

Joseph Allen

Marianne O'Hare: Welcome to Conversations on Health Care with Mark Masselli and Margaret Flinter. This week we welcome Joseph Allen, founder of the Healthy Buildings Program at the Harvard School of Public Health, seeking adoption of building standards that are aimed at promoting and protecting health.

Joseph Allen: This is a strategy that's good for all infectious diseases and whatever curveball COVID throws at us next.

Marianne O'Hare: We hear from FactCheck.org's Managing Editor Lori Robertson and we end with a bright idea improving everyday lives. Now, here are your hosts Mark Masselli and Margaret Flinter.

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Mark Masselli: Our guest believes our buildings can make us sick or keep us well and that we need to make healthy buildings the next public health revolution. But how do we reach this goal and what are their hurdles?

Margaret Flinter: Joseph Allen holds a Doctor of Science degree. He's an Associate Professor and Director of the Healthy Buildings Program at Harvard University's T.H. Chan School of Public Health. He co-wrote Healthy Buildings: How Indoor Spaces Drive Performance and Productivity.

Mark Masselli: Well, Joseph, welcome to Conversations on Health Care. We're big fans. But before we dive deeply into the topic, let's just start with your definition of a healthy building and why they are so important.

Joseph Allen: Well, so it's great to be here. Thanks for inviting me. I think it comes down to something that's really quite simple before we define what a healthy building is and why it's so important. The reality is we spend the vast majority of our time indoors. We are an indoor species, yet we spend all of our time I think thinking about out things like outdoor air pollution, and how the outdoor environment impacts our health. But the reality is that the indoor environment has this massive impact on our health. But the way we design operate and maintain our buildings hasn't been always designed around what we know the science tells us an indoor environment can be designed to promote health, not just protect us from disease that's important, but also promote our health and well-being, and so we'd been in the sick building era for the past 40 years.

Margaret Flinter: Well, Joseph, before you took your role at Harvard, I understand that you've worked as a forensic investigator of sick buildings, which is very intriguing as an idea sounds like real CSI stuff. Tell us a little bit of the story. How did you get into this line of work and study?

Joseph Allen: Yeah, so that's an interesting longer story. I went to school for biology at Boston College. Then for years, I went back and did the work I was doing while I was in college, I was a private investigator in New York

City, so doing a different kind of investigation or forensic investigation. Went back to grad school, got my degrees in public health, and it was there after I left and got my degrees I started working for a consulting company that started to do with these investigations of sick buildings, and they were forensic investigations. Everything from what would seem as minor, but it's not things like eye irritation or malaise, or something's off in a building to the very, very serious. Hospitals where multiple people had died from Legionnaires disease or an investigation with the US Army about 11 infant deaths at the base that they thought might be attributable to the housing.

In all of these, the goal, my goal and with my team was to determine if there was a cause, an environmental cause related to the building performance that was causing these cancer clusters or disease outbreaks, sometimes deaths. If we did find something, not only just finding it, but putting the controls to resolve it to be sure no one else was impacted.

Mark Masselli: Well, Joseph, I love this proposition that clean buildings should be the next public health revolution. I know people are eager to know how would that work and are you looking for public dollars to make all this happen?

Joseph Allen: Well, we have some public dollars available. But let's start with the reason why we have to have that happen. In the 1970s, we started tightening up our building envelopes in response to the energy crisis. We stopped designing buildings for people. Public health lost its seat at the table in the architectural design and engineering community, so it wasn't a surprise that we had this sick building era. We were confronted with all of our buildings that many of them that underperform in this era. This is why that revolution, the healthy building revolution has to change because it should be obvious that we need to design buildings in a way that promote human health.

I think what's become obvious because of COVID, a virus that spread nearly entirely indoors, that the indoor environment is really impacting all of us all the time and has been under appreciated. That's the genesis, short genesis of why we need this revolution to happen. How do we make it happen? I think the new work with the White House just over the past couple of months one elevating this conversation. The White House, we worked with them they put out a clean air and buildings challenge. That sets the stage. This is important from our top pulpit, bully pulpit in the United States they're saying this is important. I think that's key.

For things like schools, we have the American Rescue Plan Funds, hundreds of billions of dollars still on the table in terms of fixing our school infrastructure. Much of it not spent yet, so there are still

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opportunities out there. I don't think it's enough. I think we're just getting going, there have been bills proposed in Congress to give tax incentives for companies that would upgrade their ventilation systems or put an air quality monitoring. I think there's a lot of clever levers we can pull to help promote or advance this healthy buildings movement. But the very first one was the recognition that it's important. I've been talking about this for 20 years, there's some leading companies doing but it wasn't till COVID that we really got healthy buildings on the map. Now that people are talking about it, we can put in some of these bigger policies.

Margaret Flinter: Well, you are so right the way that COVID has made this a front and center issue, whether you're inviting people to your home for a holiday dinner or you're a health care facility dealing with whether rooms stay open or have to be shut down after somebody comes in. COVID has made this a front and center issue. But you said several months ago, December of last year I think it was, that the playbook, the country's playbook to fight COVID is outdated and you had a number of ideas. Let's check in with you. What's your thinking now on what we're doing right and what we're doing wrong with regards to our indoor spaces or anything else regarding the COVID pandemic?

Joseph Allen: Yeah, so there were a couple of things. Just like in that article, I say we shouldn't use a 2019 playbook in 2020. I think it was inappropriate to use our old playbook in 2022. Things like contact tracing, that's just not working anymore and we have new tools, specifically vaccine, better therapeutics. We now have rapid tests, we've been calling for these for a long time. Yes, in that mix was again a call for better ventilation. I've written 50 something Op-eds since the pandemic first started. Every single one mentions ventilation, so this had to be part of the playbook.

Actually, this is what has changed, there has been a big shift. The Biden administration's pandemic plan has now elevated healthy buildings, clean air and buildings as one of the pillars along with vaccination, then therapeutics, masking, testing, and now clean air and buildings. We're starting to see some of these as the new playbook. But it's things we've known all along, to be honest. We knew we needed those rapid tests early. We knew we needed a vaccine we got that through Operation Warp Speed. We knew we needed therapeutics, they're coming along.

Ventilation of buildings were not discussed for full year, really, except by a small group, right. But it's now entered into the mainstream in terms of this 2020 playbook. By the way, this should not go away when COVID goes away. This is a strategy that's good for all infectious diseases and whatever curveball COVID throws at us next.

Mark Masselli: Well, you've also entered the mainstream and you're a prolific writer,

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and you've written some things that really caught people's attention particularly focused in on the Transportation Security Administration, and really requesting that -- and its mass mandates for flights. But you laid out very clearly in your op-ed in The Washington Post some ways the airlines could diminish the really small risk from flying during COVID. I wonder if you could share some of those ideas. Just really out of curiosity has the airline industry reached out to you in terms of efforts that they've been taking?

Joseph Allen:

Yeah, so let's grounded in what the article was and why. I mean, so I've been studying in 2013 I was one of the lead authors of a national academies report on infectious disease transmission in airports and airplanes, so it's something I've been talking about researching for a long time. The article, I think, might surprise people. The key point is that you really don't get sick on airplanes. A lot of people are going to say, wait a second, I always get sick when I travel, and maybe you do you change time zones, you don't sleep that well, you maybe take a bus to conference room, a hotel room. But it turns out the time on the airplane is very low risk and why, it gets back to what we talked about for buildings good ventilation and filtration.

In fact, to put some numbers on it, in school you might get two or three air changes per hour, your home make it happen air change per hour. In an airplane, you're getting 10, 20 plus air changes per hour. Air comes off the engine, fresh outdoor air comes inside, you get a 50-50 mix of re-circulated air, the re-circulated air all goes through HEPA filters, high grade filters. The time on the airplane is actually low risk.

But I flagged one thing in that article, and it's the same thing I flagged 10 years ago. During boarding and when you get off the plane, the systems aren't always running. Now you have a lot of people exerting a lot high emission rate, small volume tube with no ventilation or low ventilation, low filtration. That's a high risk type. That's an area where I think masks should stay on, or airplane airlines need to be running ventilation systems at the gate. We've been saying this for 10 years.

I haven't been talking to them. Specifically I don't advise any airlines or manufacturers other than I've been talking about this loudly for a long time to anyone who listens. Our studies have shown it for a long time that the ventilation rates are low when the airplane is parked at the gate.

Margaret Flinter:

That is a very good take home message I think that all of our listeners are going to remember from this show, so thank you for that. Let me ask you another question and that is about some of the financial implications of making changes to buildings, certainly looking at a number of indicators that are worrying people about inflation. Being, at a four year high interest rates rising, some indications, possibly we could be entering a recession.

Joseph Allen

I'm sure you're hearing the argument that we really don't have the financial resources at this time to pay for healthy buildings or for the redesign to make them healthier. I have a feeling you've probably looked at the economic cost of not doing what you recommend needs to be done. What do you say to people that say this is too expensive and we can't get this done?

Joseph Allen:

Yeah, I'll make the business case for this I think really clearly for anyone, any executives that are listening, but let's just talk about the COVID risk first. I mean, if you haven't -- this has now become existential, if you don't handle your buildings properly, you're going to have cases it's people can get sick and your building, people may die because of spread in your building. You have brand damage issues. There's a lot of good reasons people's health being number one, that we have to do this, and COVID changed that.

Let me talk about the business case, even beyond COVID. This is going to surprise a lot of people. First, our research has shown if you make these healthy building investments, the costs are on the order of \$40 per person per year, against the benefit of \$6,000 to \$7,000 per person per year in gains from productivity. That's the individual level. You can look at the data in our book, I wrote it with Harvard Business School Professor John Macomber. We looked at what happens if a business puts in these healthy building strategies, we estimate that even including the cost, upfront cost, the CapEx cost, bottom line benefits to the company on the order of 10%, they have an individual benefits, business benefits.

Then third, a new study at MIT, out of our -- from our friends at down the road at MIT, showing that healthy buildings actually command a higher lease or rental rate than their peers controlling for other factors. Actually healthy buildings are a no-brainer, right, it's good health decision but it's also a good business decision, just a good financial decision, despite what I think is maybe seen as common knowledge that well, this must be expensive. The reality is sick buildings are expensive, healthy buildings are great business, a great business decision.

Mark Masselli:

Well, and that's -- I want to pick up on two points, one on the healthy buildings. I want to go back to your answer around the airlines. They're getting 10 changes per hour. Tell me what's the standard should be in our home and you were suggesting the homes were much lower. Then also in a healthy building what should we expect? We have people coming back to offices, what are some of the markers and also maybe is there anything that we should be looking at CO2 readings that might be helpful for -- what's the gauges that we might be looking at as a layperson in terms of simple questions that we can ask our employers about? Are you meeting these standards?

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Joseph Allen:

Yeah, great questions in there. One of the things we did was set a target air change per hour target, target ventilation rate. As far as I know, I don't think -- I think a lot of the major organizations have not really put out a number. I think that's been a problem, so let's just get right to it. I wrote an article in JAMA recommending four to six air changes per hour. To put some numbers on this, typical US home median gets about half an air change per hour. Air changes, you think about the volume of room of air in a room getting changed out. If it's an air change per hour is going to take at least an hour, two hours to clean out all that air so we want four to six air changes per hour.

Schools designed for three air changes per hour, but a design standard, not a performance standard, most have degraded over time, most schools get about one and a half air changes per hour, not nearly enough. Airplanes, now you're talking 10, 20 air change per hour getting a lot of turnover, and for reference a surgical suite would get 12 air changes per hour. We pegged our four to six this is what happens in a typical patient room in a hospital targets four to six air changes per hour. That's kind of a target that we like that, conceptually it makes a lot of sense.

You have these respiratory aerosols that we all admit all the time, they'll build up indoors in under ventilated, under filtered places, you have to remove them, you need some rapid turnover. Now your last question is really good in terms of what can somebody do. I think the first thing to do is simply ask the question, and you'll know how your building's performing based on that answer. They'll look confused, like they'd never heard it before, they're going to be right on top of it. You want more outdoor air, you want MERV 13 filters or higher. Typically, we use a MERV 8 filter captures a very small percent of particles. These are filters designed to protect equipment, not people. You want a MERV 13.

Three, you can supplement this with portable air cleaners, so you want higher ventilation rates. MERV 13 filters are better, maybe portable air cleaners. Your last point is you can get a portable air CO2 monitor like I have in my office right now. That's too high, I'm going to open my window, that's over a thousand parts per million. I like to see this under 800 parts per million of CO2, that'll tell you you're really well ventilated.

Now, there's a caveat, it's a long answer but there's important caveat here. CO2 tells you about the ventilation performance. It does not tell you about filtration performance, so you could have high CO2 just went up, I'm talking a lot, I have a high emission rate right now, my windows were not open, I just popped them open, we'll check back on this later. But you can have high CO2 with good filtration and it not be a risk. But if low CO2 under 800, you're in good shape.

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Margaret Flinter: Well, that was a lot of very actionable information that I think people will find really useful. I wonder if I can ask you to comment on health care as one sector. You talked a little bit about the surgical suites. I'm remembering back to the campaign, which is ongoing Health Care Without Harm, where we encourage everybody in health care to really step up around the environmental impact the health care can have and making a difference in that.

It seems from what you're saying that hospitals, community health centers, clinics, doctor's offices, health care offices, maybe should really be held to a higher bar than what they are today, by themselves, by public opinion and if all that fails by accreditation and licensor people. What's your sort of interaction with the health care community around them really needing to step forward and be leaders in this and also probably educating patients about what to do at home as well?

Joseph Allen: Yeah, I think you hit it right there. I mean, firstly I love the work of Health Care Without Harm for they've been doing terrific work for a long time. I think it's a leadership opportunity for the health care industry in a couple of levels, right. You think about the work, the original work Health Care Without Harm saying, let's just have healthy materials in our space. How could we possibly using materials with toxic chemicals in them. We have to change our practices. Even going back to mercury thermometers back two decades, right. Then now we're talking about well how do you create healthy building centers such that we don't just want good ventilation in the places where we have aerosol generating procedures, or we think we need respiratory protection. It turns out, we're all -- we know this, we're all emitting these viruses all the time if you're infected, so we want good air quality everywhere in the building, right, so there's a leadership moment.

We can't -- we also -- there's a real opportunity too to take a leadership position in merging this healthy building movement with the green building movement, right. We can't just dump a lot of air and not really think about our energy expenditure knowing that hospitals are our major draw on our energy system dominated by fossil fuel combustion, contributing to local air pollution impacts and climate change. There's an opportunity to find this sweet spot to say, well how do we create a healthy building space while also reducing energy. It can be done while using healthier materials, while educating the people who come through our doors that instead of just coming for treatment, we can push some of these upstream where you live has a massive impact on your health.

Can we push all of this into affordable housing, such that we're providing not just housing, but actually healthy housing, that's green

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housing, that's also reducing the demand or environmental footprint, so we can do all of that and health care system, I mean, you have the leadership position and the trusted voice, right. When you act, people follow it, this is the way it should be done with a holistic health lens. I don't think healthy buildings have been part of the health care conversation all the time.

Mark Masselli: Well, I really want to pick up on your theme about leadership. I think it's so important. You were talking earlier about the Biden administration though I don't think they've connected all the dots, I think they're hopeful that the schools and the municipalities will use that money wisely. But what additional leadership is really going to be required, and then talk to us about your ecosystem of allies that you have because it really is going to take a whole village of people to be engaged in this process. Who would you appoint people to in terms of our listeners, to keep an eye on, certainly your writing is one of them. Talk to us a little bit about other folks that we may want to be listening to.

Joseph Allen: Yeah, I mean, this sounds biased because it's people in my field, right. I'm in a small field, right, I'm an Editor of the journal Indoor Air, people probably didn't know there's a journal called Indoor Air. It's been around for a long time. That field has been -- we don't get a lot of funding, we haven't got a lot of attention, we finally forced our way to get some attention during the COVID crisis to say this is actually an indoor air issue. There's lots of great untapped expertise in that domain. I would say if you're in the healthcare space, or you're thinking about your next infectious disease grant or whatever it is, or healthy materials, there's a whole group of people that have spent their careers focusing on healthy building strategies that has tie-ins to physical activity and health, nutrition and health, air quality and health, infectious disease and health it has all these cross linkages, but I don't think groups necessarily think about our field right off the bat, I think you should.

In terms of what other groups, something I would like to see more of in this kind of clean air and buildings work or healthy buildings work, particularly from the government sector, is a little more public private partnership. I think we've seen massive success with the vaccine and therapeutic and even masks and testing where the government is essentially guaranteed a market here. We haven't really started to connect the public and these private organizations with public for the public good, and thinking about our building level strategies. There's lots of good companies out there, small companies, big engineering companies that would love to be connected with the market. They have the knowhow and the skill set, but we haven't always played matchmaker, and I think we could do a lot more there.

Joseph Allen

Mark Masselli: I think people are a little lost here in terms of what should be the standard. You did a wonderful job there. Thanks so much.

Margaret Flinter: I've got to tell you that we have certainly realized the impact of having a shutdown rooms because of exposure to COVID, and the huge economic cost of that as well so lots of --- [Crosstalk]

Mark Masselli: Maybe just one quick one, for healthcare facilities that have to shutdown rooms because there was somebody there. Is there a standard that you would use about the time they can come back and start utilizing the space again?

Joseph Allen: Yeah, I think most people would be surprised to learn that it doesn't take long to air out of space, right. Think about this air change per hour idea. You got a couple air changes in the air, which doesn't take all that long if you have a good system. It could be as quick as 20 minutes, 30 minutes. You're going to remove a lot of that virus. If you have someone who is infectious, and they're known infectious, even within an hour and that's a long time. But you can do a good job of if you have four to six air changes you're going to be pretty good after 30 minutes, right. It's not like this is going to linger for days and days clean the surfaces down, get a couple air changes in there, and you should be good to go.

Mark Masselli: Great, perfect. Thanks so much.

Margaret Flinter: Thank you, Joseph Allen. You have given us a lot to think about in terms of healthy buildings, and what all of us can do to advocate for more of them. Thanks to our audience for joining us. You can learn more about Conversations on Health Care and sign up for our email updates at www.chcradio.com. Joseph, thank you so much for joining us today.

Joseph Allen: Thank you. I enjoyed the conversation.

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Mark Masselli: At Conversations on Health Care, we want our audience to be truly in the know when it comes to the facts about health care reform and policy. Lori Robertson is an award winning journalist and Managing Editor of FactCheck.org, a nonpartisan, nonprofit consumer advocate for voters that aim to reduce the level of deception in US politics. Lori, what have you got for us this week?

Lori Robertson: In the wake of mass shootings in Buffalo, New York and Uvalde, Texas some officials have cited mental illness as a reason for the unprovoked attacks. But as we've explained before, having a mental illness isn't predictive of who will perpetrate a mass shooting. Back in 2019 we answered a question from a reader about the relationship between mental illness and mass murder following two mass

shootings in Texas and another in Ohio. At the time, then President Donald Trump suggested mental illness was one of the primary culprits. “Mental illness and hatred pulls the trigger, not the gun,” he said during a televised address following two of the shootings.

Once again, there is another set of mass shootings and politicians are making similar claims. On May 24, an 18 year old killed 19 children and two teachers at an elementary school in Uvalde, Texas. A week and a half before another 18 year old killed 10 people at a grocery store in Buffalo, New York in a racially motivated attack. In a speech at the National Rifle Association Convention in Texas on May 27, Trump again focused on the role of mental health in mass shootings.

Texas Governor Greg Abbott also brought up mental health in a press conference the day after the Uvalde massacre even as he acknowledged that the shooter did not have a known history of mental illness. “We as a state, we as a society need to do a better job with mental health.” Abbott said, adding, “Anybody who shoots somebody else has a mental health challenge.”

As we explained in our 2019 article, people with mental health disorders are more likely than those without such conditions to commit acts of mass violence, but many mass shooters do not have mental illnesses. It has not been shown that mental illness is the primary cause of mass murder. Abbott's belief that anyone who commits a mass shooting must have a mental health problem is common. But experts told us it was flawed.

Beth McGinty, a mental health and substance abuse policy researcher at Johns Hopkins University told us that those who commit violent acts aren't mentally well, drawing a distinction between mental illness and mental wellness. But that doesn't mean that the person meets the criteria for a mental illness or that treatment would have eliminated that person's violent act. She told us that it's important to improve the mental health system, but it wouldn't significantly reduce mass shootings or interpersonal violence overall.

Rather than focusing on mental health diagnoses, experts suggest paying attention to disturbing behavior as the best predictor of violent behavior is prior violent behavior. For more on this issue, see our website FactCheck.org. I'm Lori Robertson, Managing Editor of FactCheck.org.

Margaret Flinter:

FactCheck.org is committed to factual accuracy from the country's major political players and is a project of the Annenberg Public Policy Center at the University of Pennsylvania. If you have a fact that you'd like check, email us at www.chc.radio.com. We'll have FactCheck.org's Lori Robertson check it out for you here on Conversations on Health Care.

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Margaret Flinter: Each week Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. Smoking bans across the country have yielded countless health benefits in myriad ways, reducing smoking related illness and death. While smoking in most buildings and public establishments has been banned across the country for years, it's still a ubiquitous practice in most of the nation's casinos, subjecting employees and patrons of these establishments to secondhand smoke exposure.

The State of Colorado recently passed a ban on smoking in the state's casinos, and the results have been dramatic. Once smoking was banned. The number of emergency ambulance calls dropped by 20%. Dr. Stanton Glantz, Director of the Center for Tobacco Control, Research and Education at the University of California, San Francisco, says it's really a pretty simple equation. Long term exposure to secondhand smoke increases the risk of the development of blood clots that can block arteries causing an attack.

Dr. Stanton Glantz: There's the long term effects of increasing atherosclerosis but there's also this acute triggering effect, and even a few minutes of secondhand smoke exposure is enough to make your blood platelets get stickier. When that happens, they are more likely to form a blood clot and if that blood clot lodges in an artery in your heart it causes a heart attack. You could have people who never smoked in their life who walked into a smoky casino and the short term exposure in that casino could actually trigger a heart attack.

Margaret Flinter: The American Heart Association has applauded the first of its kind study supporting the smoking ban in casinos and hopes that operators of casinos around the country take note.

Dr. Stanton Glantz: The clear implication of this work is continuing to permit smoking in casinos sending people to the hospital and it's not doing it next month or next year. It's doing it right now. A 20% change in the number of ambulance calls, I mean that's very substantial.

Margaret Flinter: A smoking ban in casinos populated by thousands of people, eliminating secondhand smoke exposure to those people and significantly reducing smoking related medical emergencies. Now that's a bright idea.

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Mark Masselli: You've been listening to Conversations on Health Care. I'm Mark Masselli.

Margaret Flinter: And I'm Margaret Flinter.

Joseph Allen

Mark Masselli: Peace and health.

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Marianne O'Hare: Conversations on Health Care is recorded at WESU at Wesleyan University, streaming live at www.chcradio.com, iTunes, or wherever you listen to podcasts. If you have comments, please email us at www.chcradio@chc1.com or find us on Facebook or Twitter. We love hearing from you. This show is brought to you by the Community Health Center.

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