

How to Balance the Benefit and Risk of Radiological Tests

VALUABLE TOOLS

X-rays, mammography, CT (Computed Tomography), and PET Scans (Positron Emission Tomography) can be invaluable tools to diagnose illness. Plain X-rays provide a simple view, whereas mammography, CT, and PET Scans create more complex dimensional views, thereby increasing accuracy as well as radiation exposure.

CALCULATING RADIATION

On average, a person in the U.S. receives about 3 millisieverts of radiation per year from natural background sources alone. This baseline is what we use throughout this piece when comparing medical imaging doses to everyday radiation exposure.

RADIATION COMPARISON

Chest X-ray	0.02 mSv	~2.5 days natural exposure
Panoramic Dental X-ray	0.01 mSv	~1 day natural exposure
Mammogram	0.4 mSv	~7 weeks natural exposure
CT Scan (head)	2 mSv	~8 months natural exposure
CT Scan (abdomen)	8 mSv	~2.5–2.7 years natural exposure
Combined PET/CT Scan	22–25 mSv	~7–8 years natural exposure

5 TIPS TO REDUCE YOUR RADIATION EXPOSURE

1. Ask if the test is necessary and how it will change your treatment.
2. Request the lowest radiation dose possible (especially for children).
3. Keep a record of your imaging history to avoid repeat tests.
4. Ask about alternative tests (ultrasound, MRI) that don't use radiation.
5. Discuss cumulative exposure with your doctor if you've had multiple scans.

WHAT ARE THE RISKS OF RADIATION EXPOSURE?

Radiation exposure can cause harmful oxidative stress. This essentially means that conditions are such that this can cause the cells in our body to deteriorate early. Fortunately, there are measures we can take that can reduce these risks.

MORE WAYS TO REDUCE RADIATION EXPOSURE RISK

Water:



Stay hydrated. This helps your kidneys clear radioactive tracers faster after scans like PET, and supports your body's overall ability to repair cellular damage.

Colorful Veggies & Fruits:



Eat antioxidant-rich foods like berries and vegetables to help counter the oxidative stress radiation can cause.

Do No (More) Harm:



Minimize other oxidative stressors around the time of testing — alcohol, tobacco, chemical exposure, and air travel, which adds extra cosmic radiation at altitude.

Radiation Dosing — It All Adds Up:



Radiation exposure is cumulative. Track any tests you've had and ask your doctor whether a lower-dose or radiation-free alternative (ultrasound, MRI) could work instead.

Vitamins & Supplements:



Vitamin C may help protect DNA from oxidative damage; vitamin D3 may help protect cells (more research needed).

Astaxanthin and **selenium** are antioxidants that may reduce oxidative stress.

NAC may help protect the kidneys during contrast-enhanced CT.

Ginkgo biloba, taken the week of testing, may offer some protection. Check with a doctor first, especially if on blood thinners (ginkgo and NAC have mild blood-thinning effects).

Acemannan: In mouse studies, oral acemannan (50 mg/kg for seven days) improved survival after radiation exposure, likely by boosting lymphocyte counts, spleen cellularity, and cytokine signaling. No human radioprotective dose has been established, so it remains investigational rather than proven.

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