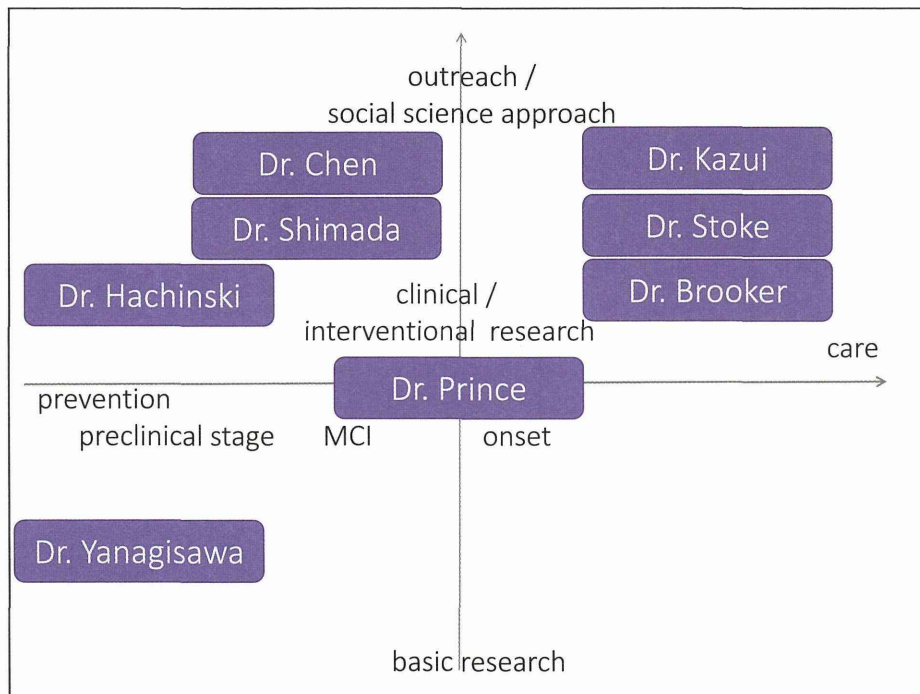
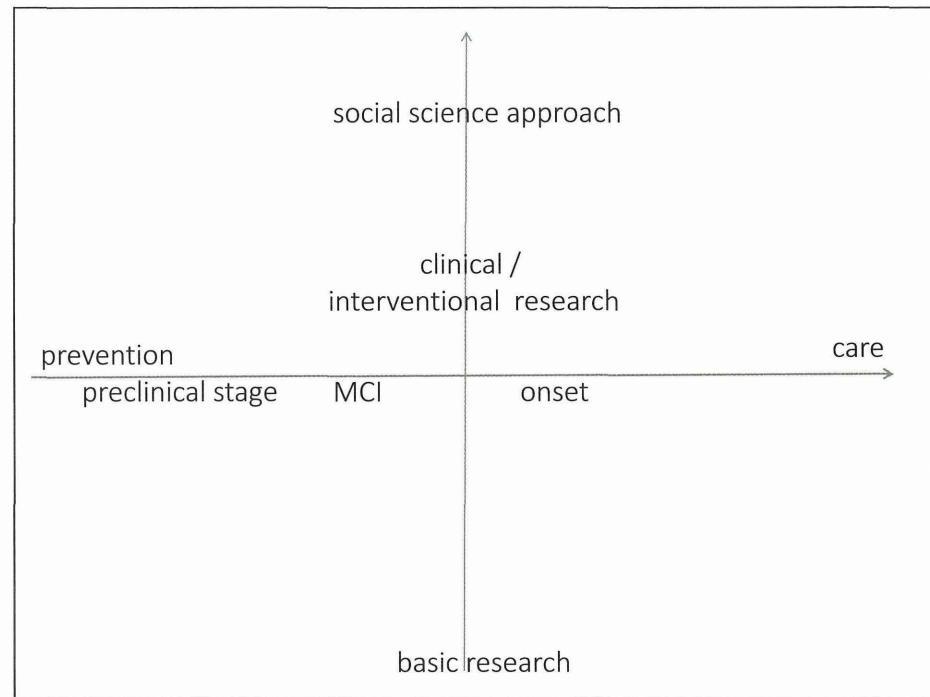


<p>トピック2：認知症予防とケアへの科学的アプローチ</p> <p>前日のセッション2でまとめられた認知症予防とケアの科学的側面について各学会や研究者から、研究の最前線の話をお話者から話を聞きましょう</p>
鈴木 隆雄(独立行政法人国立長寿医療研究センター)
Martin Prince (キングス・カレッジ・ロンドン, 英)
原山 優子(総合科学技術・イノベーション会議)
森 啓(大阪市立大学)
Philippe Amouyel (アルツハイマー病対策財団, 仏)
Yves Joanette (カナダ保健研究機構& モントリオール大学, 加)
大内 耐義(虎の門病院)

Day 1 Session-2 Scientific Aspects of Dementia Prevention and Care



National Center for Geriatrics & Gerontology
Takao Suzuki



Dr. Prince: Proposal for the future research

- analysis of global prevalence of dementia
- Identification of modifiable factors & pharmacological / non-pharmacological intervention for risk reduction

education	in early life
hyper tension	in midlife
diabetes	in mid-to-late life
smoking	in mid-to-late life
- We have to continue our efforts to establish other robust risk factors for prevention of cognitive decline and dementia

Preventing Dementia: Can We Do Better?

Focusing on the treatable Vascular Component
Trying new **multimodal integrated approaches**

Vascular risk factors may be related to cognitive decline
e.g., blood pressure control, weight reduction, smoking cessation, etc.

Dr. Hachinski

prevention
preclinical stage

Interventions of 3 steps

- 1) identification of risk factors
- 2) enhancing motivation
- 3) enablement in the society
e.g., education in school/work, supported by IT technologies social media environment, etc.

↑
outreach /
social science approach

Detection of preclinical Alzheimer's disease for the preemptive therapy
~ to stop Alzheimer Disease before It Starts !

Research question:
How should you know the pathological change before clinical onset?

care →

1) Amyloid PET: very costly ~ hardly available \$ 500
2) Blood test: low cost only 10 cents
Novel procedure to detect Aβ from plasma using mass spectrometry

prevention
preclinical stage

Dr. Yanagisawa

basic research

A Scheme for Preventing Cognitive Decline in the Community

Aim: Delay the onset of dementia
Target population: MCI
Early detection by population screening

Dr. Shimada

prevention
preclinical stage

Intervention
~ New method of preventive intervention of dementia
COGNICISE = Cognitive training + Exercise

Results: cognitive improvement
reduction of brain atrophy
~ hippocampus + whole brain

Conclusion

1. Early detection of MCI in the community is critical for prevention of dementia
2. Exercise, especially COGNICISE, may useful to maintain cognitive functions in MCI subjects

Dementia Prevention Study and Policy in Taiwan

Taiwan Health Intervention Study on Community-dwelling Elders (THISCE)

1 Nationwide randomized controlled trial to validate clinical effects of THISCE integrated intervention program
Physical activities
Cognitive training
Dietary counselling
Chronic disease management

2 Developing social marketing strategies to facilitate nationwide implementation

prevention
preclinical stage

Dr. LK Chen

Dr. Piu Chan presented the Current Status of Dementia and Challenges in China

Person-Centred Dementia Care Research

The gist of person-centered care

V = Values people

I = Individuals needs

P = Perspective of service user

S = Supportive social psychology

Dr. Brooker

care

Intervention Results

Qualitative results QOL improvement
reduction in anti-psychotic medication

basic research

The Need To Transform Services In Care Homes

<implementation of person-centered care in care homes>

- 1) 2009-2014 ~ Antipsychotic reduction program
"Person First, dementia second staff training program"

Dr. Stoke

care

Results

2009 - 35.0%

2013 - 19.5% residents with dementia
prescribed antipsychotics

basic research

Effect of a regional cooperative system for dementia patients with a collaboration notebook

Dr. Kazui

Needs for collaboration among the many people caring for dementia patients living at home

↑

The collaboration notebook

to support patient life at home

- 1) patient's clinical information
- 2) information for sharing among stakeholders

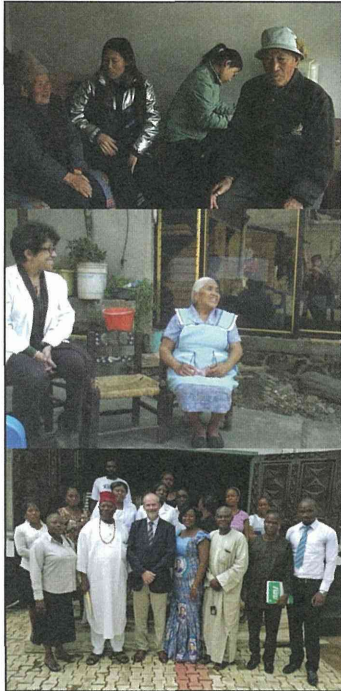
care

<use of the notebook>

inter-professional collaborative meeting
education for healthcare professionals
& caregivers



Thank you for your attention



Messaging the message

(who?, what?, where?, when?, why?)

Martin Prince

Centre for Global Mental Health
King's College London
1066drg@iop.kcl.ac.uk



Alzheimer's Disease
International
The global voice on dementia

World Alzheimer Report 2014

Dementia and Risk Reduction

AN ANALYSIS OF PROTECTIVE AND MODIFIABLE FACTORS

Global Observatory for
Ageing and Dementia Care

Martin Prince
Emiliano Albanese
Maelenn Guerchet
Matthew Prina

The message (modifiable risk factors for dementia)

Exposure	Period
Education	Early life
Hypertension	Midlife
Diabetes	Mid- to late-life
Smoking	Mid- to late-life



Messaging the message

- **Dementia is a preventable condition**
- **Myth-busting**
 - It's an inevitable, normal part of ageing
 - There is nothing that we can do
- **Dementia is everybody's business**
 - never too early... (brain health promotion)
 - never too late... (dementia prevention)



Dementia is a preventable condition

- Not widely understood or accepted
- Needs to be integrated and mainstreamed within emerging global health NCD prevention agendas e.g '25 by 25'
 - Tobacco control, salt, alcohol, inactivity, CVRF management
 - Current focus is on 'premature' mortality
 - Older people marginalised
 - Actual societal benefit may be much wider and greater
 - Global societal cost of dementia = \$600bn

A7

It's never too early.... (brain health promotion)

- Education
 - As a source of cognitive/ brain reserve
 - As 'education for life'
 - Benefits with every additional level from primary > tertiary (and beyond?)
- Upstream determinants of adult cardiovascular risk
 - Poverty, inequality
 - Foetal nutrition/ childhood obesity
 - 'Habits of a lifetime'
 - Diet
 - Exercise
 - Smoking initiation

A7

It's never too late.... (dementia prevention)

- Evidence on smoking, diabetes
- There may be additional benefits from multicomponent interventions for high CVD risk groups
 - FINGER trial
 - Polypill?
- Older people not prioritised in NCD prevention...
...despite equivalent or greater health benefits
- Concerns about dementia may be a powerful motivator for behavioural change
- NB - social learning theory – older people as authoritative communicators

A7

Can prevention help to reduce the burden of dementia?

Exposure	Meta-analysed RR - association with AD	Population attributable risk fraction (PARF%)	(Norton et al 2014)
Diabetes	1.46 (1.20-1.77)	2.9%	
Midlife hypertension	1.61 (1.16-2.24)	5.1%	
Midlife obesity	1.60 (1.34-1.92)	2.0%	
Physical inactivity	1.82 (1.19-2.78)	12.7%	
Smoking	1.59 (1.15-2.20)	13.9%	
Depression	1.65 (1.42-1.92)	7.6%	
Low education	1.59 (1.35-1.86)	19.1%	
COMBINED TOTAL		28.2%	

10% reduction in risk exposure – (8.3% reduction)

25% reduction in risk exposure – (15.3% reduction)

A7

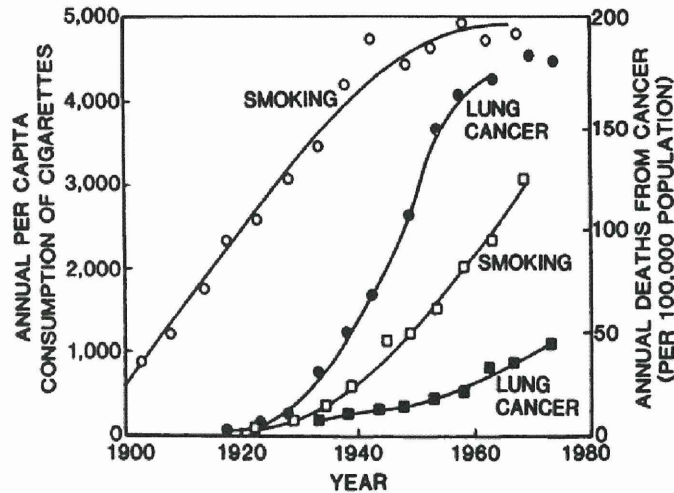


Chart 4. Trends in smoking prevalence and lung cancer, British males and females. The data for this chart are for England and Wales. In men, smoking (○) began to increase at the beginning of the 20th century, but the corresponding trend in deaths from lung cancer (●) did not begin until after 1920. In women, smoking (□) began later, and the increase in lung cancer deaths in women (■) has only appeared recently. Redrawn with permission from the paper of Cairns (4).

A7

Monitoring progress

- Cardiovascular health is improving in many developed countries
 - Less smoking, declining BP and cholesterol
 - Increased physical activity
 - Prevalence of obesity and diabetes is increasing
 - Falling incidence of heart disease and stroke
- Better education
- Natural experiment
 - Track change in risk factor profile
 - Predicted vs. observed change in dementia incidence
 - Attribute change in incidence to individual risk factors

A7

Articles

A two-decade comparison of prevalence of dementia in individuals aged 65 years and older from three geographical areas of England: results of the Cognitive Function and Ageing Study I and II

Fiona E Matthews, Antony Arthur, Linda E Barnes, John Bond, Carol Jagger, Louise Robinson, Carol Brayne, on behalf of the Medical Research Council Cognitive Function and Ageing Collaboration

Summary

Background The prevalence of dementia is of interest worldwide. Contemporary estimates are needed to plan for future care provision, but much evidence is decades old. We aimed to investigate whether the prevalence of dementia had changed in the past two decades by repeating the same approach and diagnostic methods as used in the Medical Research Council Cognitive Function and Ageing Study (MRC CFAS) in three of the original study areas in England.

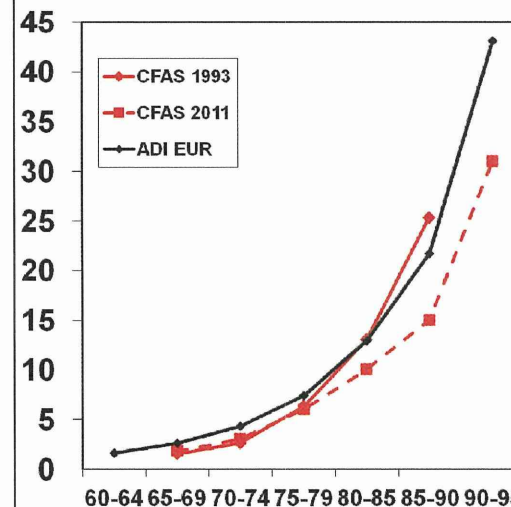
Methods Between 1989 and 1994, MRC CFAS investigators did baseline interviews in populations aged 65 years and older in six geographically defined areas in England and Wales. A two stage process, with screening followed by diagnostic assessment, was used to obtain data for algorithmic diagnoses (geriatric mental state-automated geriatric examination for computer assisted taxonomy), which were then used to estimate dementia prevalence. Data from three of these areas—Cambridgeshire, Newcastle, and Nottingham—were selected for CFAS I. Between 2008 and



Lancet 2013; 382: 1405-12
 Published Online
 July 15, 2013
[http://dx.doi.org/10.1016/S0140-6736\(13\)61570-6](http://dx.doi.org/10.1016/S0140-6736(13)61570-6)

See Comment page 1384
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 MRC Biostatistics Unit,
 Cambridge Institute of Public

Prevalence may already be falling in HIC... e.g MRC CFAS (England) 1993-2011



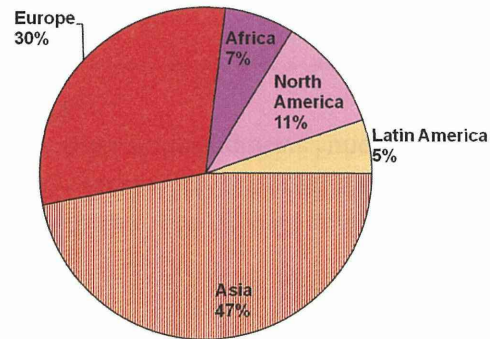
Standardised prevalence
 1993 - 8.3%
 2011 - 6.5%

Prevalence of dementia nearly **one third lower** in 2011 compared with 1993

OR 0.7 (0.6-0.9)

Matthews et al, Lancet 2013

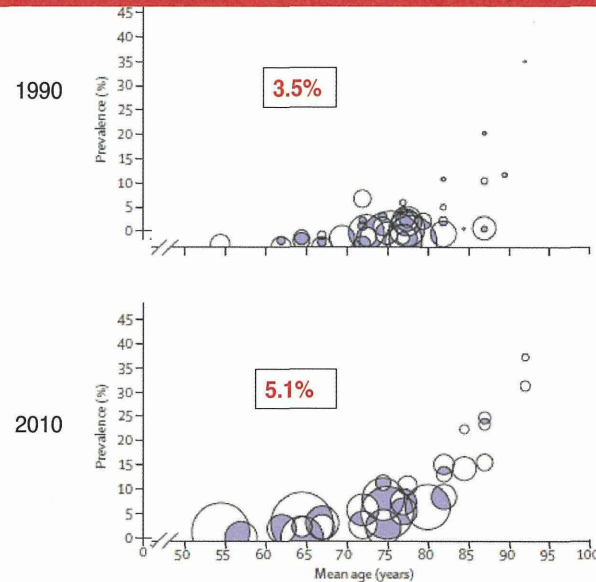
Global Distribution of Incident Dementia (7.7 million new cases per year)



One new case every 4 seconds!

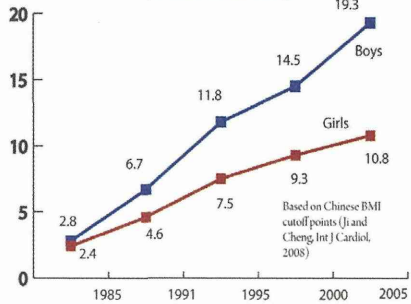
WHO Report 2012 – Dementia a Public Health Priority

Increasing prevalence of dementia in China?

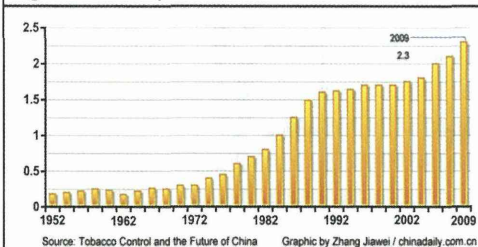


The prevalence of dementia in China 1990-2010
Chen et al, Lancet 2013

China: Trends in the overweight and obesity prevalence among school children (northern coastal cities)



Cigarette consumption in China



An index of the quality of public healthcare – detection and control of hypertension

	Detection	Control	Detected and controlled
Good			
Peru (rural)	97%	93%	90%
Peru (urban)	93%	78%	73%
Puerto Rico	91%	65%	58%
Moderate			
Mexico (urban)	80%	55%	44%
Venezuela	83%	50%	42%
DR	82%	48%	39%
Mexico (rural)	73%	52%	38%
China (urban)	79%	45%	36%
Poor			
S Africa	82%	32%	24%
Cuba	70%	34%	24%
India (rural)	43%	43%	18%
India (urban)	44%	37%	16%
China (rural)	51%	5%	3%

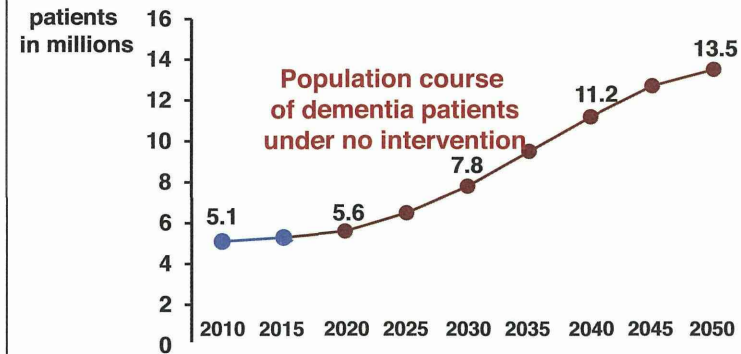
Prince et al, Journal of Hypertension, 2011



Efficient prevention of dementia based on medical evidence and an financial view

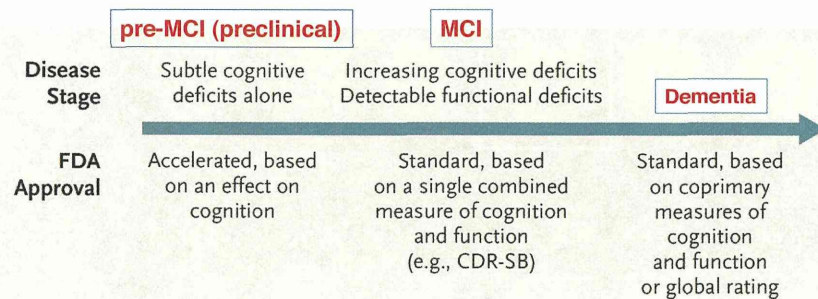
Predident, Japan Society of Dementia Research
 Professor, Osaka City University, Medical School
Hiroshi Mori

A 5-yr delay of disease onset result in a big reduction of AD patients.



Reported by Alzheimer's Association, 2010

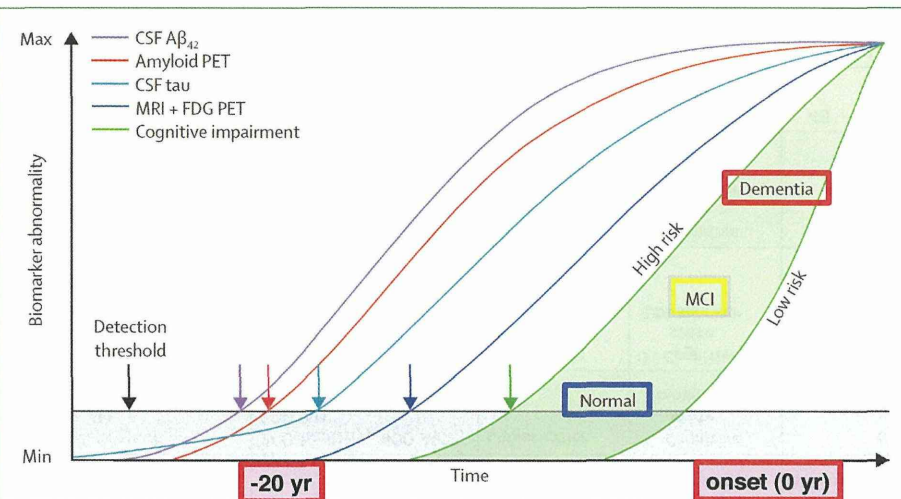
From cure to prevention of dementia



The US-FDA has developed guidance for the design and execution of clinical trials involving patients who do not present with dementia.

from Kozauer N and Katz R., *New Engl J Med* 2013; 368: 1169.

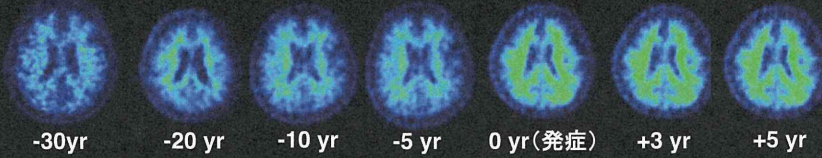
Revised model from ADNI & DIAN studies



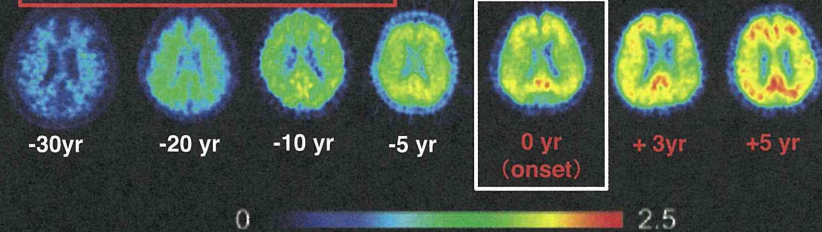
Petersen RC (2010) *Lancet neurol* 9: 4-5.;
 Juck Jr, C. et al (2013) *Lancet neurol* 12: 207-16.
 Bateman RJ (2012) *N Eng J Med* 367: 795-802.

A pathological course of amyloid-PET (DIAN)

Non-career (normal)



Career of causal genetic defect



Cases from Osaka City Univ Hospital to refer Bateman RJ (2012) N Eng J Med 367: 795-802.

Clinical challenges

Clinical trials	participants	Drugs (new concepts)	Target to challenge	Budgets million US\$
① ADNI project (Weiner M)	200 healthy, 400 MCI, 200 AD Also, Japan running	Observation	① Cognitive state ② biomarker	67
② Anti-Amyloid Treatment of Asymptomatic Alzheimer's (A4) (Sperling R)	1,500 amyloid-PET positive	Solanezumab	① Cognitive state ② biomarker	36
④ Dominantly Inherited Alzheimer Network (DIAN, DIAN-TTU) (Morris J, Bateman R)	240 familial AD in US, UK, Germany, Australia Also, Japan just joining	Observation + Solanezumab Gantenezumab One more?	① Cognitive state ② biomarker	6
⑤ Banner project (Reiman E, Tariot P)	1,300 healthy subjects in 60-75yr ApoEε4/ε4	BACE-I CAD106	Disease onset & more?	45 + more
③ Alzheimer's Prevention Initiative (API) (Reiman E, Lopera F)	300 familial AD in Colombia, Presenilin-1 E280A	Crenezumab	① Cognitive state ② biomarker	116

from Underwood BY, Science Insider, Science 2013

Current situation of dementia in Japan

Dementia : 4,620,000 patients



general practitioner : 100,000 doctors
(dementia supporter educated : 3,000 doctors)



Specialists to see dementia authorized by two academic societies (Japan Society of Dementia Research & Japanese Psychogeriatric Society) : 1,800 doctors

Perspective for dementia science

