



HEALTHY BUILDINGS POST COVID-19



Speakers



Katie Fink
Business Dev. Manager
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Managing Partner
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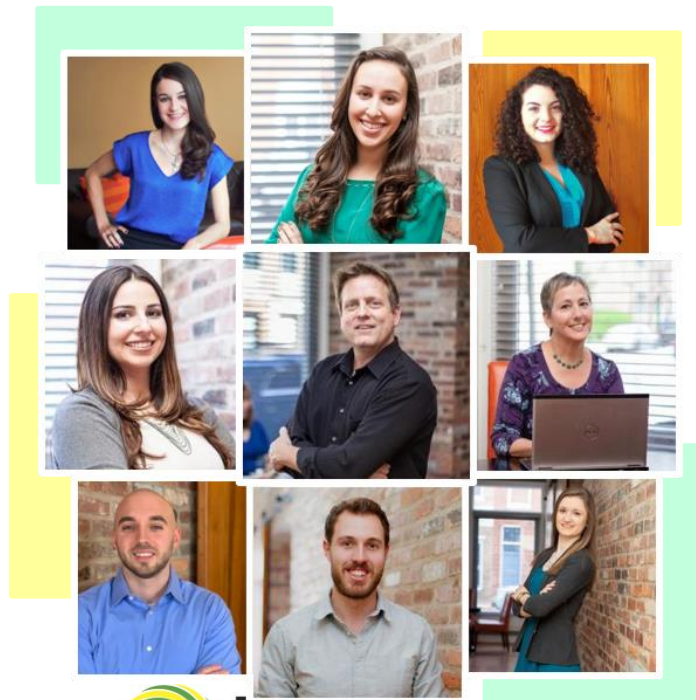


Moderator:
Krystal O'Hara
Managing Director
Lorax Partnerships



A Little About Lorax Partnerships...

- 17 years of green and healthy building experience
- Design, Construction Administration, Operations + Maintenance, Tax Incentives, and more!
- 9 employees
- Accreditations: LEED AP, WELL AP, Fitwel Ambassador, Green Globes Professional, NGBS Verifier, and more!
- 300+ certified projects, 100+ active projects
- ULI Gold Sponsor



Get To Know Engenium Group...

- MEP, FA/FP consulting engineers, 21 full time employees + 2 interns
- Offices in Baltimore and the District of Columbia
- Our mission is to develop and nurture long-lasting relationships
- Check us out at www.engeniumgroup.com!



Learning Objectives

- Become mindful of modern information flow
- Understand strategies that can be taken to increase building occupant health
- Realize costs of poor well-being and the benefits of health and wellness
- Understand the fundamentals of The WELL Building Standard and Fitwel
- Recognize opportunities to implement health and wellness strategies that address the spread of infectious disease in your projects

Why Address **COVID-19** Transmission in Our Buildings?

#1

Re-entry Into Office Spaces



#2

Attracting Tenants

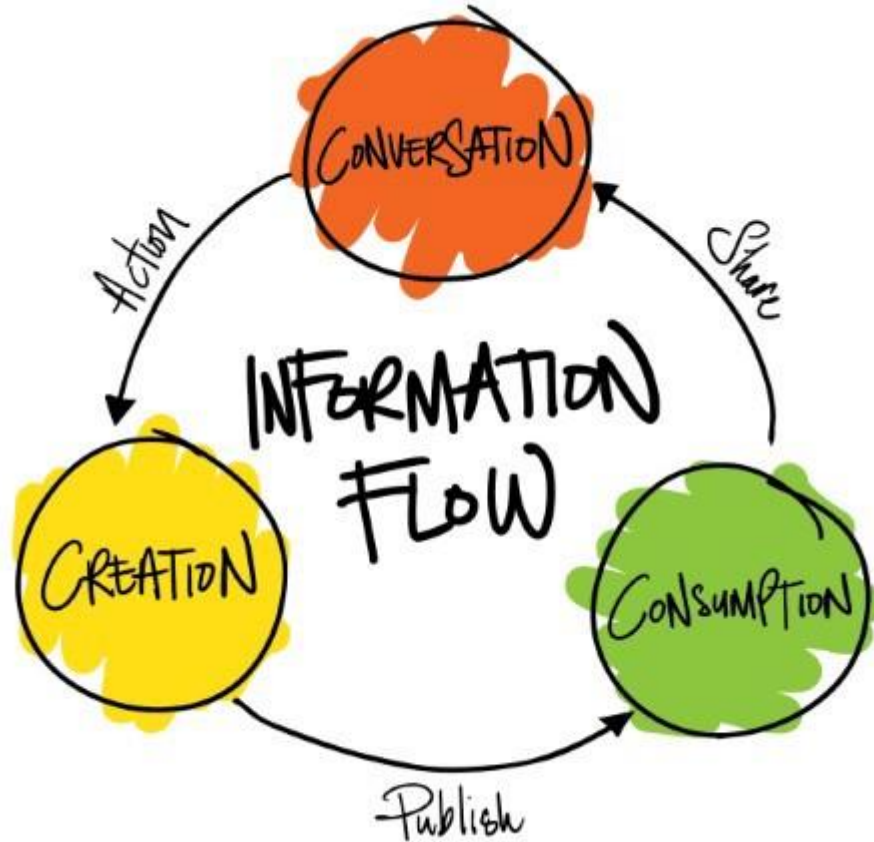


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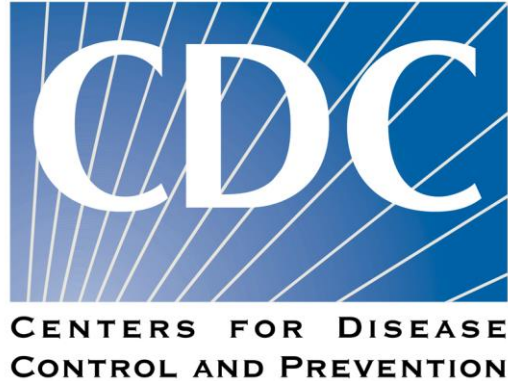
Renting Apartments



Be mindful about Modern Information Flow!



With so much information available, Who do we trust?



World Health Organization:

"The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes..."

https://www.who.int/health-topics/coronavirus#tab=tab_1

"People can catch COVID-19 from others who have the virus. The disease spreads primarily from person to person through small droplets from the nose or mouth, which are expelled when a person with COVID-19 coughs, sneezes, or speaks. These droplets are relatively heavy, do not travel far and quickly sink to the ground... These droplets can land on objects and surfaces around the person such as tables, doorknobs and handrails. People can become infected-by touching these objects or surfaces, then touching their eyes, nose or mouth."

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/q-a-coronaviruses>



**World Health
Organization**

Centers for Disease Control and Prevention:

“COVID-19 is thought to spread mainly through close contact from person-to-person”. Some people without symptoms may be able to spread the virus. We are still learning about how the virus spreads and the severity of illness it causes.”

“The virus that causes COVID-19 is spreading very easily and sustainably between people. Information from the ongoing COVID-19 pandemic suggest that this virus is spreading more efficiently than influenza, but not as efficiently as measles, which is highly contagious.”

“The virus may be spread in other ways. It may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes. This is not thought to be the main way the virus spreads, but we are still learning more about how this virus spreads.”

https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fprepare%2Ftransmission.html



Heating, Refrigeration and Air Conditioning Engineers

"Transmission of SARS-CoV-2 through the air is sufficiently likely that airborne exposure to the virus should be controlled. Changes to building operations, including the operation of heating, ventilating, and air-conditioning systems, can reduce airborne exposures".

[ASHRAE Position Document, April 14, 2020](#)

"Neither WHO nor CDC rule out the possibility of aerosol transmission under some circumstances and both recommend the use of engineering controls in some cases and cannot explain all incidents of community spread of COVID-19. ASHRAE's position that engineering controls to reduce airborne concentrations of viral particles or droplets are warranted to mitigate this risk is not in conflict with WHO and CDC's positions".

[ASHRAE Clarification Memo, May 28, 2020](#)



Take it all with a grain of salt!

- Much of the information available is derived from relevant experience
- COVID-specific research that *does* exist is young
- Scientific consensus is likely years away

Positive Steps to Increase Building Health

- Upgrade filtration
- Ultraviolet Germicidal Irradiation
- Bi-Polar Ionization Purification Technologies
- Humidification
- Increased Ventilation with Energy Recovery



Low hanging fruit: Upgrade Filtration

- Most recirculating systems use MERV-5 or MERV-8 filters
- MERV-11 filters are significantly more impactful against biologicals
- Be mindful of increased pressure drop
- Be mindful of existing system design
- Be mindful of energy intensity
- Consider Fan Filter Units in critical zones



Ultraviolet Germicidal Irradiation

- Deactivates Viruses by Mutating RNA (similar to DNA)
- Deactivated Viruses cannot reproduce
- Industry Standard Design: 85% 1-pass deactivation rate
- Diminishing returns of increased intensity
- Shortcomings of current technology
- The next chapter... UVLED!



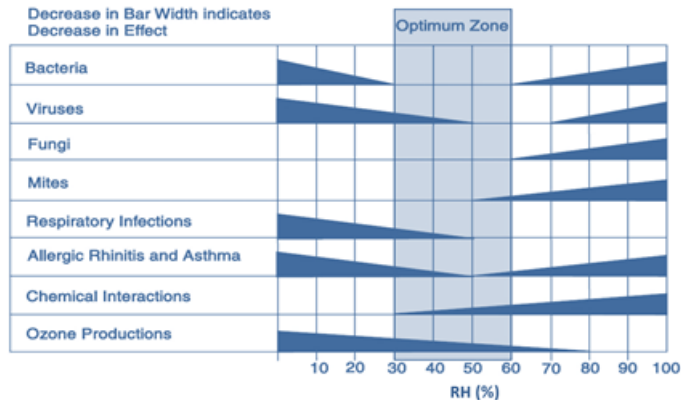
Bi-Polar Ionization Purification Technologies

- Creates a high concentration of positively and negatively charged ions
- Clumping effect leads to bigger, heavier particles
- Chemically altering affected molecules
- Research by ALG Lab Group shows high effectiveness on SARS-CoV-2 surrogate
- Low up-front cost, low maintenance cost, low operating cost



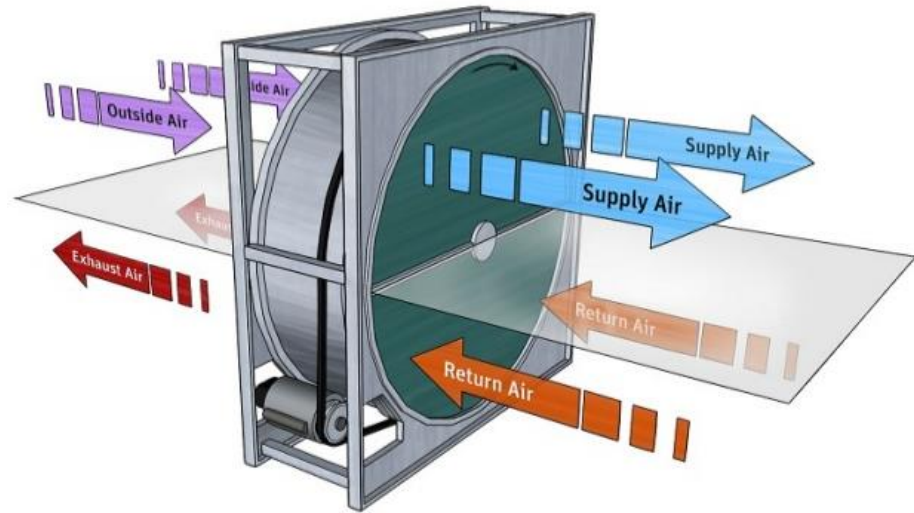
Humidification

- Target range is 40% to 60% Relative Humidity
- Humidity helps keep mucosal barriers hydrated and intact
- High first cost, high direct/indirect energy cost



Increased Ventilation

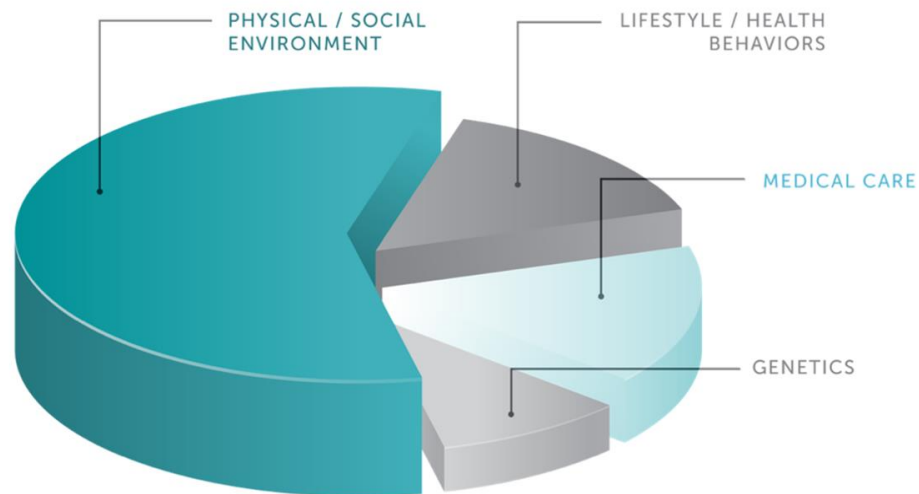
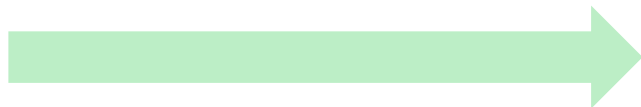
- Increasing ventilation dilutes suspended particles and biologicals
- Controls solutions are not enough!
- Bi-Polar Ionization Purification Technologies
- Humidification
- Increased Ventilation with Energy Recovery



Integrating Your COVID-19 Response into a

Holistic Approach to Health & Wellness

What determines
the state of health?



Source: Centers for Disease Control and Protection. Frequently Asked Questions. 2014. Available online at: <http://www.cdc.gov/nchhstp/socialdeterminants/faq.html>

The Cost of Poor Well-Being



\$63.6 billion in workers compensation in 2013.



\$13,375 average employer health insurance premiums for a family.



\$153 billion productivity losses annually.



51% - forecast of population that will be obese by 2030.

The **Benefits** of a Healthy Building Environment



41% lower health-related costs



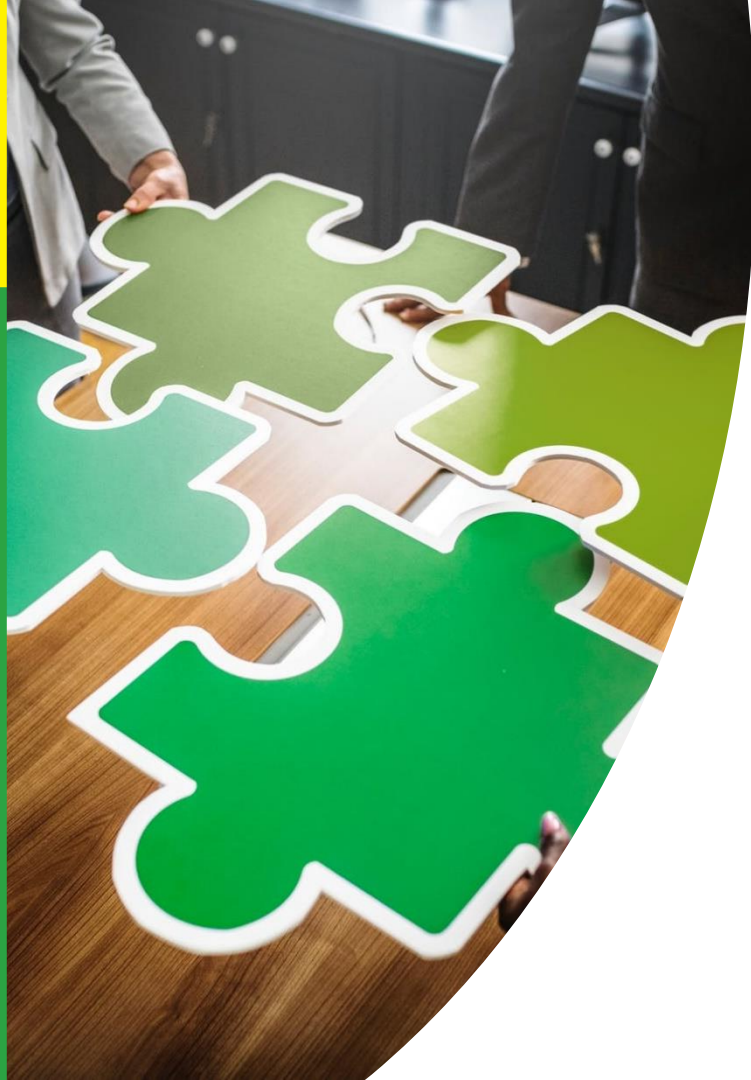
\$1 spent on wellness programs there is a \$3.27 medical cost reduction



28% reduction in sick time



55% overall improvement of well-being



Environment

LEED v4/ Pilot Credit

Living Building
Challenge

Green Globes

IgCC



Human Health

The WELL Building
Standard

Fitwel



THE **WELL** BUILDING STANDARD®

MIND

AIR

NOURISHMENT

FITNESS

WATER

LIGHT

COMFORT

- The world's first building standard focused exclusively on human health and wellness
- Administered by International WELL Building Institute (IWBI)
- Certifications by Green Business Certification Inc. (GBCI)

AIR

WATER

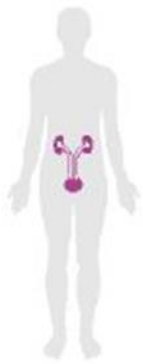
NOURISHMENT

LIGHT

FITNESS

COMFORT

MIND





The World's Leading
Certification System that
Optimizes Buildings to
Support Health

- The CDC and GSA led the development and pilot phase
- Administered and certifications by the Center for Active Design

12 Sections

- 1 Location
- 2 Building Access
- 3 Outdoor Spaces
- 4 Entrances + Ground Floor
- 5 Stairwells
- 6 Indoor Environments
- 7 Workspaces
- 8 Shared Spaces
- 9 Water Supply
- 10 Cafeterias + Prepared Food Retail
- 11 Vending Machines + Snack Bars
- 12 Emergency Procedures

7 Health Impact Categories



Impacts Community Health



Reduces Morbidity + Absenteeism



Supports Social Equity for Vulnerable Populations



Instills Feelings Of Wellbeing



Provides Healthy Food Options



Promotes Occupant Safety



Increases Physical Activity

WELL/Fitwel Strategies Addressing COVID-19



Air Filtration



Optimal Humidity

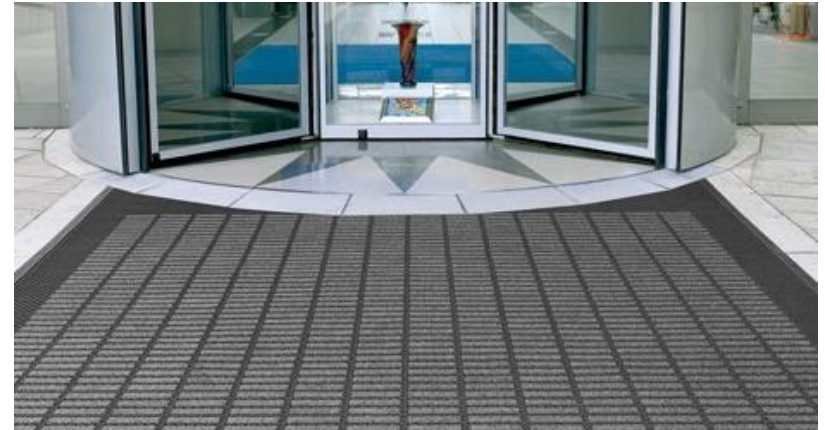


Increase Ventilation

WELL/Fitwel Strategies Addressing COVID-19



IAQ Testing & Indoor Air Quality Plan



Entryway Systems

WELL/Fitwel Strategies Addressing COVID-19



Moisture & Humidity Management



Microbe & Mold Control

WELL/Fitwel Strategies Addressing COVID-19



Water Quality Testing



Antimicrobial Activity for Surfaces

WELL/Fitwel Strategies Addressing COVID-19



Tobacco & Smoke-Free Policies



Common Area Cleaning Protocols
Cleanable Environment
Cleaning Equipment

WELL/Fitwel Strategies Addressing COVID-19



Hand-Washing Signage



Stakeholder Collaboration Process

WELL/Fitwel Strategies Addressing COVID-19



Quiet Room



Health Programming
Health & Addiction Treatment

WELL/Fitwel Strategies Addressing COVID-19



Emergency Preparedness Plan



Education & Communication

Recap and Conclusions

- Follow guidelines provided by reputable institutions like the WHO and CDC
- Behavioral measures are more effective than mechanical measures
- There is psychological value in the story; people are most productive when at ease
- Modifications to HVAC Systems are typically accompanied by energy penalties
- We must collectively value the health, safety and productivity of building occupants
- WELL and Fitwel Certifications can add validity to the health and wellness strategies you are already implementing.



THANK YOU FOR JOINING

Katie Fink | Lorax Partnerships
Calvin Douglass | Engenium Group

