

Epidemiology of Hearing Loss Study (EHLS)

Funded by the National Institute on Aging

EHLS

- Began in 1993
- Participants in the BDES (n=3753; 83%)
- Examinations every 5 yrs
 - Additional examinations and interviews for some groups

What didn't we know in 1993?

- Number of people with hearing impairments
- Severity of impairments
- Risk of developing a hearing impairment
- How often is there continuing deterioration
- Why does hearing worsen with aging
- Does the middle ear stiffen with aging
- How many people have regular hearing care

What have we learned from Beaver Dam?

- Hearing impairments are common
 - 21% of 48-59 yrs
 - 90% of 80+ yrs
- Most are mild or moderate
 - Only 3% with severe hearing impairments
- 60% had not had a hearing test in 10 yrs
- 15% of people with hearing impairments used hearing aids
- Not due to middle ear changes

What have we learned from Beaver Dam?

- Risk of developing a hearing impairment
 - About 1 in 25 people each year

- Risk of worsening
 - About 1 in 10 people each year

Why do hearing impairments develop?

Clues from Beaver Dam

- Older age
- Men more than women
- Education
- Occupation
- Smoking
- Atherosclerosis
- Obesity
- Higher pulse rate
- Inflammation
- Diabetes
- Genetic Factors

Protective Factors

- HDL-cholesterol
- Exercise
- Statins and NSAIDS?



CIGARETTES CAN
BE DEADLY.

WHAT?

TOBACCO IS
CONSIDERED
ADDICTIVE

PARDON?

SMOKING
IS CARCINOGENIC

I CAN'T
HEEEEEAR
YOU...

TOBACCO
INDUSTRY

THEY'RE RIGHT.
CIGARETTES
DO HASTEN
DEAFNESS...

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Other studies of hearing

- National Health and Nutrition Examination Survey
- Nörd-Trøndelag Study
- Blue Mountains Eye Study
- Jacksonville Heart Study
- Hispanic Community Health Study

Olfactory impairments

- Added in 1998 at the request of NIA
- No other population-based studies of olfactory impairment in the US
- San Diego Odor Identification Test

Olfactory impairments: What we've learned from Beaver Dam

- Olfactory impairment is common (25%)
- Risk is high
 - About 1 in 40 people each year
- Risk factors
 - Age, diabetes, heavy alcohol consumption, deviated septum, nasal polyps
 - Exercise and statins protective

Cognitive Impairment

- Olfactory impairment
- Inflammation
- Atherosclerosis

What's next for EHLS?

Hearing, olfaction and cognitive impairments

Understand the effects of:

- Changes in inflammation
- Changes in large and small blood vessels
- Changes in medications



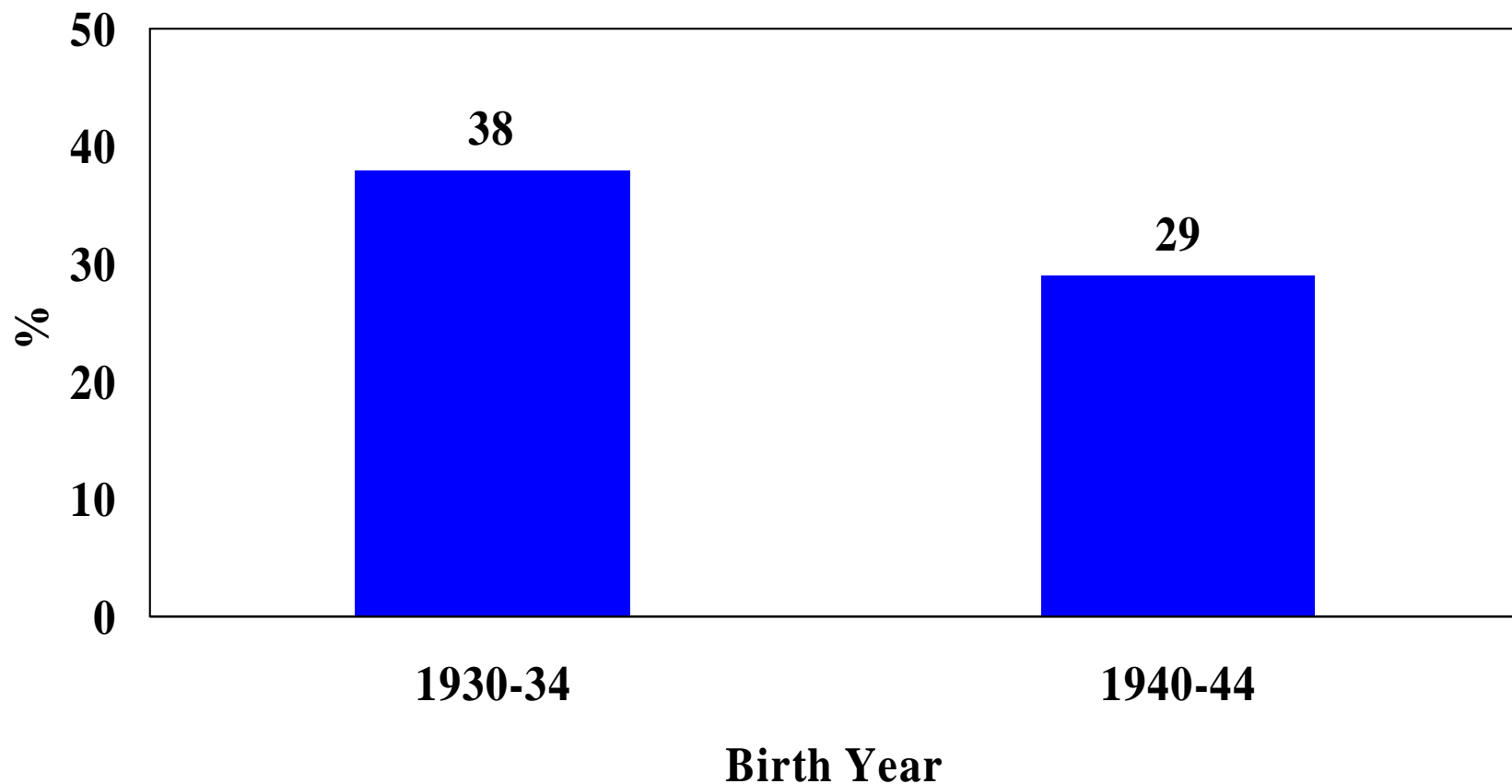
***Beaver Dam
Offspring Study***

NIH AG021917 – Funded by the National Institutes of Health

In the Year 2030

- 69 million hearing impaired adults age 45+
(58 million will be untreated)
- 3 million new cases each year

Prevalence of Hearing Loss by age 60



What will sensory aging be like for people
born in the last half of the 20th century?

EHLS born before 1947
Offspring born 1920s-1990s

Generational Differences

Born in the 1920s

- 106,521,537 people
- Life expectancy:
Male 53.6, Female 54.6
- Average annual earnings \$1236
- It took 13 days to reach CA from NY
- Great Depression, WWII

Born in the 1960s

- 177,830,000 people
- Life expectancy:
Male 66.6, Female 73.1
- Average annual earnings \$4743
- Space travel -
Armstrong and Aldrin
- Civil rights, Vietnam

Health-related changes: 1960s to 1990s

↓ Serious childhood infections (immunizations & antibiotics)

? Nutrition

↓ Smoking

↓ Cholesterol

↓ Hypertension

↑ Obesity and sedentary lifestyles

↓ Household sizes

↓ Noisy jobs

New exposures: plastics, adhesives, medications, Ipods,
etc.

Beaver Dam Offspring Study (BOSS)

- Two cohorts span most of the 20th century
 - From 1902 to 1992
- Most of the “children” are ages 30-65 yrs
- 76% live in Wisconsin

Aims

- How many people have impairments or disorders?
 - Hearing, Vision, Olfaction and *Taste*
- Why do these occur?
 - genetic, lifestyle, and vascular factors
- How to prevent sensory disorders and have healthy aging?

Beaver Dam Offspring Study Investigators



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Status Report

Families:

83% of agreed to let us contact children

8.7% refused

If you haven't been contacted, please let us know

Offspring:

12% have refused

If you haven't been contacted, please let us know

If you haven't been examined, please schedule

BOSS Sneak Preview

Age (yrs)	48
Men	44%
Diabetes	6%
Hypertension	35%
Smokers	
Current	16%
Past	29%

BOSS Sneak Preview

Vision: 20/20

Hearing impairments:

17% 50-59 yrs

28% 60-69 yrs

Olfaction:

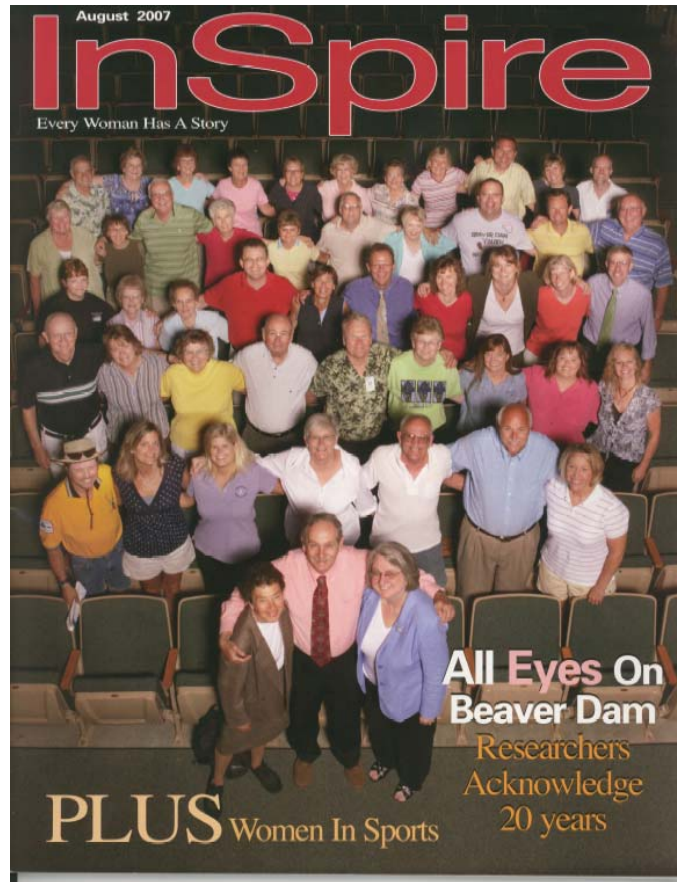
9% 60-69 yrs

Taste: 30 FP per person; Range=6-62

What's next?

- Complete examinations next spring
- Complete laboratory analyses
- Analyze data
- Publish results

Thank You, Beaver Dam, for the first 20 years!



Better Health for Future Generations

Please join us for refreshments