The Hidden Cancer Risk of Frequent Flying Transcript

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Study on Flying and Cancer Risk

Does flying increase the risk of cancer? If you spend a lot of time flying, or especially if you work as a pilot or flight attendant, there is a new study you should know about.

A study published in JAMA Internal Medicine in 2026 found that pilots and flight attendants had some of the highest rates of deaths from cancers that researchers classified as potentially related to radiation exposure.

And there is a biological reason researchers are interested in this question. Every time an airplane climbs to cruising altitude, the people onboard are exposed to higher levels of cosmic ionizing radiation than people on the ground.

Well, that just makes sense. But for an occasional traveler, this exposure is relatively small, but for pilots and flight attendants who may spend hundreds of hours in the air every year, for decades, the cumulative exposure becomes much more important.

Let's look at what this new study actually found, why flying exposes you to more radiation, and what people who fly frequently can potentially do to reduce their exposure.

Now the study was conducted by researchers affiliated with Harvard Medical School, Brigham and Women's Hospital, and Massachusetts General Hospital. The researchers analyzed more than 12 million deaths in the United States occurring between years 2020 and 2024. They examined more than 500 different occupations including over 14,000 pilots and over 7,00 flight attendants.

Now this is an important point because many earlier studies of flight crews included much smaller numbers of people. The researchers focused on cancers that previous radiation research has associated with ionizing radiation.

Who Was Studied and Which Cancers Were Included

And they included breast cancer, cancers of the nervous system, including brain cancer multiple myeloma, leukemias, lymphoma, thyroid cancer, prostate cancer melanoma and actually non-melanoma skin cancers.

Now they intentionally excluded lung cancer from this category because cigarette smoking is such a powerful risk factor for lung, cancer that it would significantly complicate the analysis.

And the researchers adjusted the results for factors including age at death, sex, race, ethnicity, education, and marital status. The findings were striking.

Of the more than 500 occupations examined, flight attendants had the highest risk-adjusted percentage of deaths from radiation-related cancers at 6.9%.

Pilots were second at When compared with people in all other occupations, flight attendants had approximately 50% higher adjusted odds of dying from one of these radiation-associated cancers.

And pilots had about 36% more adjusted. I want to explain that carefully because this type of statistic is easily misunderstood. This does not mean that flight attendants have a 50% greater chance of developing cancer during their lifetime.

The study looked at people who had already died and asked what proportion of deaths in different occupations were attributed to these particular cancers.

So the proper interpretation is that among deceased flight attendants, the adjusted odds that the cause of death was one of these radiation related cancers was approximately 50% higher than among people from other occupations.

For breast cancer mortality, The adjusted Odds were approximately 61% Higher among flight Attendants and 57% high among pilots compared with other Occupations for prostate cancer Mortality.

The odds were Approximately 75% High among Flight. attendance and 38 percent higher among pilots.

Key Findings for Flight Attendants and Pilots

The researchers also found statistically significant elevations involving central nervous system cancers like I mentioned before and melanoma in both pilots and the flight attendants.

Interestingly, when researchers looked at cancers that were not classified as radiation related, pilots in flight attendance were much closer to the middle of the pack among the occupations studied.

That makes the findings more interesting because The increase was not simply seen across every type of cancer. The researchers also included some clever comparison groups.

For example, aircraft mechanics and aircraft assemblers work around airplanes but do not spend thousands of hours flying at high altitude. These groups did not demonstrate the same elevation in radiation-related cancer mortality, which would make sense.

Researchers also looked at nuclear technologists who have known occupational exposure to ionizing radiation. nuclear technologists ranked near the top for radiation related cancer mortality as well.

Again, none of this proves directly that cosmic radiation caused the cancers, but the pattern certainly raises an important question and one that's been concerning for many years.

So what exactly is cosmic? Well, the earth is constantly being bombarded by high energy particles originate from outside our atmosphere. Fortunately, your atmosphere provides an enormous amount of protection.

But when you fly at 30,000 to 40, 000 feet, there is much less atmosphere above you shielding you from this radiation. The CDC has told us that pilots and flight attendants are exposed to cosmic ionizing radiation on every flight.

And ionising radiation is different from things such as radio waves or normal visible light because it carries enough energy to damage molecules inside the cells, including DNA.

And when DNA is damaged, your cells have extensive repair systems designed to correct that damage, but that doesn't always protect a person 100% of the time.

Why Flying Increases Radiation Exposure

So if DNA damage is not repaired correctly, mutations can occur and this can lead to the development of abnormal cell replication and cancer. and so with flying the dose generally increases with altitude because there is less atmosphere protecting you it also increases.

With latitude flights traveling closer to the north or south pole generally receive more cosmic radiation than flights closer. To the equator because the earth's magnetic field provides less protection in polar regions that means that long distance flights across northern routes can produce substantially greater radiation exposure than shorter flights of lower latitudes.

Now the amount also varies with solar activity and occasionally the sun releases large bursts of energetic particles

called solar particle events. These events can temporarily increase radiation levels at aircraft altitudes Now, the Federal Aviation Administration actually developed a computer program that can estimate the cosmic radiation those received on a particular flight based on altitude, geographic location, solar activity, and the flight route.

Now there's another important issue that may be affecting pilots and flight attendants besides radiation, and that is circadian rhythm disruption. Pilots and Flight Attendants frequently work overnight, sleep at unusual times and repeatedly across multiple time zones.

Your body operates according to roughly a 24-hour biological clock called the circadian rhythm. This clock helps to regulate sleep, hormones, immune function, metabolism, your body temperature, DNA repair, and many other critical biological processes.

Constantly shifting the light dark cycle and sleeping when your buddy expects to be awake can disrupt these rhythms. The International Agency for Research on Cancer has classified night shift work involving circadian disruption as probably cancer causing to humans.

So when we discuss cancer risk amongst aircrew, cosmic radiation may not be acting alone. There may be a combination of exposures involving cosmic ionizing radiation, circadian disruption, irregular sleep, and possibly ultraviolet radiation particularly amongst pilots.

Now melanoma skin cancer deserves special attention.

Other Risks: Circadian Disruption and Melanoma

A previous meta-analysis published in JAMA Dermatology examined 19 studies involving more than 260,000 people working in flight-based occupations. The researchers found that the incidence of melanoma among pilots and cabin crew was approximately twice that of the general population.

Again, this doesn't necessarily mean that cosmic radiation causes melanomas, but we do know that ultraviolet radiation can contribute, particularly for pilots, because some of the UV radiation can penetrate certain cockpit windows.

But also lifestyle factors, including recreational sun exposure, could also contribute. Now, like any studies, this new study has some limitations. First is based on death certificates, not medical records tracking workers throughout their careers.

Second, researchers knew a person's usual occupation, but they did not know exactly how many years each person worked, many hours they flew, which routes they've flew or their cumulative radiation dose.

A pilot flying short domestic routes for 10 years could have very different radiation exposure from someone flying polar international routes. For 30 years the researchers also cannot fully adjust for every cancer risk factor including smoking history, alcohol use, diet, exercise, reproductive history, family history genetic susceptibilities, ultraviolet exposure and other environmental exposures.

And most importantly, it wasn't observational studies. and as we know, observations studies don't always prove cause and effect. But when you combine this new study with decades of research showing higher cosmic radiation exposure in aircrew, higher rates of melanoma in multiple studies, evidence involving breast cancer and flight attendants, and earlier studies relating cumulative radiation exposures to certain cancers and pilots, there's enough evidence that I believe occupational exposure of course, deserves serious attention.

So what can pilots, flight attendants, and frequent flyers do to protect themselves? Well, for someone who flies occasionally for vacations or business, I would not panic at all.

Study Limitations and What Frequent Flyers Can Do

Your cumulative exposure is dramatically lower than someone working hundreds of hours in the air every year. However, a professional air crew Cumulative exposure is worth considering and it definitely appears to be a risk.

So people that fly a lot, especially aircrew, can estimate their radiation exposure with the tools and programs I mentioned earlier. This easily can be done so you can get an estimate of your risk and if you fly, a certainly you need to protect your circadian health.

That means making sleep a medical priority, not an afterthought. Whenever scheduling permits, try to maintain regular sleep and wake times, obtain sufficient sleep, keep sleep environments dark and cool, and limit unnecessary disruption of your biological clock.

And again, if you have to fly a lot for your occupation or business, then you'll have address the other things which can contribute to cancer. You have to maintain a healthy body weight, exercise regularly, eat a nutrient-dense diet rich in vegetables and whole foods, you need to avoid tobacco, really limit or do not consume any alcohol, and maintain healthy vitamin D levels.

Some people just have to fly a lot, their business, or if they're part of the air crew. And it'd be nice if there were more studies on things which could protect them, the ways they could be more proactive.

For example, experimental studies have found that melatonin can reduce DNA and cellular damage caused by ionizing radiation. In one small human study, volunteers took melotonin before their blood cells were exposed to gamma radiation, and researchers found significantly less DNA damage and fewer chromosomal abnormalities.

Animal studies have demonstrated substantial radioprotective effects. However, we do not yet have clinical trials showing that melatonin prevents cancer in pilots or flight attendants exposed to cosmic radiation.

Other natural agents which would be worth considering until we have more research which are safe and effective. N-acetylcysteine, selenium, curcumin from turmeric, spirulina, quercetin, resveratrol, chlorella, vitamin C and E.

These all have some preliminary evidence that they protect against radiation exposure. But again, we don't have any conclusive data, unfortunately, of studies showing that it dramatically reduces your risk.

So I'm hoping there will be more studies in this area because we definitely need them. Well, I hope you found this video helpful. And if you liked it, make sure to hit the like button and subscribe to the channel if haven't subscribed yet.

I look forward to talking to you about another health issue here in the upcoming edition of Dr. Stengler's Health Breakthroughs.