



# 1918 FLU COVID-19

## Urban and Rural delivery - how does Ultraviolet Radiation and Open Spaces effect COVID-19 patients

*Symposium of Leading Physicians with Domestic and Global Experience*

**SUNDAY** APRIL 19 8pm EST

Sponsored by: AWR360 Health in partnership with GC Health, NAD Health, Your Best Pathway to Health, Weimar Institute, Oakhaven and others.



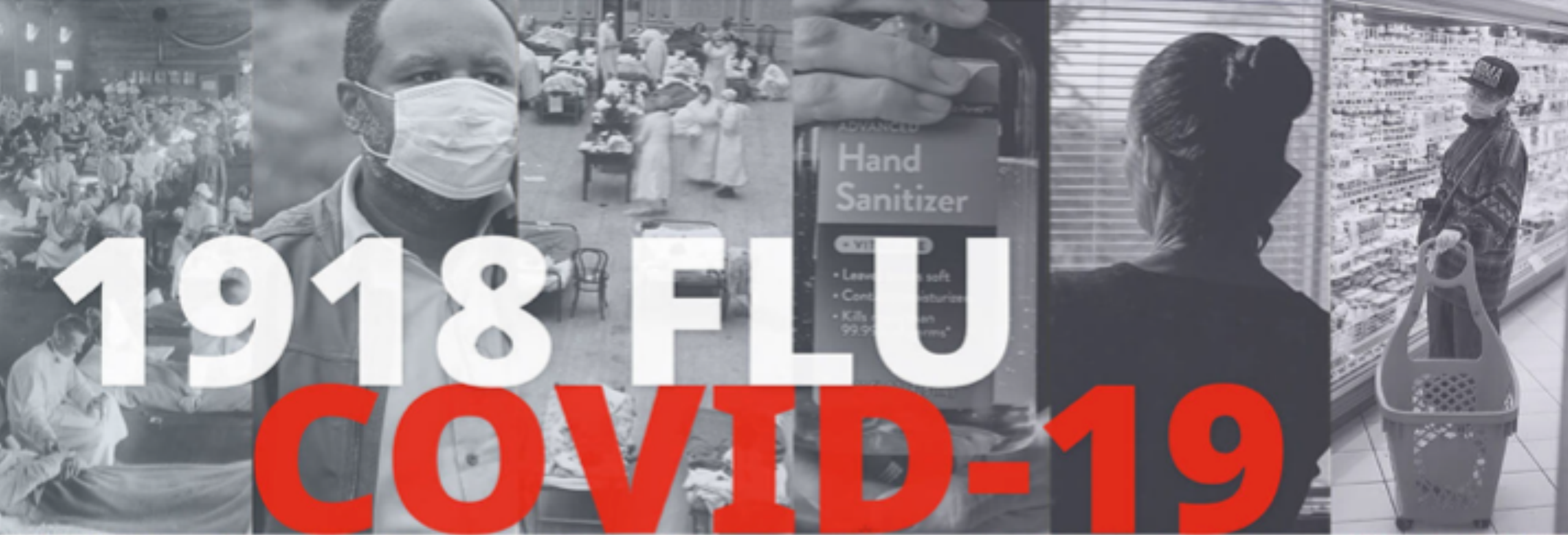
Welcome & Introduction	Lela Lewis, MD, MPH
Keynote	Duane McKey, DMin
Overview of Symposium #1	Zeno Charles-Marcel, MD (5min) Eric Nelson, MD (2min) Peter Landless MD (5min)
Overview for Symposium Part 2/4	Lela Lewis, MD, MPH
Historic Use of Open Space and Ultraviolet Light in 1918 Pandemic	Richard Hart MD, DPH
Where Evidence Today that these “Simple” Treatments May Benefit CoVID19?	Roger Seheult, MD
Possible Proposed Practical Applications: Community Patient: Urban vs Rural setting Hospitalized patient	Zeno Charles-Marcel, MD, (4min) Angie Brauer, DPH, (4min) Roger Seheult, MD (4min)
CoVID-19 and Mental/Emotional Health is there a role for UV Radiation and Green Spaces?	Neil Nedley, MD
Wholeistic health: Spirituality and CoVID19	Mark Finley, MDiv, MPH
Keynote	Angie Brauer, DPH
Question and Answer	



**12 HRS OF CATEGORY 1 CME CREDIT**

**ONGOING RESEARCH**

**[AWR.ORG/HEALTH](http://AWR.ORG/HEALTH)**



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## **Novel Lessons Learned from the 1918 Flu. Could they Apply to the COVID-19 Pandemic?**

*Symposium of Leading Physicians with Domestic and Global Experience*

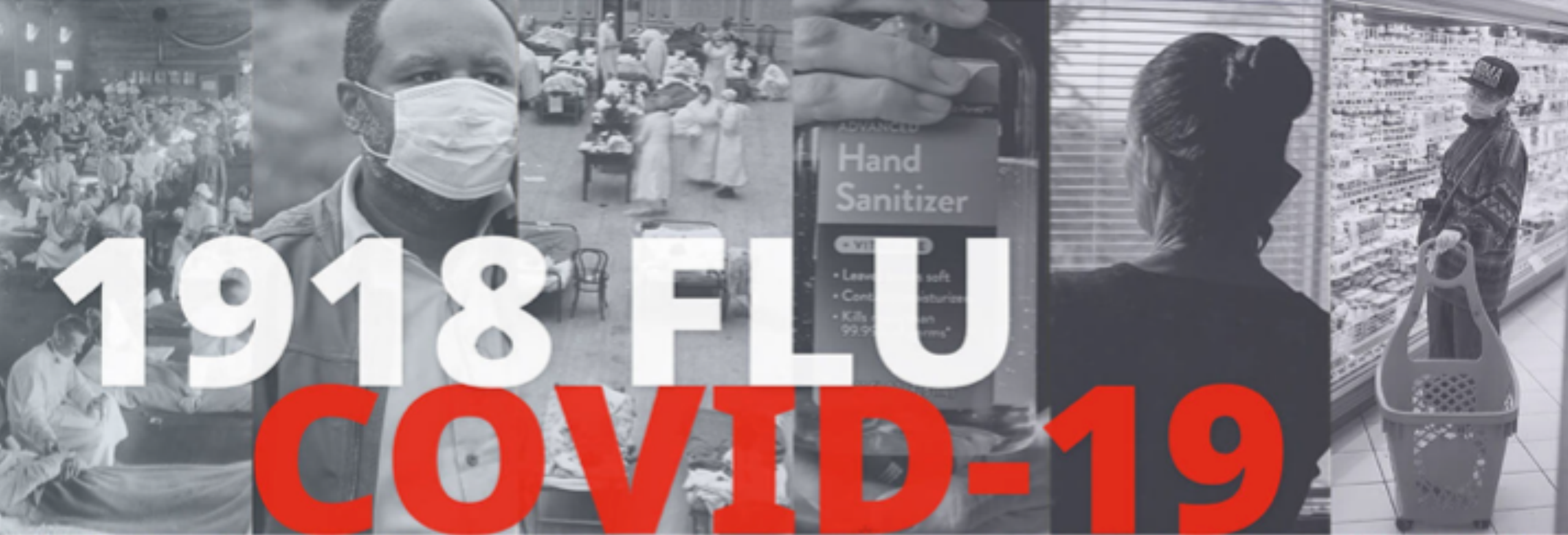


**PART 3: Benefits of Nutrition and Exercise Induced Antioxidants and the  
Racial Disparity in COVID-19 death rates**

**Lela Lewis, MD, MPH, FACOG**

**Medical Director AWR 360° Health / CEO/Founder Your Best Pathway to Health**





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### **PART 4: A Comparative Treatment Analysis of Proper Sleep and Self-Restraint Between 1918 Flu and COVID-19**

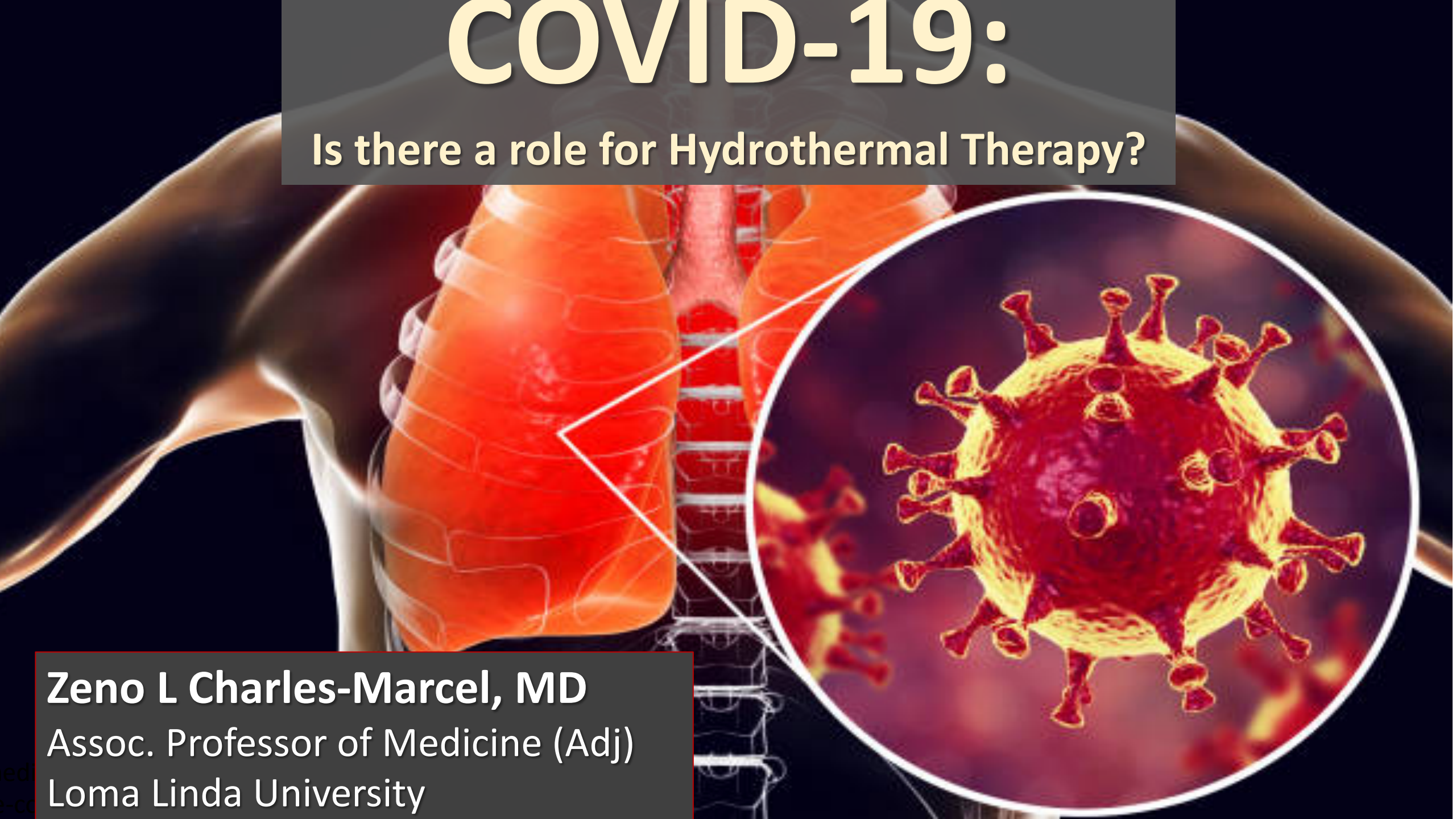
**Lela Lewis, MD, MPH, FACOG**

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# COVID-19:

Is there a role for Hydrothermal Therapy?



**Zeno L Charles-Marcel, MD**

Assoc. Professor of Medicine (Adj)  
Loma Linda University



# Hydrothermal Therapy

- Historical use in H1N1 Pandemic of 1918
- Historical and contemporary use
  - As simple as alternating Hot-Cold in the shower
    - (3 min hot: 30-60 seconds cold) x3 as a tonic
  - Tub, Sauna, jacuzzi hot immersion followed by cold immersion, shower or “hose spray”
  - Hot pack to the chest with cold friction follow up

# SAUNA (Hydrothermal Therapy)

- Eyes on FINLAND
- But also ESTONIA
- Culturally ingrained practice



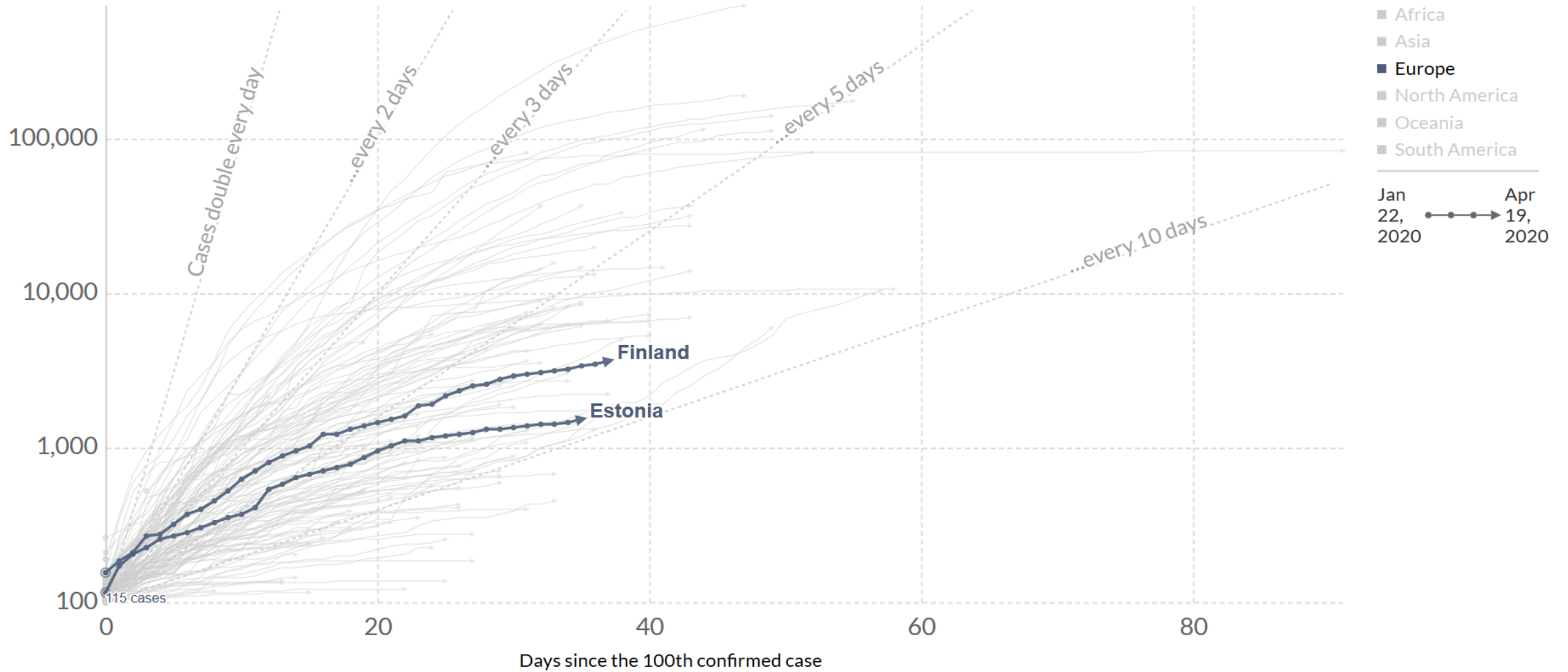




# Total confirmed cases: how rapidly are they increasing?

The number of confirmed COVID-19 cases is lower than the number of total cases. The main reason for this is limited testing.

LOG



Source: European CDC – Situation Update Worldwide – Last updated 19th April, 11:00 (London time)

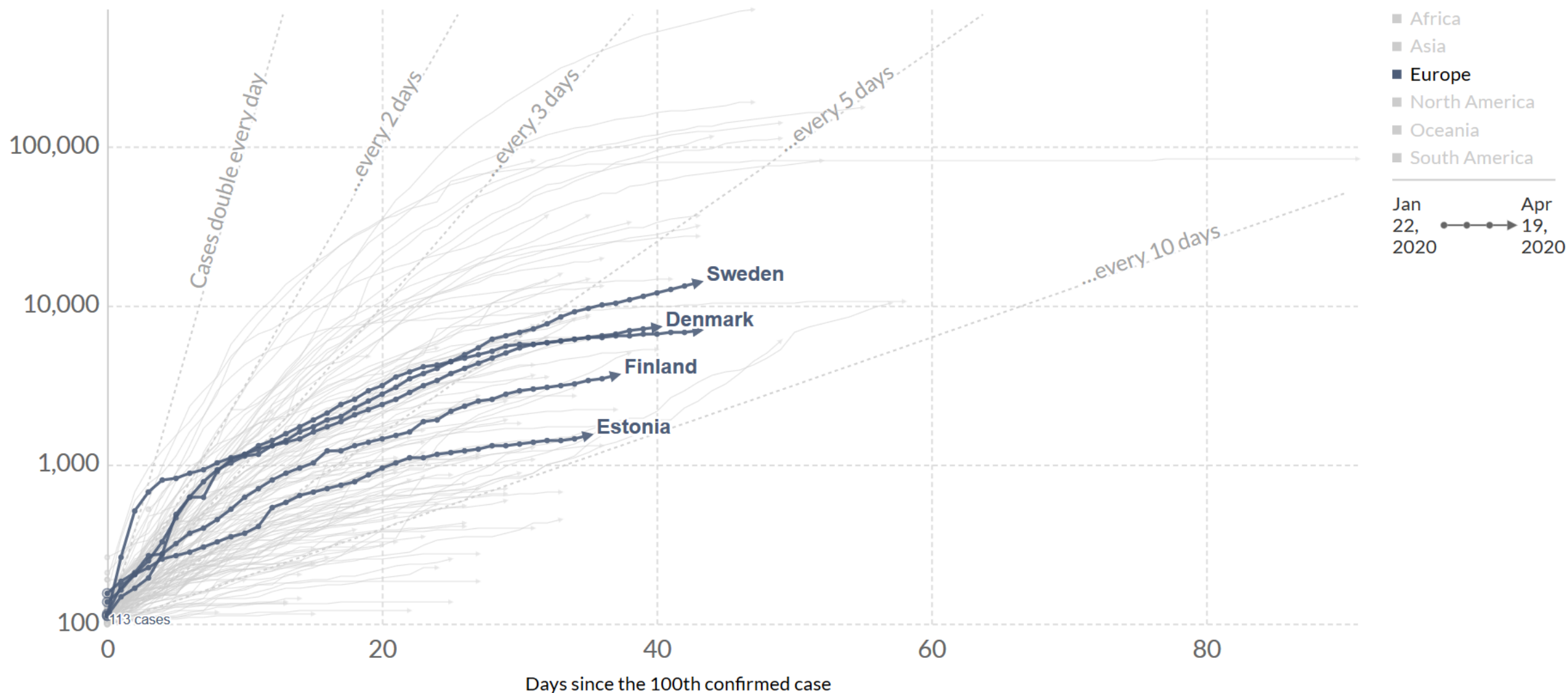
OurWorldInData.org/coronavirus • CC BY



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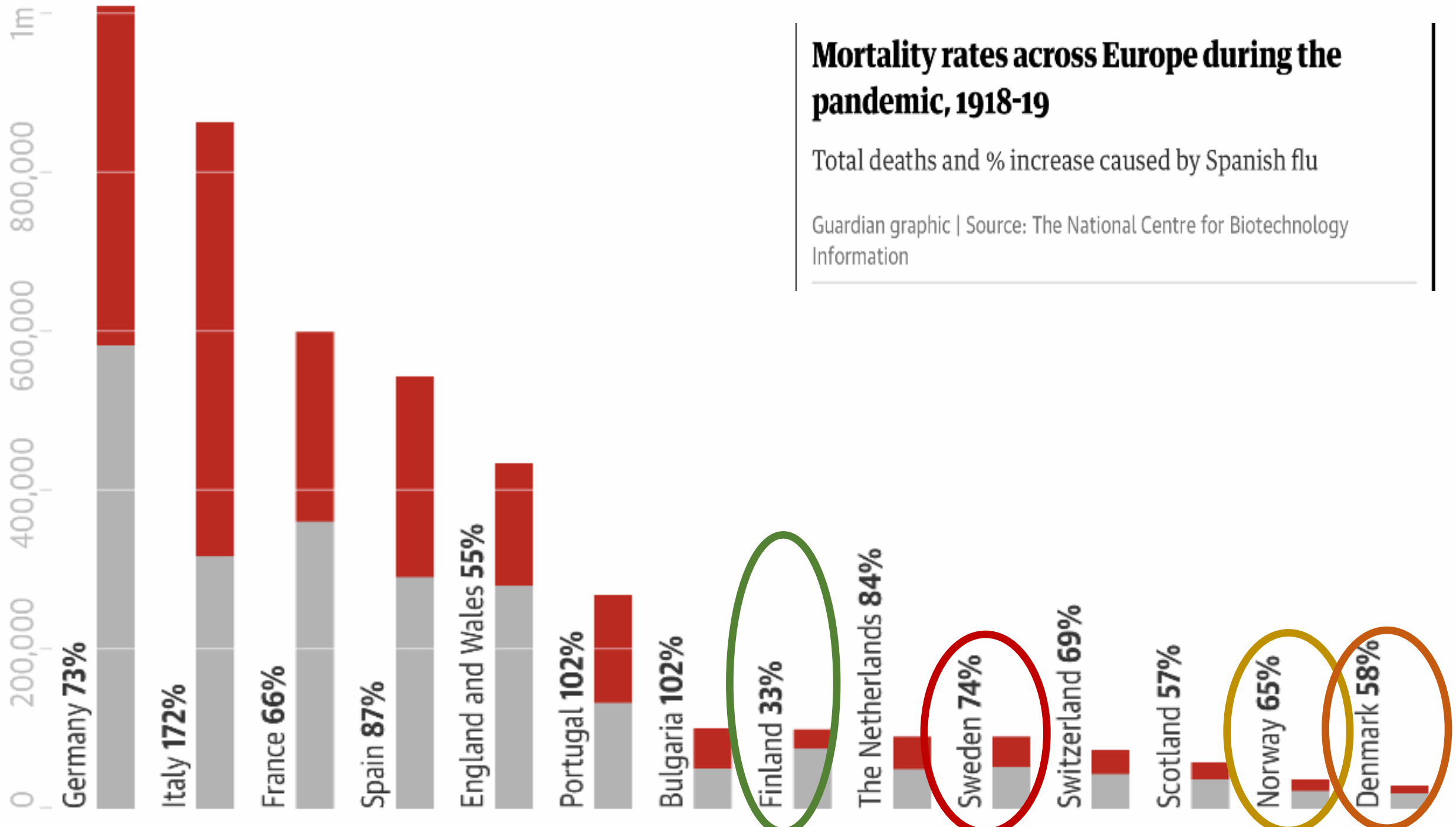
LOG



Source: European CDC – Situation Update Worldwide – Last updated 19th April, 11:00 (London time)

OurWorldInData.org/coronavirus • CC BY

Expected mortality Cumulative excess deaths



## Mortality rates across Europe during the pandemic, 1918-19

Total deaths and % increase caused by Spanish flu

Guardian graphic | Source: The National Centre for Biotechnology Information

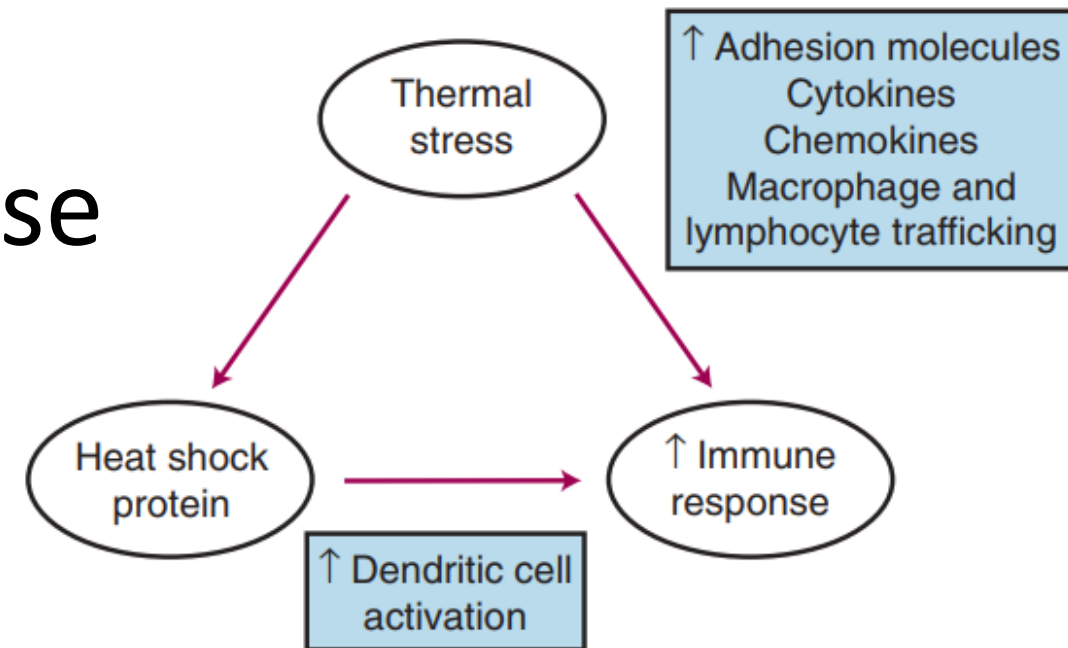


# Hydrothermal Therapy – Mechanism

## Fever-range Thermal Immunomodulation

- Heat shock proteins
- Innate Immune Response
- Adaptive Immune Response

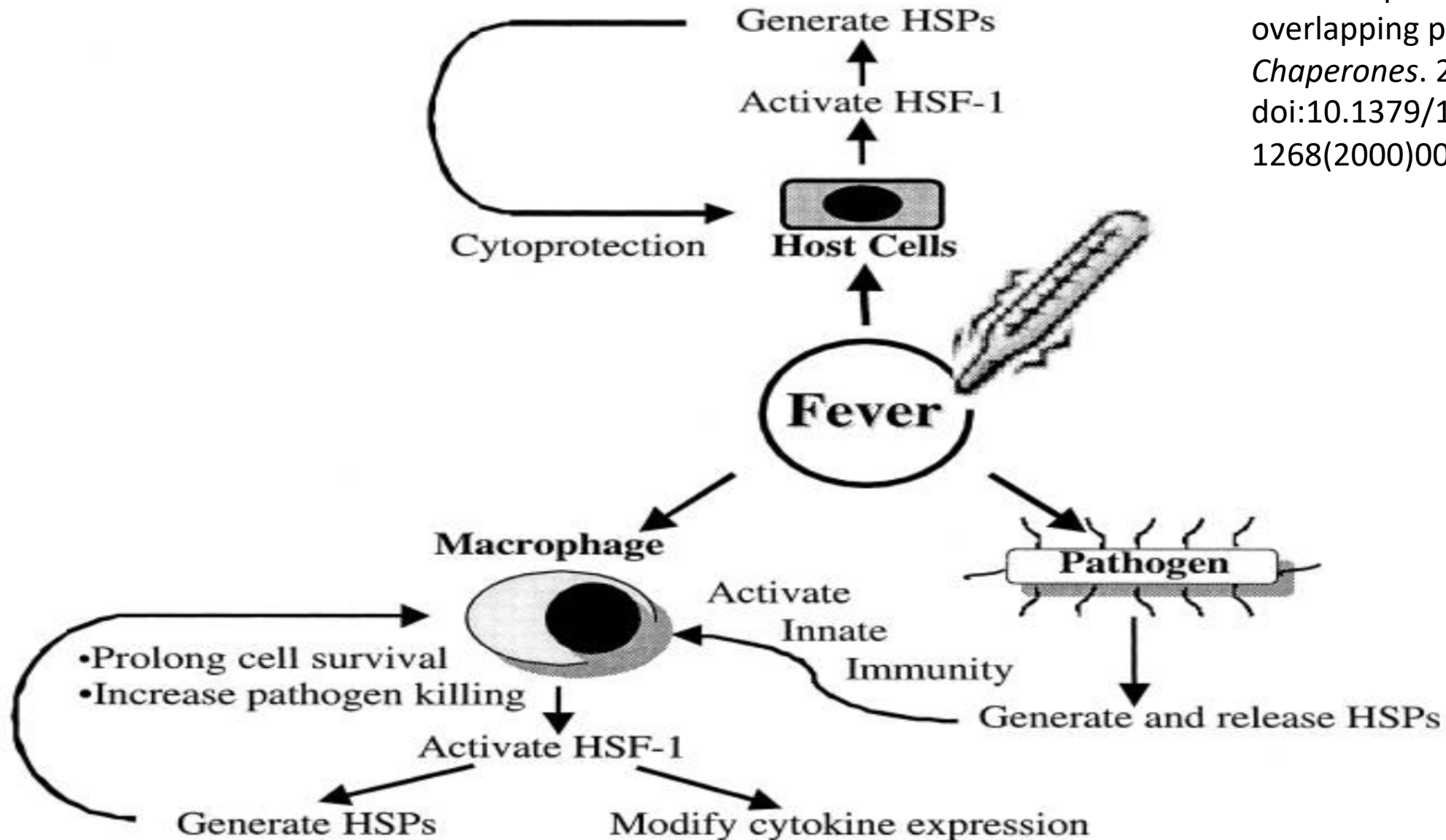
Repasky EAGE: Biomedical applications of Heat Shock Proteins and Thermal stress. Int J Hyperthermia 29:359–499, 2013.



**Figure 21-4** Summary of known beneficial immunological effects of mild temperature hyperthermia.

# Proposed Interactions between Fever and Heat Shock Response

Hasday JD, Singh IS. Fever and the heat shock response: distinct, partially overlapping processes. *Cell Stress Chaperones*. 2000;5(5):471–480. doi:10.1379/1466-1268(2000)005<0471:fathsr>2.0.co;2





# HSP60 concentration

## Pro-inflammatory

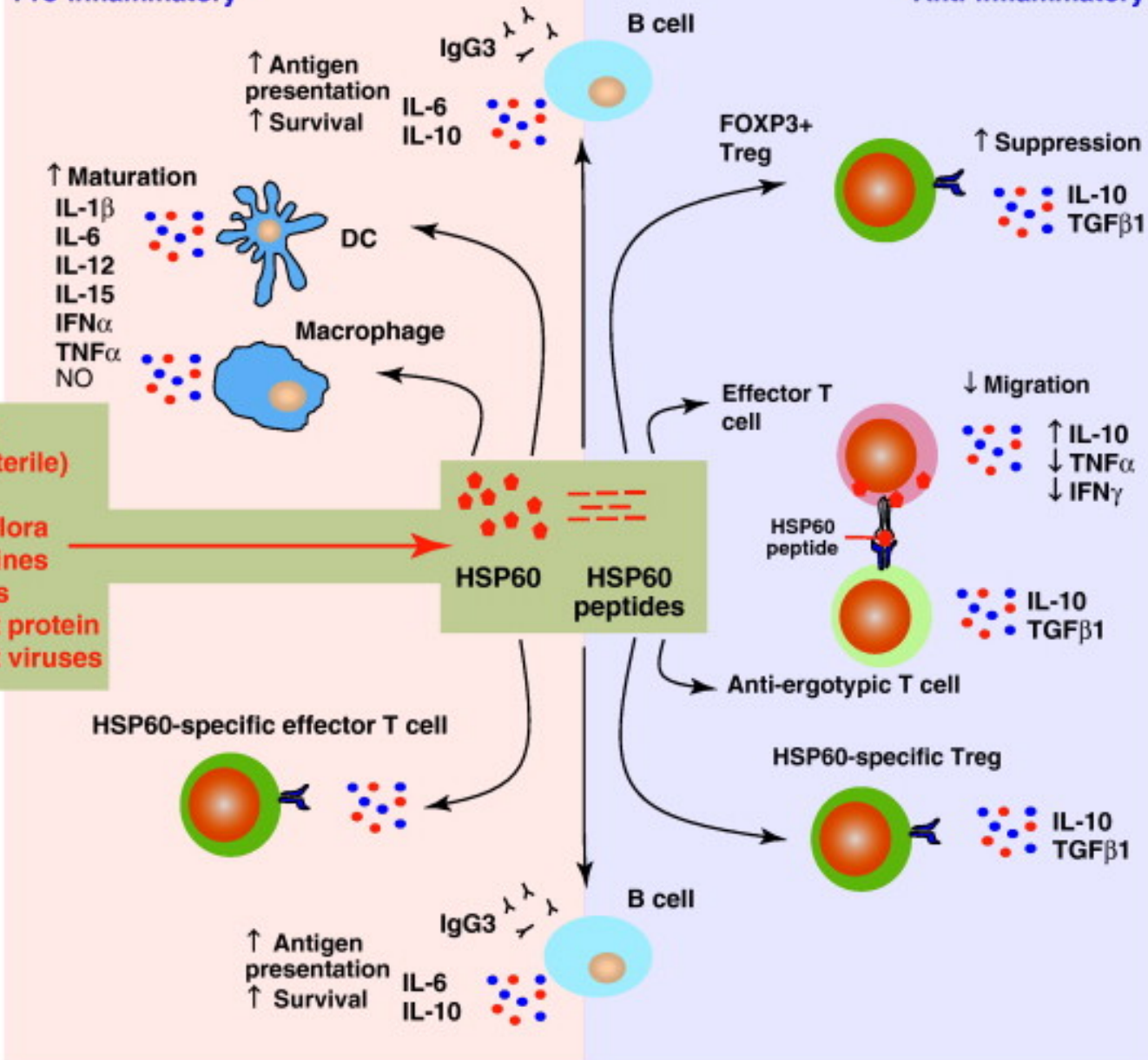
## Anti-inflammatory

## HSP60 effects

## Via innate receptors (TLR2, TLR4)

## Via adaptive receptors (TCR, BCR)

Inflammation (septic and sterile)  
Pathogens  
Commensal flora  
Peptide vaccines  
DNA vaccines  
Recombinant protein  
Recombinant viruses



Quintana FJ  
Cohen IR

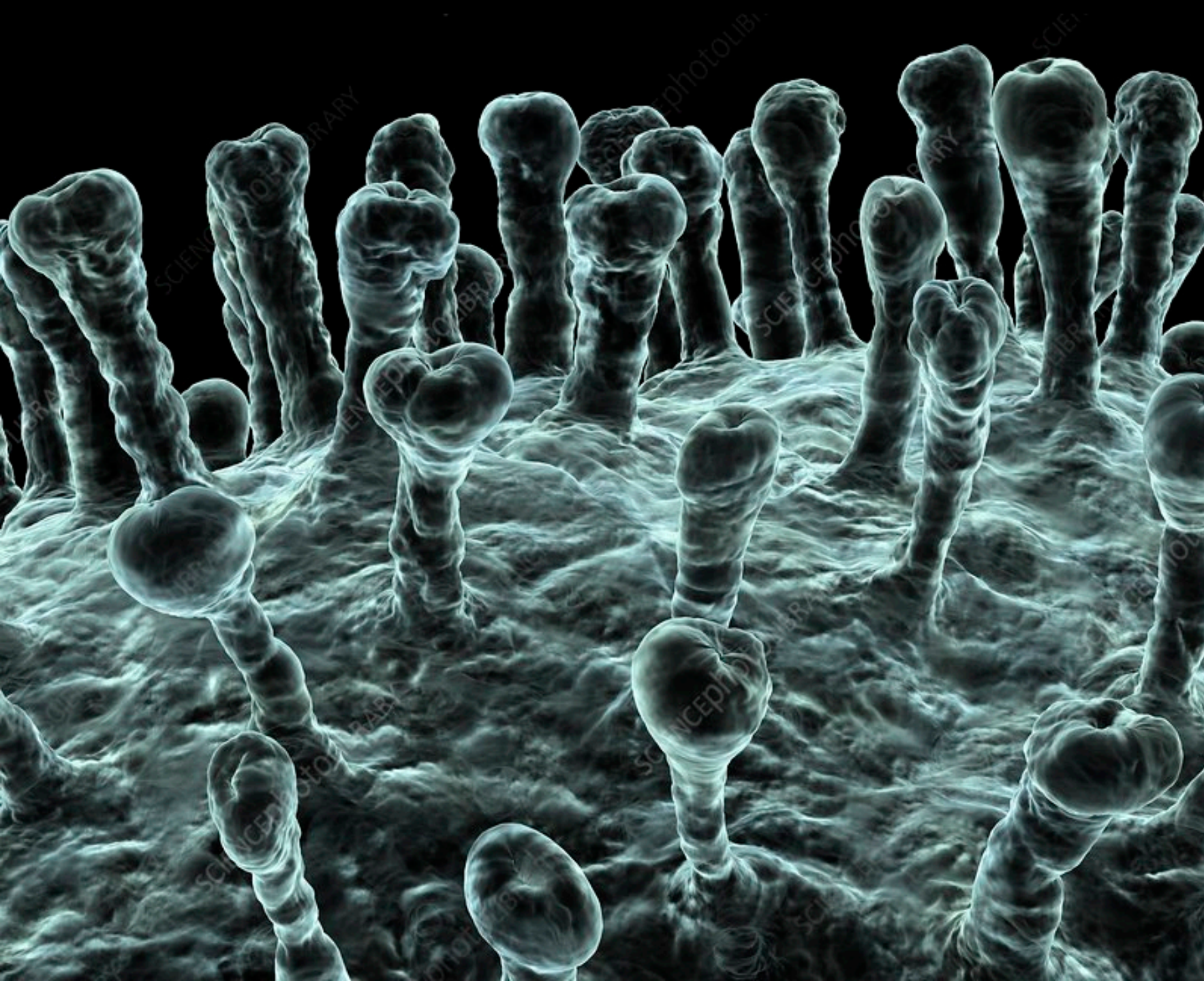
Trends in  
Immunology

Vol. 32: 2(89-95),  
February 2011

# Hydrothermal Therapy

- **NOT a panacea**
- Based on historical evidence and rational scientific postulates, *therefore*
  - Should be given SERIOUS CONSIDERATION
  - **Part of** a PREVENTIVE regimen
  - **Part of** a THERAPEUTIC regimen
  - Warrants further scientific investigation





Future  
Research?

# Hydrothermal Therapy Research

Eric Nelson, MD, FACS, FASCRS



# Inpatient

- Protocol
  - 25min heat
  - 1-2min cold (“thermal lock”)
  - 4x/day
- Primary Outcomes
  - LOS/Dispo, Oxygenation
- Collaboration?
  - [enelson06m@yahoo.com](mailto:enelson06m@yahoo.com)

# **ONGOING RESEARCH HYDROTHERMAL THERAPY (HT)**

**JOIN Facebook Group**

**[www.facebook.com/groups/233299017872769](https://www.facebook.com/groups/233299017872769)**



**Zeno L Charles-Marcel, MD**  
Assoc. Professor of Medicine (Adj)  
Loma Linda University





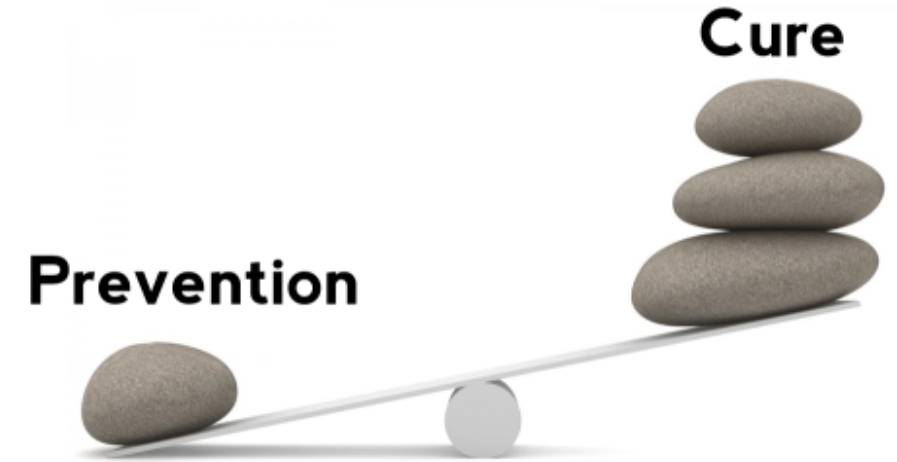
VS



***Urban vs. Rural***

# SAME Basic Approach – Everywhere!

- Avoid CONTACT with the virus
  - Directly and through others
- Disinfect contact points with the virus
- Increase resistance to viral infection
- Get Tested if risk is high (availability?)
- Protect the most vulnerable
- Take care wholistically:
  - Physical, mental-emotional, social-relational, spiritual-transcendent.



# Bring Outdoor Inside and Go Outside too!

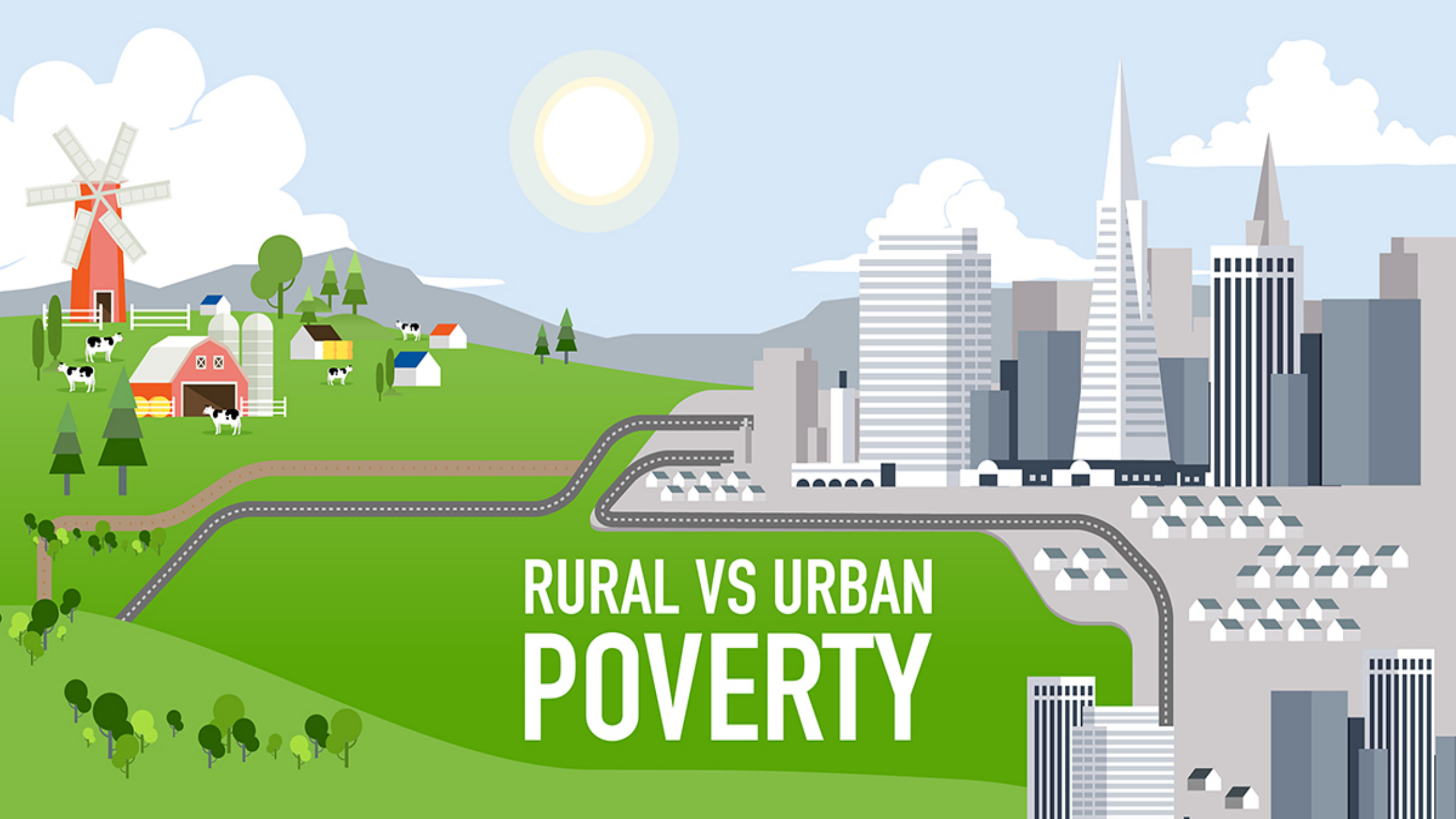
- Sunshine:
  - OPEN Windows, open drapes and draw shades, balconies, parks, rooftops, skylights, patio, community gardens, window flowers, etc.
- Open Spaces: FRESH Air
  - Plants, flowers, trees indoors, green wall
  - Natural materials
  - HEPA Filter
  - UVC air and surface treatments
  - Pictures of outdoor scenes
  - GO outside, mountains, rivers, seashore etc.



# Urban Life and Infection Risk

- Space to self-isolate
- Private cars vs public transportation
- Jobs that can be performed remotely
- Pollution
  - Fine particulate matter at  $1\mu\text{g}/\text{m}^3 \rightarrow$  15% increase in COVID-19 mortality

Exposure to air pollution and COVID-19 mortality in the United States. Xiao Wu, Rachel C. Nethery, Benjamin M. Sabath, Danielle Braun, Francesca Dominici. medRxiv 2020.04.05.20054502; doi: <https://doi.org/10.1101/2020.04.05.20054502>



# RURAL VS URBAN POVERTY





# *America's Biggest Cities Were Already Losing Their Allure. What Happens Next?*

The urge among some residents to leave because of the coronavirus may be temporary. But it follows a deeper, more powerful demographic trend.



Angeline D. Brauer, DrPH, MHS, RDN

# Cautions & Contingencies



# Cautions

- Social distancing is still important
- Avoid crowds
- Practice standard precautions
- Overexposure to UV radiation
- Don't make assumptions – one good habit does not make up for many bad habits

# Health Equity in Urban Settings (WHO)

- Many factors in the political/economic, physical, and social environment
- Greater health risks for minorities, women, migrants, the poor, elderly, children, disabled, other vulnerable groups
- Chronic and communicable diseases are associated with an unhealthy urban environment
- Urban population will double by 2050, worldwide



# Health Equity in Rural Settings (CDC, USA)

- Greater risk of death compared to urban Americans
  - Heart disease, cancer, unintentional injury, chronic lower respiratory disease, stroke
- Less access to health care, insurance
- Higher rates of smoking, blood pressure, obesity
- Less leisure-time physical activity
- Racial/ethnic disparities
- 15% of US population live in rural areas



*Review*

# Physiological Benefits of Viewing Nature: A Systematic Review of Indoor Experiments

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<sup>2</sup> Department of Forest Resources, Kongju National University, Yesan-gun, Chungcheongnam-do 32439, Korea

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Received: 24 October 2019; Accepted: 22 November 2019; Published: 27 November 2019



# Summary of Stimulation Methods

- Actual plants/foliage
- Still photos
- Virtual reality scenes of nature
- Natural materials used in room (wooden flooring, etc)
- **Stimulation time** ranged from 10 seconds to 60 minutes



# Summary of Outcome Measures

- Heart rate
- Heart rate variability
- Pulse rate
- Blood pressure
- Brain/prefrontal cortex activity
  - Electroencephalography, EEG
  - Near-infrared spectroscopy, NIRS
  - Near-infrared time-resolved spectroscopy, TRS
- Electrodermal activity
- Respiratory sinus arrhythmia
- Skin conductance response
- Skin temperature
- Oxyhemoglobin saturation, SpO2

# Positive Associations

- Use of real natural elements (floral, foliage)
- Photos of landscapes
- Difference by type of scenery
  - Natural compared to urban landscapes
  - Forest scenes compared to sea
  - Pathway along a forest compared to internal forest scenes
- Differences by age, sex, personalities
- Indoor elements can still provide health benefits in the absence of outdoor opportunities for exposure, even in hospital setting



# Get outside

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If that's not possible, bring the outdoors inside or at least watch pictures/videos

Designed by welcomia / Freepik



# COVID-19 and Mental/Emotional Health

Is there a role for UV radiation and Green Space?

Neil Nedley, M.D.

# Vitamin D

- Is synthesized in the skin through a photosynthetic reaction triggered by exposure to UVB radiation.
- The efficiency of production depends on the number of UVB photons that penetrate the skin, a process that can be curtailed by clothing, excess body fat, sunscreen, and the skin pigment melanin.

- For most white people, a half-hour in the summer sun in a bathing suit can initiate the release of 50,000 IU (1.25 mg) vitamin D into the circulation within 24 hours of exposure;
- This amount of exposure yields 20,000–30,000 IU in tanned individuals
- 8,000–10,000 IU in dark-skinned people.
- UVR increases blood levels of natural opiates called endorphins.



# Vitamin D and Depression

- Levels in 18–65 year olds were found to be lower among participants with current or remitted depression relative to controls, and associated with symptom severity and a worsened 2-year course.

# 185 undergraduate college “healthy” women

- More than one third of participants had depressive symptoms
- Almost half had vitamin D insufficiency, and that depressive symptoms were predicted by vitamin D levels.
- "Vitamin D deficiency and insufficiency occur at high rates in healthy young women, and lower vitamin D3 levels are related to clinically significant depressive symptoms,"
- Low serum levels of vitamin D are associated with clinically significant symptoms of depression in otherwise healthy individuals

# Vitamin D

- has receptors that are distributed in brain areas involved in emotional processing and affective disorders (Eyles et al., 2013, Kesby et al., 2011);
- regulates serotonin synthesis via transcriptional activation of the tryptophan hydroxylase 2 gene (Patrick and Ames, 2014);
- impacts innate immunity and the production of proinflammatory cytokines that in turn influence mood by activating the stress response (Capuron and Miller, 2004, Raison et al., 2006, Silverman et al., 2005, Zhang et al., 2012).



# Melatonin

- This pineal hormone is a key pacesetter for many of the body's circadian rhythms.
- It also plays an important role in countering infection, inflammation, cancer, and auto-immunity
- Melatonin suppresses UVR-induced skin damage

- When people are exposed to sunlight or very bright artificial light in the morning, or 480 nm wave length blue light, their nocturnal melatonin production occurs sooner, and they enter into sleep more easily at night.
- The melatonin rhythm phase advancement caused by exposure to bright morning light has been effective against insomnia, premenstrual syndrome, and seasonal affective disorder (SAD).

# Serotonin and Light

- Moderately high serotonin levels result in more positive moods and a calm yet focused mental outlook.
- Seasonal Affective Disorder has been linked with low serotonin levels during the day as well as with a phase delay in nighttime melatonin production.
- Mammalian skin can produce serotonin and transform it into melatonin, and many types of skin cells express receptors for both serotonin and melatonin.



With our modern-day tendency for indoor activity and staying up well past dusk, nocturnal melatonin production is typically far from robust.

- “The light we get from being outside on a summer day can be a thousand times brighter than we’re ever likely to experience indoors.”
- “For this reason, it’s important that people who work indoors get outside periodically, and moreover that we all try to sleep in total darkness. This can have a major impact on melatonin rhythms and can result in improvements in mood, energy, and sleep quality.”

Quote is from melatonin researcher  
Russel J. Reiter of the University of Texas  
Health Science Center as quoted in  
Environmental Health Perspectives  
National Institute of Environmental Health Sciences  
2008 April 116 (4) A160-A167  
**CORRECTED** Environ Health Perspect. 2008 May;  
116(5): A197.

# Increasing Melatonin and Improving Depression

- The study included 89 men and women age 60 or older who were randomly assigned to one of two groups.
- In one, participants were given a light-therapy box, donated by Philips Lighting, that emitted pale blue light; they were told to use it every morning for one hour over three weeks.
- The rest were given boxes that emitted a dim red light, which has no known benefits or harms to the body.

- Three weeks after the therapy ended, more people in the light-therapy group were considered treatment "responders" -- meaning their depression scores had dropped by at least 50 percent.
- Of the light-therapy patients, 58 percent were responders, versus 34 percent of the control group.
- Patients who underwent light therapy began to show a steeper rise in evening levels of the hormone melatonin, which promotes sleep. They also had a drop-off in levels of the "stress hormone" cortisol -- which, at the start of the study, had been elevated.
- "I think bright light therapy definitely now deserves a place in the treatment of major depression"



# What about the effects of screens versus reading printed books

- During the two-week study, study participants read electronic books before bedtime. The experiment was then repeated with printed books.
- The researchers found that those reading on screens were less sleepy in the evening and took longer to fall asleep.
- They had reduced levels of melatonin.
- Blue glow emitted from Kindles and Ipads can disrupt circadian rhythm

- And they took nearly ten minutes longer to fall asleep after reading an e-reader compared to reading a printed book.
- lower amount of rapid eye movement sleep
- later timing of their circadian clock
- reduced next-morning alertness
- screens can have an 'extremely powerful effect' on the body's natural sleep pattern.

Anne-Marie Chang December 2014 Proceedings of the National Academy of Science. Penn State and Harvard

# WHO in 2013 stated that the average person now spends 90% of their time indoors

- A quarter of Americans spend almost an entire 24 hours without going outside and downplay the negative health effects of only breathing indoor air
- 77 percent of Americans don't believe that breathing air inside is any worse than pollution outside.
- Environmental Protection Agency evaluated indoor air quality from 1987 and 1989, which found that it is two to five times more polluted than outside.
- Humidity, mold growth, inadequate temperature and being in close quarters with other people are all cited risks associated with poor air quality indoors.



# Negative Air Ions (NAIs)

- Generated from radiant or cosmic rays in the atmosphere
- Sunlight, including UV light
- Lightening
- Shearing forces of water (Lenard effect)
- Plant sources, such as evergreen trees
- Negative oxygen concentration exceeding 1000 ions/cm<sup>3</sup> has been regarded as the threshold value for fresh air

# NAls on mental health

- Exposure to NAls showed highly significant increase in performance of all tested tasks (mirror drawing, rotary pursuit, visual reaction time, and auditory)
- Alleviate symptoms of seasonal affective disorder (SAD).
- NAls relieve symptoms in mood disorders to comparable to antidepressant nonpharmacotherapy trials were observed.
- NAls have also showed effective treatment of chronic depression.
- May help regulate serotonin

International Journal of Molecular Science Oct 2018, Negative Air Ions and Their Effects on Human Health and Air Quality Improvement Shu-Ye Jiang, Ali Ma, and Srinivasan Ramachandran Bowers B., Flory R., Ametepe J., Staley L., Patrick A., Carrington H. Controlled trial evaluation of exposure duration to negative air ions for the treatment of seasonal affective disorder. Psychiatry Res. 2018;259:7–14.

Goel N., Terman M., Terman J.S., Macchi M.M., Stewart J.W. Controlled trial of bright light and negative air ions for chronic depression. Psychol. Med. 2005;35:945–955.

- Researchers found that among more than 300,000 Dutch adults and children, those living near more “green spaces” tended to have lower rates of 15 different health conditions.
- The link was especially strong when it came to depression and anxiety.



# Denmark Satellite Imagery and Disease

- Largest investigation of the association between green spaces and mental health.
- Growing up near green spaces was associated with a lower risk of developing psychiatric illness in adulthood by anywhere from 15 percent to 55 percent, depending on the specific illness.
- For example, alcoholism was most strongly associated with lack of green space growing up, and risk of developing a learning disability was not associated with green space.
- Green space effect was dose dependent