Aging and COVID-19: What Does Science Actually Tell Us?

A Webinar Series Presented by the American Federation for Aging Research and Grantmakers in Aging

Why COVID-19 Preys on Older Adults: What the Science Says (and Doesn't Say)

JUNE 9, 2020





Participating in the Webinar



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John Feather, PhD CEO Grantmakers In Aging





Believing a society which is better for older adults is better for people of all ages, Grantmakers In Aging - a national membership organization of philanthropies - acts as a relevant and responsive network, resource, and champion, amplifying the voices of older people and issues of aging.



Stephanie Lederman, Ed.M. **Executive Director** American Federation for Aging Research





The American Federation for Aging Research (AFAR) is a national non-profit organization that supports and advances pioneering biomedical research that is revolutionizing how we live healthier and longer. For nearly four decades, AFAR has served as the field's talent incubator, providing more than \$181 million to more than 4,200 investigators at premier research institutions nationwide.





Steven N. Austad, PhD Senior Scientific Director, American Federation for Aging Research Distinguished Professor, University of Alabama at Birmingham George A. Kuchel, MD, FRCP, AGSF Travelers Chair in Geriatrics and Gerontology Director, UConn Center on Aging, University of Connecticut Chief, Geriatric Medicine, UConn Health

Why COVID-19 Preys on Older Adults: What the Science Says





Steven N. Austad, PhD

Senior Scientific Director, American Federation for Aging Research Distinguished Professor, University of Alabama at Birmingham

COVID-19 Does Indeed Prey on Older Adults



Age range	Percent of Population	Percent of Deaths
65+	26	81
85+	5	33

Source: CDC

But Almost Everything Preys Mainly on Older Adults



- Falls
- Heatwaves
- Traffic accidents
- Influenza



Age

The aging body is more susceptible to almost everything



The aging body is more susceptible to almost everything



The aging body is more susceptible to almost everything



Age

Aging kills and debilitates <u>far more</u> people than any other cause



Aging is a slight imbalance between damage and repair







The engine of life is inherently damaging

Your body contains ~50,000,000,000,000 cells





...and 60,000,000,000 miles of DNA!!!

10 round trips to Pluto



While you were reading this... Your body made **70,000 miles (!)** of new DNA

... which has already been damaged at least 64,000,000 times

DNA make proteins, proteins do everything

Proteins must remain precisely folded to do their job

- Catalyze chemical reactions
- Provide structure
- Repair cellular damage
 - To DNA
 - To proteins





Some good news

- Genes account for only 20-25% of how you age
- The rest is up to you





More good news

Now that we understand major aging processes, we can target them with drugs

Nine effects (in mice) of one drug

- 1. Extends life
- 2. Delays and slows Alzheimer's disease
- 3. Delays normal cognitive aging, reduces anxiety & depression
- 4. Prevents several cancer types, slows growth of others
- 5. Prevents later-life heart dysfunction
- 6. Rejuvenates some stem cells
- 7. Prevents detrimental effects of "zombie" cells
- 8. Protects against periodontal disease
- 9. *Enhances and broadens vaccine protection against flu



Bottom line: Learning to treat the underlying causes of aging will delay the maladies of aging <u>as a group</u>



Jeffrey M. Levine[©]

Why COVID-19 Preys on Older Adults: What the Science Says (and Doesn't Say)

George A. Kuchel, MD, FRCP, AGSF Travelers Chair in Geriatrics and Gerontology Director, UConn Center on Aging, University of Connecticut Chief, Geriatric Medicine, UConn Health <u>kuchel@uchc.edu</u>



GMIA/AFAR Webinar, June 9 2020

Vulnerability of Older Adults to COVID-19: It is about much more than your date of birth

According to the CDC Highest Risk for COVID-19 deaths includes:

- Advanced age
- Multiple chronic diseases including dementia
- Being male
- Living in a nursing home or senior housing
- Race and socioeconomic status
- Having two copies of the Alzheimer's gene (APOE e4)
- What does this all mean?

Is date of birth (chronological aging) the best measure?





UCON Elhaney

Acknowledgements to J McElhaney

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Vulnerability of Older Adults to COVID-19:

It is all about prevention, prevention, prevention

Prevention in terms of good hygiene:

- Physical (not social) isolation
- Frequent handwashing
- Use of masks
- Testing in congregate housing to include providers and caregivers

Prevention in terms of efforts to promote healthy aging:

- Follow your provider's recommendations
- Exercise
- Healthy diet

Prevention in terms of <u>efforts to target aging</u>:

 Research involving drugs targeting biological aging as a means of boosting immune defenses



Vulnerability of Older Adults to COVID-19:

Nearly all aspects of immune response and host defense are impacted by aging



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Sungnak et al. Nature Med 2020

Vulnerability of Older Adults to COVID-19:

Impact of Immune Aging on Ability to Handle Familiar and Unfamiliar Pathogens

Vulnerability of Older Adults: Must consider dynamic processes involving resilience mechanisms needed to maintain homeostasis in the face of a stressor (pathogen)

Potential Role of Another Geroprotector (Metformin) in Reducing Onset and Progression of Multiple Chronic Diseases TAME Trial (Targeting Aging with Metformin)

Inclusion Criteria: Age 65-80, nondiabetic, some comorbidities allowed; n = 3,000 Double blind placebo-controlled trial

Primary Outcome:TIME TO MAJOR DISEASES (FDA)Secondary Outcome:FUNCTIONAL AGINGTertiary Outcomes:BIOMARKERS (NIA)

Impact of Metformin on Flu Vaccine Responses (VEME-AFAR/NIA, Jenna Bartley, PhD - UConn)

Potential Role of One Geroprotector (RTB101) in Reducing Respiratory Infections

Phase 2b: RTB101 reduces the incidence of respiratory tract infections caused by multiple viruses including coronavirus

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Conclusions

Prevention in terms of good hygiene:

- Physical (not social) isolation
- Frequent handwashing
- Use of masks
- Testing in congregate housing to include providers and caregivers

Prevention in terms of efforts to promote healthy aging:

- Follow your provider's recommendations
- Exercise
- Healthy diet

Prevention in terms of efforts to target aging:

Research involving drugs targeting biological aging as a means of boosting immune defenses

We MUST prepare for the next pandemic by:

- Re-examining our approaches to senior housing and long-term care
- Bringing the full power of modern science to targeting biological aging as a means of enhancing function and independence in late life

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QUESTION & ANSWER

PLEASE TYPE YOUR QUESTIONS INTO THE "QUESTION" BOX IN YOUR CONTROL PANEL

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Upcoming Webinars in the Series (Dates to be announced soon)

II. Exercise, Nutrition and Immune Health in the Age of COVID-19

III. COVID-19 Vulnerability and Mortality in Nursing Homes: Why Systemic Changes are Needed Now

IV. Preventing COVID-19 by Targeting Aging: A Multi-Disease, Therapeutic Approach

