Sarah L. Booth, Ph.D.
Associate Director and Senior Scientist
About the HNRCA

30 years ago, the HNRCA came into existence because the US Congress found that...

“...there is evidence of a relationship between nutrition and many of the leading causes of death in the U.S.; that improved nutrition is an integral component of preventive health care; that there is a serious need for research on the effects of diet and degenerative diseases and related disorders.”

The HNRCA’s mission is to find ways that nutrition promotes healthy aging and prevents chronic diseases.
Cancer -- 41 billion dollars/treatment cost/y (1995)
Cardiovascular Disease
Cataract & Macular Degeneration
Dementia -- 5.1 M at a cost of $172 billion
Diabetes -- 65 billion in health care expense in 2007
Infection
Osteoporosis -- $19 billion annual cost of falls
Sarcopenia

Largest research center in the world studying nutrition and healthy & active aging

270 scientists, trainees and staff

17 research labs covering a wide range of nutrition and age-related topics

Collaboration between USDA and Tufts University

Our research impacts nutritional recommendations and requirements, public policy, and clinical healthcare

About the HNRCA
Basic Science/Animal Studies → Epidemiological Research → Clinical Investigation → Health Policy Recommendations → Public Knowledge
It is estimated that by 2050, there will be 395 million people living to be 80 years old.

The increase in the number of Americans over the age of 65
What we do

14-story research facility in downtown Boston

Lab science

Volunteer studies

Outreach of research
At least 170 scientific publications yearly
730 media mentions in 2013
Community engagement
Translating our research to the public...
Community Outreach

My Plate

Lobby Garden

Talk and Taste

Fit-4-Life
Issues impacting quality of life in older adults
Proper nutrition contributes to deterring these conditions.
A significant portion of older population in USA have nutritional problems exhibited as both under-nutrition (micronutrient deficiencies) and over-nutrition (obesity).
Compromised micronutrient status/intake observed in older adults in the USA

- **Vitamin D**: bone and muscle strength, etc.
- **Calcium**: bone and muscle strength
- **Vitamin E**: protects cells from free radical damage
- **B12**: nerve and blood health
- **B6**: metabolism
- **Folate**: cell division
- **Zinc**: immune system
- **Selenium**: fights infection
- **Iron**: oxygen transport
Modification of extrinsic factors

nutrition

combined with

exercise

lifestyle

psychosocial

create

Healthy aging

improved functionality
improved quality of life
WEIGHT

More than one-third of U.S. adults (35.7%) are obese.

Obesity-related conditions include heart disease, stroke, type 2 diabetes, certain types of cancer, and contribute to nutrient deficiencies in older adults.
WEIGHT

Restaurant calorie counts are inaccurate

When you eat may be as important as what you eat.

Mediterranean diet
Increased fiber intake can decrease appetite (*The iDiet*)

Consuming yogurt can reduce weight gain over time.

Effects of sleep on weight loss
MUSCLE AND BONE FUNCTION

Falls are the leading cause of fatal injury among older adults.

Falling is not an inevitable result of aging.
MUSCLE & BONE FUNCTION

Importance of vitamin D/calcium in falls and osteoporosis

Consume neutral or alkaline food for better bone density.

Eat vitamin K.
"Strong consistent *observational* evidence indicates that mid-life and older adults who participate in regular physical activity have reduced risk of moderate or severe functional limitations and role limitations (disability)."

• "Future research needs to focus on large-scale well-designed trials to ascertain whether physical activity programs can prevent disability and role limitations as people advance into old age."
MUSCLE & BONE FUNCTION

Sarcopenia:
Age-associated loss in muscle mass and function

Female 70 yrs.
BMI = 23.3

Female 85 yrs.
BMI = 24.6
A structured moderate intensity physical activity program, compared with a health education program, reduced major mobility disability over 2.6 years among older adults at risk of disability.
Lift weights (all major muscle groups) at least 2 times a week to retain muscle.

Weekly: Do 150 min. of moderate intensity aerobic physical activity or 75 min of vigorous intensity aerobic activity.
A common problem related to aging is “hardening of the arteries,” called arteriosclerosis.
HEART HEALTH

Have plenty of fiber.

Try eating an oily fish twice a week instead of fish oil pills.
All aging humans will develop some degree of decline in cognitive capacity as time progresses.

The effects of blueberries and strawberries on neurocognition

Increase folate, B6 and B12 consumption to deter dementia.

Concord grape juice may enhance cognitive function.
VISION

Most of the aged will confront age related vision problems with compromises to quality of life.
Lower your glycemic index.

Lutein-rich foods can decrease risk of AMD and cataracts.
The immune system is one function of the body profoundly affected by aging.
INFECTION & IMMUNE-RELATED DISEASES

Wolfberry or goji berry and possible flu protection

White mushrooms and food-borne pathogens

Cranberries prevent UTIs
Things to look for in the future in nutrition and aging...
developing diets that complement genetic makeup
Neurobiology of aging

nutritional modification of stem cells to repair the aged brain

leading to possible Alzheimer's cures
Circadian rhythm of clock genes

basing food intake on a personalized clock to deter obesity and chronic diseases
Gut microbiome

How diets impact gut microbiota:

- impacts on cancer, infection,
  - inflammation, weight control
D2d trial

Does vitamin D supplementation help prevent or delay type 2 diabetes?
“Eat and sleep and you will live a long time...You have to learn to relax.”
- Misao Okawa, turned 116 in 2014
Thank you

Questions?

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