Alzheimer's in African Americans:
Disease Burden and Research Efforts

Christiane Reitz, MD PhD
Assistant Professor of
Neurology and Epidemiology
Columbia University

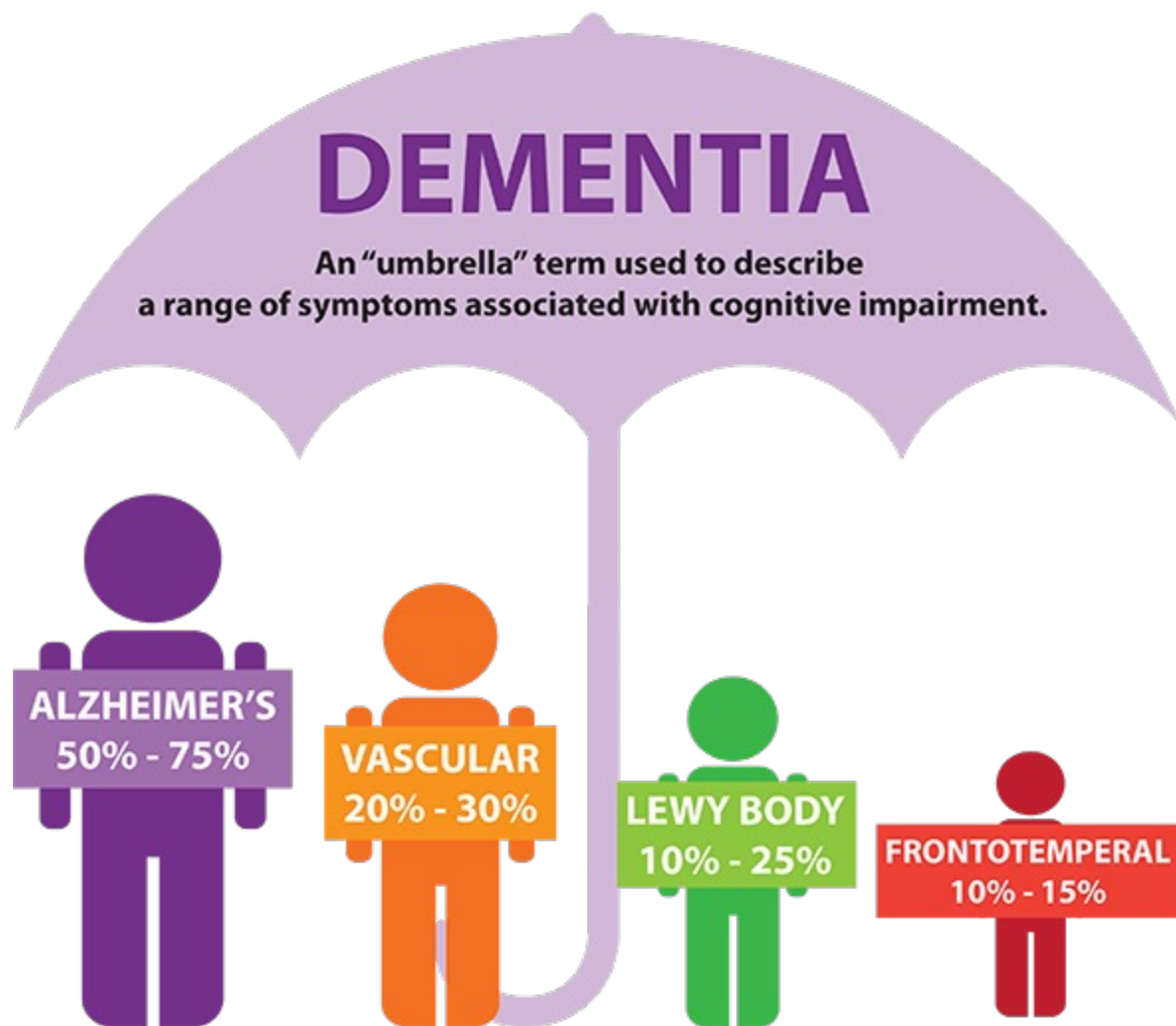COLUMBIA UNIVERSITY
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BURDEN OF ALZHEIMER'S DISEASE IN THE POPULATION

- Alzheimer's disease is a disease of the brain that causes problems with memory, thinking and behavior

- It is a progressive disease that destroys brain cells and gets worse over time, eventually leading to death

- In the U.S. more than 5 Million People have been diagnosed with Alzheimer's

- There is no cure for the disease

- Treatments are available that can slow the progression and can help patients maintain their quality of life as long as possible

WHAT IS THE DIFFERENCE BETWEEN "ALZHEIMER'S DISEASE" AND "DEMENTIA"?

DEMENTIA

An "umbrella" term used to describe a range of symptoms associated with cognitive impairment.

ALZHEIMER'S
50% - 75%

VASCULAR
20% - 30%

LEWY BODY
10% - 25%

FRONTOTEMPERAL
10% - 15%

EARLY SIGNS AND SYMPTOMS

1

MEMORY LOSS THAT AFFECTS DAY-TO-DAY ABILITIES
Forgetting things often or struggling to retain new information.

2

DIFFICULTY PERFORMING FAMILIAR TASKS
Forgetting how to do something you've been doing your whole life, such as preparing a meal or getting dressed

3

PROBLEMS WITH LANGUAGE
Forgetting words or substituting words that don't fit the context.

4

DISORIENTATION IN TIME AND SPACE
Not knowing what day of the week it is or getting lost in a familiar place.

5

IMPAIRED JUDGMENT
Not recognizing a medical problem that needs attention or wearing light clothing on a cold day.

6

$500.40 + $6.12 − $307.33 = ???

PROBLEMS WITH ABSTRACT THINKING
Having difficulty balancing a chequebook, for example, or not understanding what numbers are and how they are used.

7

MISPLACING THINGS
Putting things in strange places, like a dress in the refrigerator or a wristwatch in the sugar bowl.

8

CHANGES IN MOOD AND BEHAVIOUR
Exhibiting severe mood swings from being easy-going to quick-tempered.

9

CHANGES IN PERSONALITY
Behaving out of character, such as becoming confused, suspicious, or fearful.

10

LOSS OF INITIATIVE
Losing interest in friends, family and favourite activities.

TWO FORMS OF ALZHEIMER'S

LATE-ONSET ALZHEIMER's
- 95% of all Alzheimer's cases
- occurs after the age of 65

EARLY-ONSET ALZHEIMER's
- occurs before the age of 65
- runs in families
- 250,000 people affected in the US (5% of all Alzheimer's cases)

ALZHEIMER'S IN AFRICAN AMERICANS

AFRICAN AMERICANS ARE TWICE AS LIKELY
to get Alzheimer's than Whites!

WHY ARE AFRICAN AMERICANS AT HIGHER RISK?

Alzheimer's has been linked to several risk factors that are more frequent among African Americans, in particular **DIABETES, HEART DISEASE, HYPERTENSION AND STROKE**

It is also likely that a large part of the higher risk is **DUE TO GENES.** Slight differences in genetic make-up between ethnic groups lead to differences in risk of disease.

SOCIO-ECONOMIC REASONS FOR INCREASED RISK

- **Access to quality healthcare in the community**

- **Access to health insurance coverage**

- **Distrust in the medical system**
  - **Tuskegee experiment**
  - **Henrietta Lacks**

- **Access to culturally competent care**

- **Under-represented in medical research studies**

ALZHEIMER'S IN AFRICAN AMERICANS

African Americans tend to be **DIAGNOSED AT A LATER STAGE, REDUCING EFFECTIVENESS OF TREATMENTS**

PROPER DIAGNOSIS

Medical History

Physical Exam

Neurological Exam

Cognitive Tests

MEDICATIONS

Drugs that treat cognitive symptoms and slow the progression of dementia

- **Aricept (Donepezil)**
- **Exelon (Rivastigmine)**
- **Razadine (Galantamine)**
- **Namenda (Memantine)**

- **Lecanemab**

**Most recently FDA approved drug
for MCI
Administered intravenously**

LACK OF INFORMATION ABOUT DEMENTIA IS THE MOST COMMON CHALLENGE MINORITIES FACE WHEN GETTING A DEMENTIA DIAGNOSIS

Less likely than White patients to receive a timely diagnosis

More likely to report experiencing racial discrimination along their patient and caregiver journeys

Less likely to be enrolled in cutting-edge brain health research

Genetic Dementia Research Studies are Critical to Identify the Causes of Alzheimer's Disease in African Americans

MISSION:
Discover how genes influence human health and disease

Columbia University Medical Center is **dedicated to using cutting-edge technologies to identify genes involved in human diseases** for the diagnosis, intervention and prevention of illness.

It is essential to identify the genetic factors that define disease risks across groups. **AD genetic risk factors can be different between ancestries** so drugs based only one group may not work in others.

WHAT ARE GENES AND WHY DO WE STUDY THEM?

- Your genes contain the complete set of instructions for making YOU! Just like you use recipes from a cookbook to make dinner!

- Each person has the same set of genes (about 20,000!)

- Differences between people come from slight variations in these genes. For example, all people have the same gene for hair color, but slight differences *within* this gene dictates whether someone will have red or black hair

Similarly,
differences within some genes can lead to
DISEASE such as ALZHEIMER'S!

Finding the **genes** causing Alzheimer's will help us to
**better detect it,
better treat it,
and better prevent it from happening!**

WHAT IS "PRECISION MEDICINE"?

- "**Precision medicine**" is a new approach for disease treatment and prevention that takes into account individual variability in genes, environment, and lifestyle for each person.

- This approach allows doctors and researchers to predict more accurately which treatment and prevention strategies works best for a specific person

- It is in contrast to a "one-size-fits-all approach", in which a disease is treated with the same drug in each person, without considering differences in genes or lifestyle

PRECISION MEDICINE IN CANCER THERAPY

- Patients are classified into subpopulations that differ in the causes of the disease and their response to a specific treatment

- Patients with the same genetic cause for a tumor receive the same drug. Patients with another genetic change receive another drug
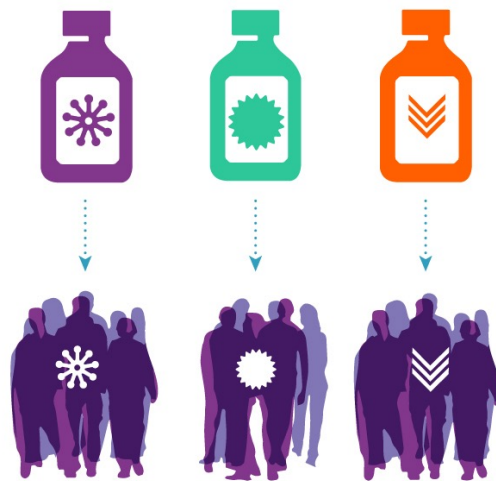
This will also be the future for Alzheimer's treatment.

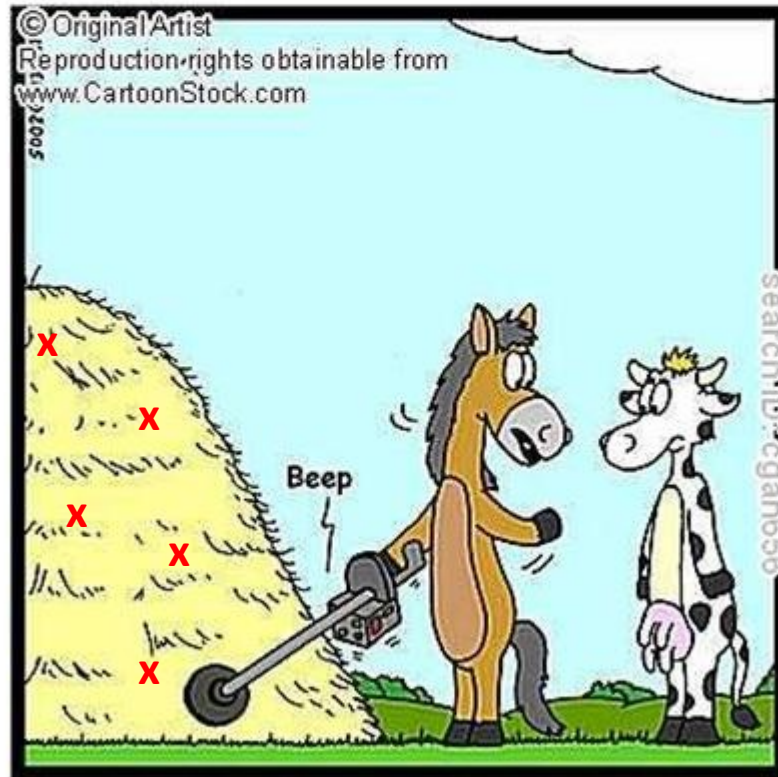**But we need to identify the genes first**, in order to be able group patients into treatment groups based on their genes.

Finding the genes causing a disease is like looking for the needle in the haystack.

You were right: There's a needle in this haystack...

The more people participate in this research, the easier it is for us to find the genes!

You were right: There's a needle in this haystack...

The end of Alzheimer's starts with YOU!

THERE IS A CRITICAL NEED FOR AFRICAN AMERICAN STUDY PARTICIPANTS!

WHY LOOK AT GENES?

Genes are key to understanding the disease - knowing the genes causing Alzheimer's will **HELP US UNDERSTAND WHAT GOES WRONG IN THE BRAIN AND WHY**

THIS IS THE FIRST STEP TO THERAPY

WHY LOOK AT GENES?

KNOWING THE GENES WILL ALSO IMPROVE TREATMENT!

Instead of a "one-size-fits-all" approach, we can develop and administer therapies tailored to an individual's genetic make up ("Personalized Medicine")

GENES DISCOVERED

We have discovered more than 25 genes

These genes tell us that inflammation, cholesterol, communication of brain cells and accumulation of amyloid plaques in the brain are part of the cause of Alzheimer's

ABCA7 GENE IN AFRICAN AMERICANS

https://media.jamanetwork.com/jama-report/genetic-risk-factor-identified-for-late-onset-alzheimers-disease-in-african-americans/#

The identified mutation in the ABCA7 gene **doubles the risk of Alzheimer's in African Americans**

This discovery significantly helps us to understand the disease mechanisms in Blacks
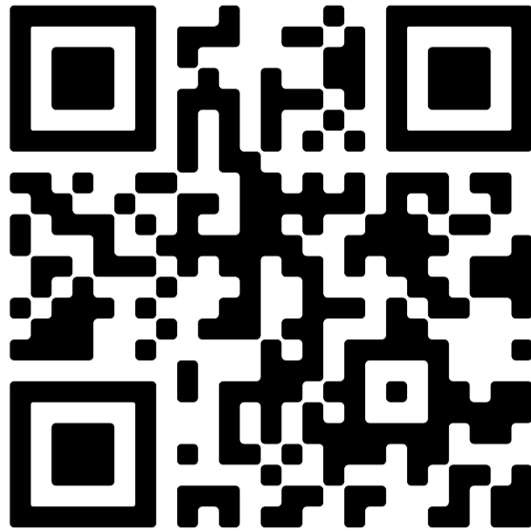
BENEFITS OF PARTICIPATING IN RESEARCH STUDIES

- Knowing that treatments for Alzheimer's and other related dementias are specific to ethnicities

- Financial compensation

- Increased health related knowledge

- Satisfaction of contributing to the "greater good" as it relates to finding a cure

HOW CAN YOU HELP IN THE FIGHT AGAINST ALZHEIMER'S DISEASE?

SCAN ME

PLEASE JOIN OUR EFFORTS TO FIGHT ALZHEIMER'S DISEASE

Lead Investigator
Christiane Reitz, MD, PhD

Project Coordinator
Jenny Chavez, MS
Tel: (212) 305-2349
Email:
jc5835@cumc.columbia.edu

Community Engagement Officer
Paula Rice, MBA
Tel: (212) 305-2349
Email:
pjr2153@cumc.columbia.edu

Research Assistant
Jaleen Fraser, BS
Tel: (212) 304-7693
Email:
jof2105@cumc.columbia.edu