

TOOTHFULLY. *speaking*



Dr. Preeti Desai

DENTAL X-RAYS! WHAT IS "SAFE"?

Part II of III

X-rays are measured in units of "sieverts". A sievert is an international unit of ionizing radiation dose based on a probable risk of cancerous changes in the body being radiated. When doctors want to calculate the radiation

dosage you receive there are 3 factors to realistically consider: a) dose from the machine (measured in grays) b) actual tissue/bones teeth etc absorbing some of the dosage (sieverts) and c) how much area is being exposed (sieverts/area). You as the patient must understand that the dosage coming out of the machine is only minimally absorbed by your body while the majority of the x-ray beam is absorbed onto the film or sensor capturing information about your health.

We discussed in last month's column that different types of x-ray machines have different levels of x-ray radiation. The International Commission on Radiological Protection recommends limiting to 50 mSv in a single year with a maximum of 100 mSv in a consecutive five-year period.

Daily small amounts of radiation exists in our environment. This is called natural background radiation from space, the earth, air, water and the concrete around us. The amount of this radiation we are exposed to depends upon where we live (ie higher elevations etc). To make a comparison for practical purposes, we compare dental/medical radiation to our everyday lives:

NATURAL BACKGROUND RADIATION = 3 MSV/YR	EQUIVALENT AMOUNT OF BACKGROUND RADIATION
1 Panoramic X-ray 0.02 mSv	up to 3 days
4 bitewing X-rays 0.005 mSv	0.6 day
FMS 0.15mSv	3 days outside / cross country flight
Cephalometric X-ray 0.006 mSv	up to 1 day
CBCT (both jaws) up to 0.6 mSv	up to 30 days
Chest X-ray (single view) up to 0.01 mSv	1 day
Chest X-ray (2 view) up to 0.1 mSv	10 days
Head CT up to 2 mSv	up to 8 months
Chest CT up to 3 mSv	up to 12 months

Science has no evidence that dental diagnostic x-rays cause cancer but 1/1,000 people will develop cancer from an exposure of +10 mSv (not dental x-rays alone). However, common sense prevails to conclude that even cumulative low doses of radiation may potentially cause harm and we should always try to minimize radiation exposure. Children are at 3-5X higher radiation risk induced for cancer mortality risk than adults because their immature organs are inherently more radiosensitive and they have many more years to live and accumulate dosage.

So you must understand that in comparison, when you now walk into today's dental office, we do not prescribe x-rays haphazardly as there is a much greater understanding of cumulative x-ray radiation dosage. But saying that, taking charge of your own health is through knowledge based on facts not an unreasonable fear of the unknown ...

*Next month ... Part III:
Are Digital X-rays Better?*



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