9	32.1	4.9
2013	0.7	2.9	2.3	17.3	2.0	32.1	5.0
2014	0.8	2.9	2.3	17.2	2.0	32.1	5.0
2015	0.8	2.9	2.3	17.1	2.0	32.1	5.1
2016	0.8	3.0	2.4	17.0	2.0	32.1	5.2
2017	0.9	3.0	2.4	16.9	2.1	32.1	5.3
2018	0.9	3.0	2.5	16.7	2.1	32.2	5.5
2019	0.9	3.1	2.6	16.7	2.1	32.2	5.6
2020	1.0	3.1	2.7	16.7	2.1	32.2	5.8
2030	1.3	3.3	4.2	17.2	2.9	32.9	8.4
2040	1.3	3.4	5.4	18.0	4.9	34.6	11.6
2050	1.3	3.3	5.4	18.5	7.0	36.6	13.8

2016 Facts & Figures



5.4

million Americans of ALL ages
will have Alzheimer's in 2016

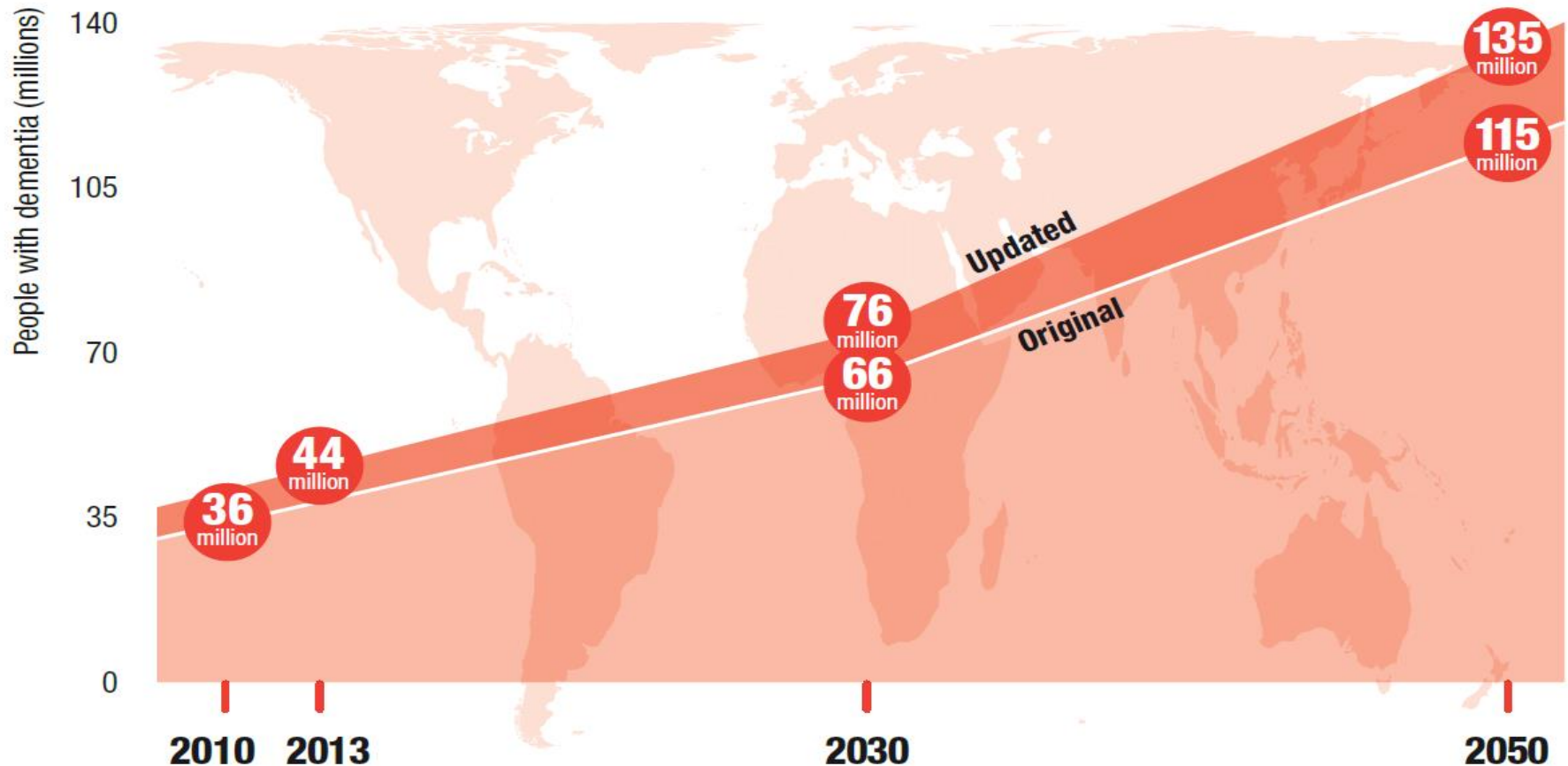
	Rate (65+)	Number (65+)
2013	11.3%	5.0 Million
2016	10.5%	5.2 Million

Other Countries Report Increasing Prevalence of Dementia

- China
 - ADI estimates dementia prevalence rate increased from 5% to 7%
- Sub-Saharan Africa
 - ADI estimates dementia prevalence rate increased from ~3% to 4.76%
- Colombia
 - Estimate approximately 260,000 people with Alzheimer's by 2020 (prevalence number)
 - Current estimates may be off by 50%



Increasing Global Prevalence Number of Dementia (2010-2050)



Source: Prince et al. The Global Impact of Dementia: An analysis of prevalence, incidence, cost and trends, Alzheimer's Disease International, 2015

What to Make of All This?

- Dementia incidence and prevalence rates appear to be declining in some countries and populations
- This is welcome news, and points to the importance of public health strategies to prevent many cases of dementia
- However, experts agree that the prevalence number, both within countries and globally, will continue to skyrocket
- **Dementia is the public health crisis of our time!**

Initiatives, Future Directions & Opportunity

IDEAS Study

- IDEAS study is modeled after the largest successful coverage with evidence development (CED) study in oncology
- Powered sufficiently to demonstrate changes in health outcomes & patient care management as result of amyloid PET scan



[http://www.
ideas-study.org/](http://www.ideas-study.org/)

IDEAS Steering Committee

Steering Committee Chair

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Alzheimer's Association

Study Chair

Gil Rabinovici

University of California, San Francisco

Study Co-Chairs

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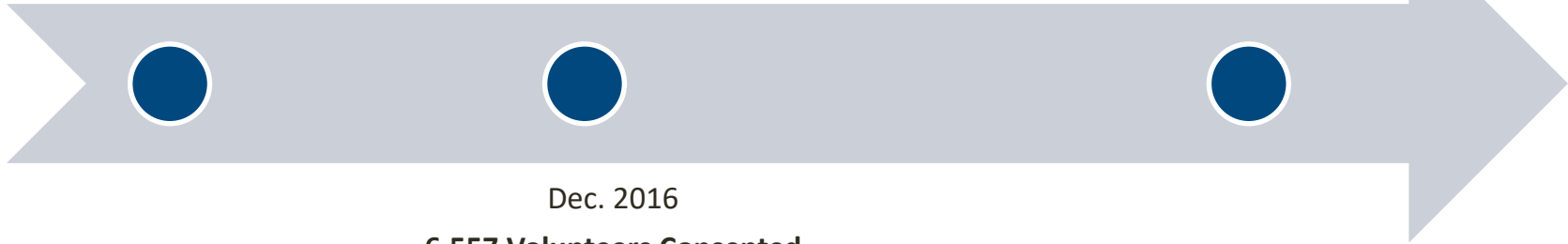
Mark Mintun

Avid Radiopharmaceuticals

IDEAS Progress

Launch:
Feb. 2016

18,488 PET Scans in
24-36 months



6,557 Volunteers Consented

5,128 PET Scans Completed

96.1% Consented to Archive Images

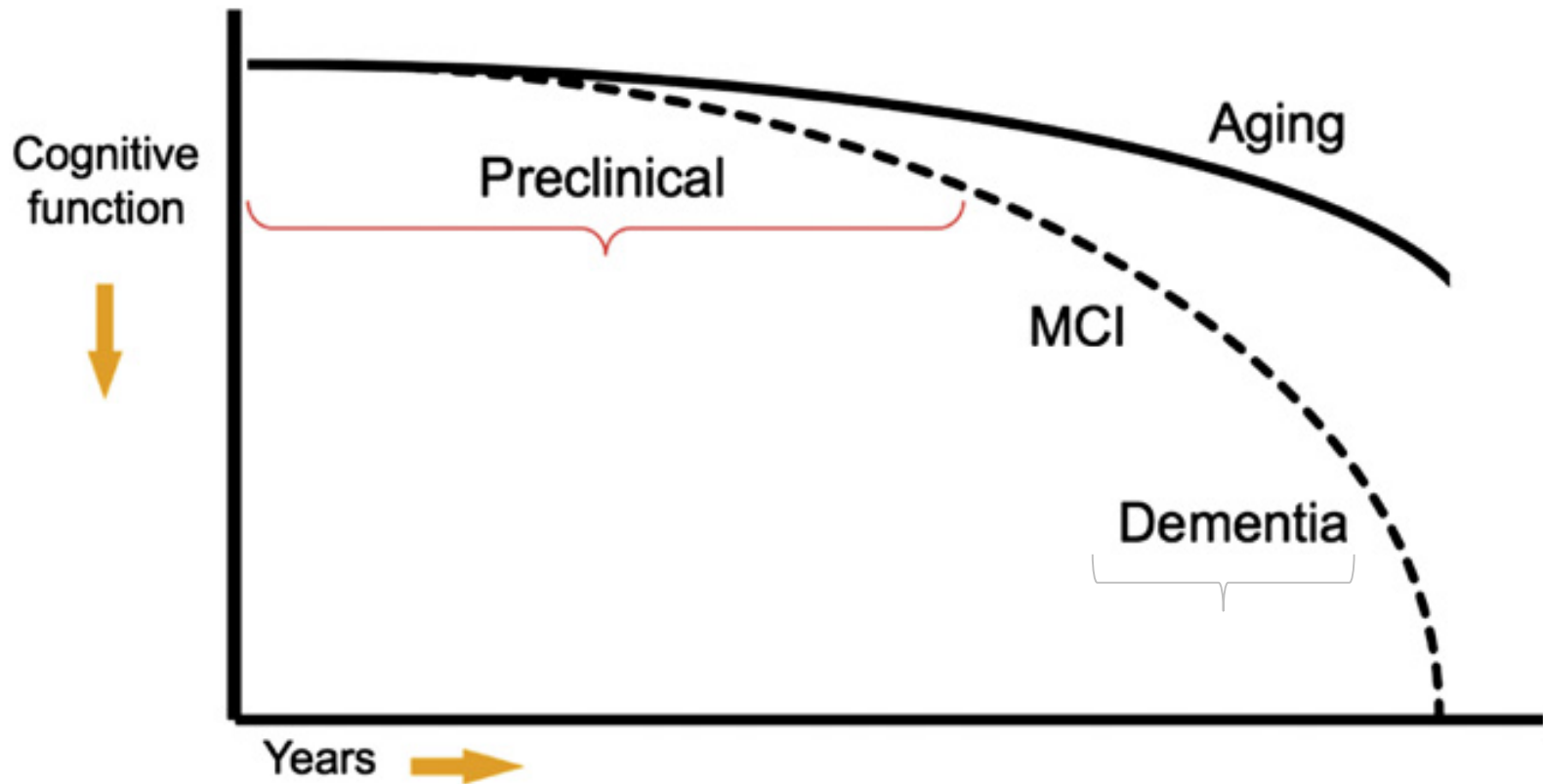
Add-on Studies (BHR, Genetics, Caregiver Survey)

-
- ☐ 725 Dementia Experts from 428 Clinics Activated
 - ☐ 286 PET Centers Activated
 - ☐ 62.3% MCI / 37.7% Dementia

Amyloid Status:

- ☐ β -amyloid (+): MCI = 54.5% Dementia = 69.2%

How Does This Impact NIA-AA Diagnostic Guidelines?



Cliff Jack to present revision process and update of the of NIA-AA Guidelines, Friday at 2pm

Why Revisit the Guidelines Now?

- Increased understanding of the disease & progression
- Advances in biomarkers – new tools, technologies
- Learnings from recent clinical trials
- Need more evidence of biomarker behavior in aging and in disease



Current Landscape of Clinical Trials In Alzheimer's

Phase of Trial Type of Clinical Trial*

Phase 1

52 – 44

ations, 1
trials

**Need to increase
shots on goal**

ons,
diagnostic trials

to registration trials, 5 for
agitation/ sleep, 5 in academic sites,
4 medical devices, 3 diagnostic trials

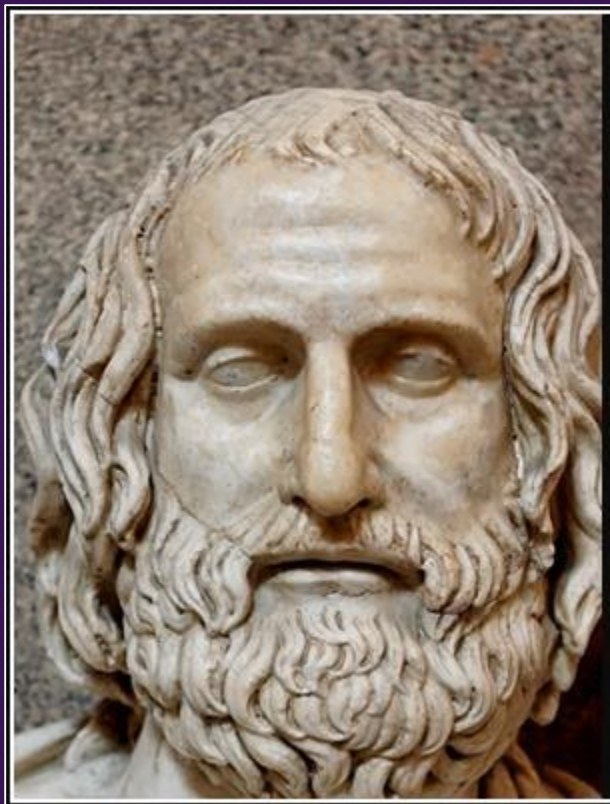
* As of October 1, 2016

Alzheimer's Association Making Strategic Investments to Diversify Portfolio

- Understanding sex biology contributions to underlying biology of disease – funded 9 projects in 2017
- Emphasis on vascular contributions to Alzheimer's & dementia, basic science and clinical add on amyloid/ tau imaging to vascular dysfunction program project
- Add on tau imaging to clinical trials –LEARN, A4, DIAN-TU, DIAN-TU NexGen, API Generation Study
- Advanced nearly 20 clinical trials in last 3 years through PTC – diverse targets in inflammation, neuronal growth factors, tau, alternative energy sources, and repurposed agents (cancer, hypertension)

CTAD presentations on diverse targets include:

- amyloid (BACE, gamma secretase, monoclonal Abs, active vaccines, kinase inhibitors)
- tau aggregation
- inflammation
- neuroprotection
- allopregnanolone (hormone)
- transcranial magnetic stimulation w/cognitive training
- lifestyle & diet/metabolic
- gut microbiota



“Leave no stone
unturned ... In our
search for an
effective treatment
for Alzheimer’s”

- Euripides

THE END OF
ALZHEIMER'S
STARTS
WITH YOU

alzheimer's  association®

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