UCSF Smoking Cessation Leadership Center | National Center of Excellence for Tobacco-Free Recovery

"Adverse effects of marijuana smoke exposure on the heart"
on Tuesday, April 18, 2023, at 1:00 pm EDT

Matthew L. Springer, Ph.D., Professor of Medicine, Division of Cardiology, University of California San Francisco

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I. Research

Q: 1) This is great information, if we want to follow this topic what authors/labs publish on similar info for Public Health Tobacco people should follow?

2) If we look at population, projection, how many people will be affected by this in the US? Extra heart disease/ heart failure, etc.?

A: There's a growing number of people interested in this topic, and in California, some of the tax dollars from Prop 64 are funding research (including our clinical study) so more people are gravitating to the field for that reason as well. It would be difficult to make a simple list; we are finally at the point where this is true! Regarding the population question, the answers would depend on a lot of data that I don't have and on various assumptions; hard to know. I have colleagues at UCSF who study issues like that for tobacco full-time.

[Keyword search for UCSF researchers here: https://profiles.ucsf.edu/display/175502/Network/ResearchAreas]

Q: Are we close to a Surgeon General's Report on MJ?

A: Great question, I think it would be reasonable to do that. I just did a search and there was one Surgeon General advisory in 2019, at https://www.hhs.gov/surgeongeneral/reports-and-publications/addiction-and-substance-misuse/advisory-on-marijuana-use-and-developing-brain/index.html. However, this seems to be viewing "marijuana" as "THC and CBD" and not discussing the smoke effects, and also is focusing on the effects on the developing brain.

Q: Are any of these cardiovascular effects from smoke exposure reversible (with time or other interventions)?

A: Really good question and we'd like to learn more about that. The literature is mixed. To some extent, some are reversible to a point, but probably not back to baseline. One the other hand, there's a study showing that children of parents who smoked have reduced endothelial function as adults.

Q: Does nicotine exposure affect FMD? Or is it the inhaled smoke that causes this?

A: It's the inhaled smoke that causes the impairment of FMD. Nicotine is actually a vasoconstrictor, so it also has an effect of making arteries smaller, but the decrease in FMD is an inability to grow, rather than active shrinking.

Remember that marijuana smoke, which doesn't contain nicotine, also impairs FMD

Q: Public 2nd hand smoke is difficult to avoid. When a person holds their breath or covers the nose and mouth how much nicotine or marijuana does a person inhale before they become impaired for 90 minutes?

A: I guess that would depend on how good one is at not breathing! If you are holding your breath or covering your nose and mouth, successfully, then you aren't inhaling any smoke and won't be impaired. But if someone is inhaling, then it's difficult to extrapolate from the exact times in the rats to exact times in humans. We do know that 30 minutes of exposure to secondhand tobacco smoke impairs FMD in humans, and haven't tested shorter times; I'd be curious to know that.

II. Policy

Q: If the effects are not chemical specific how can the results be understood relative to other plant based second hand smoke, like industrial or general environmental exposures? Also, nicotine is the addictive constituent of tobacco products, hence the regulation. Alcohol is also addictive and has been shown to cause a multitude of harms, buy we have found ways to accommodate the behavior and industry.

How can we build a regulatory structure around that reduces these harms without new social harms?

A: First, I should clarify that the effects are not chemical-specific for endothelial function, more specifically, acute effects on endothelial function. This doesn't mean they are not chemical specific for the long term effects, or for effects on the heart. For the endothelial function, it's actually pretty consistent: vascular dysfunction has been reported for exposure to wood smoke, candle smoke, and burning incense smoke, and both particulate air pollution and wildfire smoke cause a range of cardiovascular effects.

For the second question, that's more of a policy goal for which I can only agree is a good goal, but I'm not an expert on how to go about it, in contrast to many of my colleagues at UCSF's Center for Tobacco Control Research and Education, who eat this stuff for breakfast.