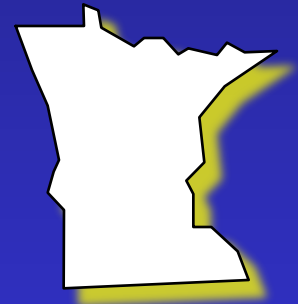


Epilepsy and Aging

Ilo E. Leppik, MD

Director of Research, MINCEP Epilepsy Care
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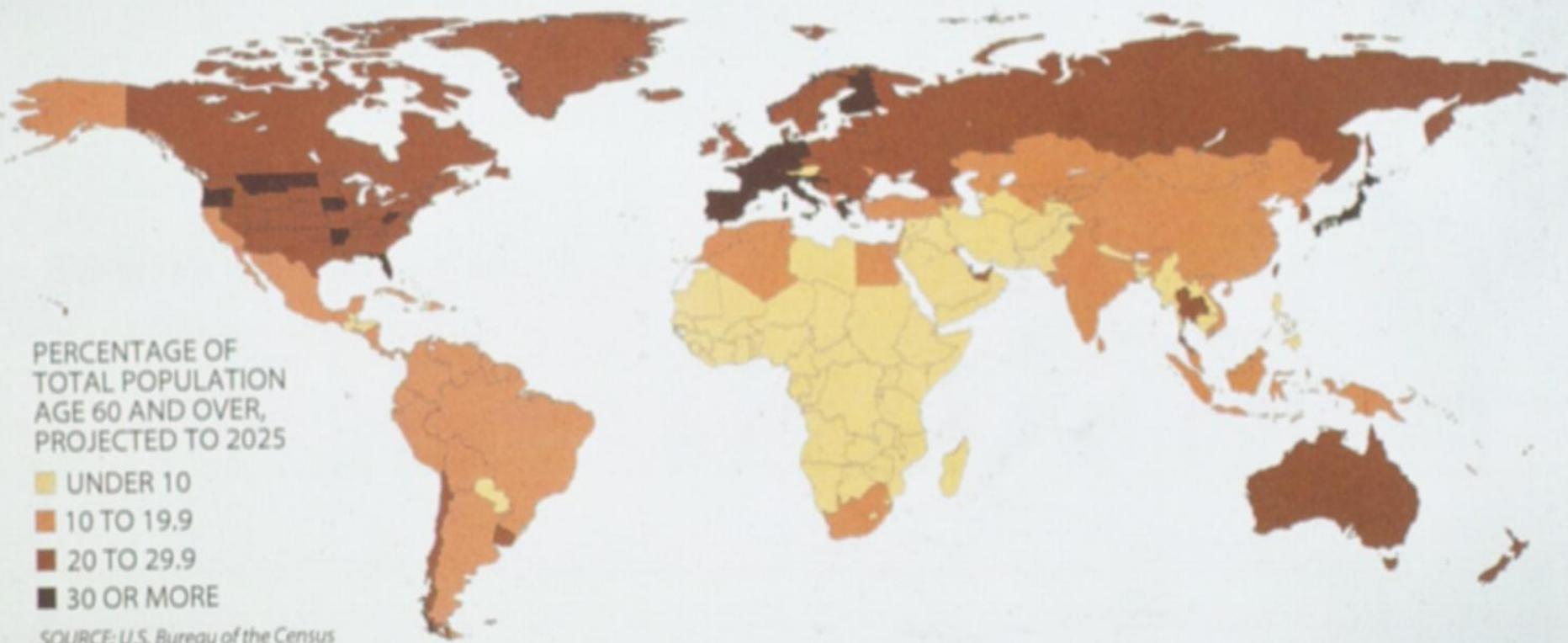
The Elderly are or will be us

The Future of the Old

PERCENTAGE OF
TOTAL POPULATION
AGE 60 AND OVER,
PROJECTED TO 2025

- UNDER 10
- 10 TO 19.9
- 20 TO 29.9
- 30 OR MORE

SOURCE: U.S. Bureau of the Census



Outline

- What happens to persons with epilepsy as they become over 50 years of age from my practice in the Twin Cities since 1976
- New onset epilepsy after age 50
 - In community dwelling
 - In nursing homes

What happens to persons with epilepsy as they reach 50+

- No scientific studies available
- My experience of 35 years
 - Many stay the same
 - Some get better as we get new drugs
 - A few get worse if they have many seizures
 - A few die from SUDEP or other causes
 - Group home residents often outlive others

What happens to the liver

- NIH sponsored study
- Used non-radioactive intravenous phenytoin and carbamazepine developed at the U of MN
- Selected persons with no other medical illnesses
- Oldest 93 y/o on phenytoin since 1940's

Liver function

- Only a minor change in speed of liver metabolism with age
- Major factor in rate of drug metabolism was the persons specific genetic makeup
- Liver failure from antiepileptic drugs is overrated (MINCEP study)
 - Test at start of use and rarely routinely
 - Test immediately if sick (stomach pain)

Long term effects of drugs

- Very few if any long term effects
- Bone mineral density
 - Major cause is normal aging, lack of exercise
 - Some antiepileptic drugs may increase bone mineral density loss in some persons
 - Phenytoin, gabapentin (Dr. Walczack)

Definition of the Elderly

- AARP (American Association of Retired People) in USA
 - Now 50 years to become a member
- Government pension definition - varies from country to country and time to time
- Standard is 65 years now in USA

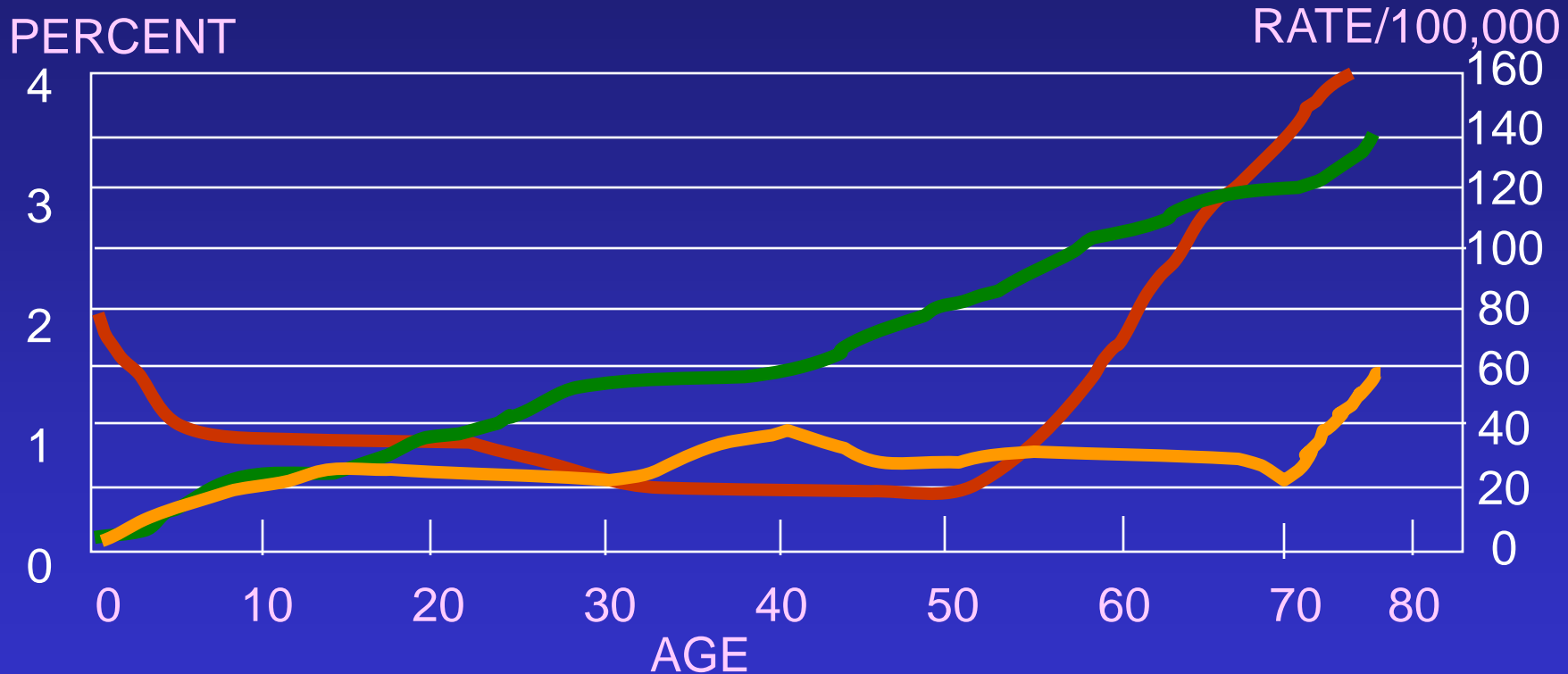
Why is the Social Security Retirement Age Set at 65?

Origins of Retirement at 65

**Otto von
Bismarck
(1815-1898)**



EPILEPSY: PREVALENCE, CUMULATIVE INCIDENCE AND INCIDENCE RATES



1975-1984

PREVALENCE 1980
INCIDENCE RATE

CUMULATIVE INCIDENCE
DERIVED FROM 1975-1984 RATES

Rochester, Minnesota

Incidence

- **In the USA, approximately 181,000 persons developed epilepsy in 1995, and approximately 68,000 of these were over age 65.⁺**
- **In Finland, new cases of epilepsy in elderly exceed those in children.***

⁺ Epilepsy Foundation of America. *Epilepsy, a Report to the Nation*. Landover, MD. 1999.

*Sillanpaa M, et al. Temporal changes in the incidence of epilepsy in Finland: nationwide study. *Epilepsy Res.* 2006 Oct;71(2-3):206-15.

NATIONAL
Examiner[®]

July 22, 1997

AMERICA'S FAVORITE FAMILY WEEKLY

EXP
REA

LIZ IN HIDING

**Seizure
fear
keeps
her
behind
closed
doors!**

— say insiders



Computer re-creation

Prevalence in Community Dwelling Elderly

- An estimate of the prevalence of epilepsy (active cases in a population) can be made from a study of veterans. Of a total of 1,130,155 veterans 65 years and older identified from the national database of 1997-1999, 20,558 (1.8%) were identified as having epilepsy by having an ICD-9-CM code representative of this condition.*

*Pugh MJV, et al. Potentially inappropriate antiepileptic drugs for elderly patients with epilepsy. J Am. Geriatr Soc. 2003; 52., 417-422.

Elderly are Not Homogenous

- Age
 - Young 65-74
 - Middle 75-84
 - Old 85 +
 - Damn old 100+
- Health status
- Living arrangements
 - Community dwelling
 - Nursing home residents

Young
healthy

Middle
healthy

Old
healthy

Young
Medical
problems

Middle
Medical
Problems

Old
Medical
problems

Young
frail

Middle
frail

Old
frail

Almost all of Epilepsy in Elderly is of New Onset

Causes of Seizures in the Elderly

- Cardiac
- Metabolic
- Respiratory
- Drugs/alcohol
- Infections
- Epilepsy

Causes of Epilepsy in Elderly

- Stroke 33 % of known causes
 - After a stroke 10% will have early seizure; another 10% within 2 years
- Tumor - 5-10%
- Alzheimer's 5 %
- Trauma 10 %
- Undetermined 50%

Co-morbidities-medical

- Incidence and severity of these is a Known Unknown
 - Depression
 - Anxiety
 - Visual impairment
 - Osteoporosis
 - Memory loss
 - Other medical problems

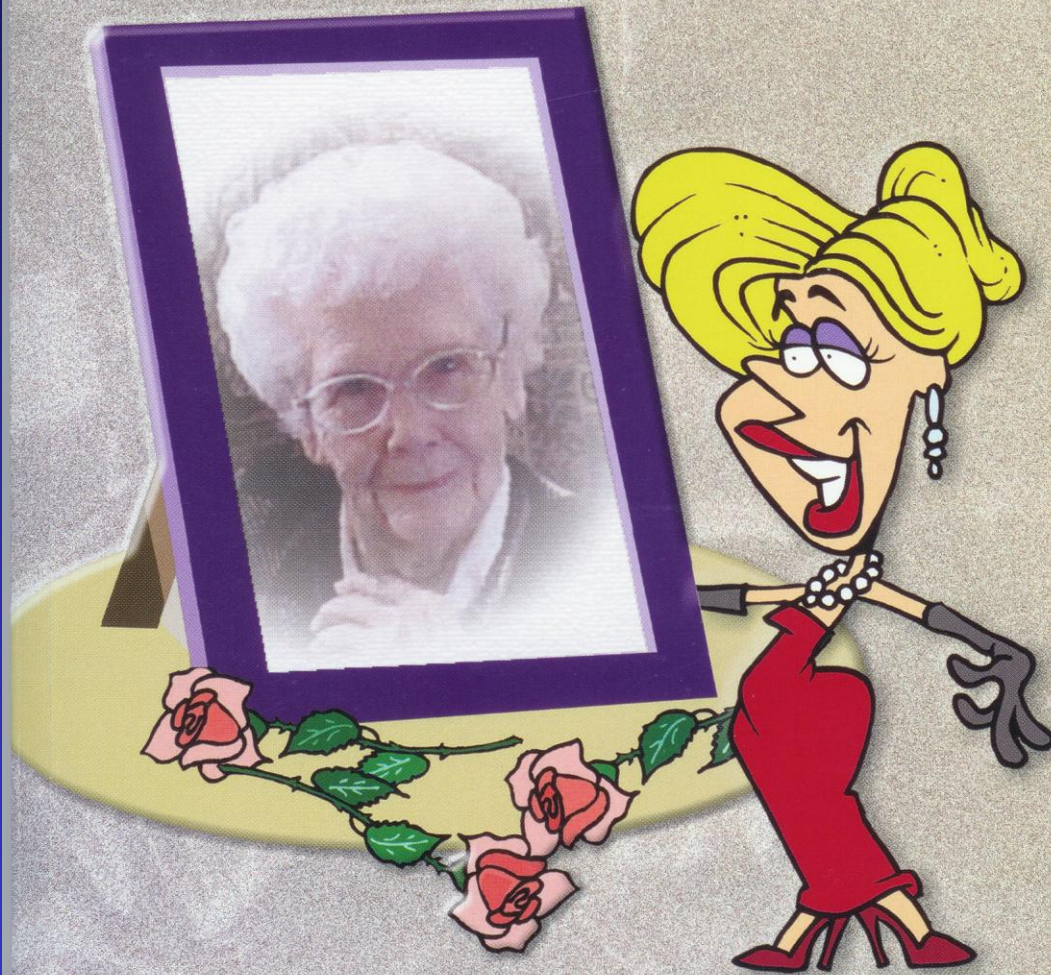
Social Issues

- Loss of driving privileges
- Lack of spousal support
- Emotional shock of developing epilepsy
- Cost of medication
- Fear of seizures, falling, embarrassment
- Known unknown = quality of life change

Problems of treatment

- 76 year old woman with new onset epilepsy
- Eventually on 2 drugs for epilepsy
- Levels for both in “therapeutic range”
- Alzheimer’s and Parkinson’s
- Admitted to our hospital in wheelchair-
unbound levels (free) very high.
- Drugs re-arranged- left hospital walking.

Two Sexy Widows



By Jeanette Fisher

Nursing Home Population

- Approximately 4.5%, of elderly are residents of a US nursing home (NH), and the lifetime probability of a person entering a NH in the US before death is estimated to be 43%.
 - Kemper P, Murtaugh CM. Lifetime use of nursing home care. *New England Journal of Medicine*. 1991;324(9):595-600.

Prevalence of Epilepsy in NHs

- Point prevalence studies state that at any given time 7-10% of the nursing home population has a diagnosis of epilepsy/seizure
- On admission, approximately 7-8 % have a diagnosis of epilepsy/seizure

Leppik. *Epilepsy in the Elderly*. Textbook of Geriatric Medicine, in press 2007

Incidence in Nursing Homes

- Information from over 8 Million persons from all US nursing homes
- New onset epilepsy in nursing homes is 10 times higher than in any other population.
 - » (Lynn Eberly principal investigator)

Miracle of the 20th Century

- In 1932, when Social Security introduced into the USA, life span was 52 years
- 75 years later, it is approximately 77
- In 75 years, 25 years was added to life
- Or 4 months, on average, for every year
- Miracle due, in part, to the medical-pharmaceutical industry complex.
- Will the miracle continue?

Goal in treatment of Epilepsy is
to improve Quality of Life for
our Elderly

Example of Quality of Life

My wife's grandmother: age 76 in 1957

