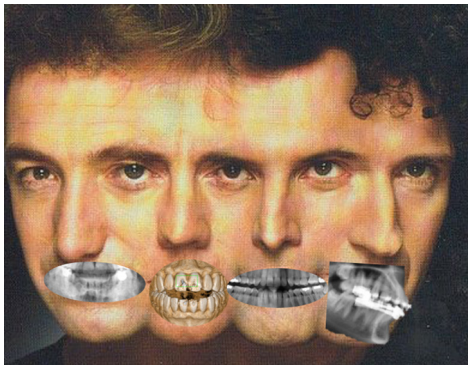
RICHMOND
ENDODONTIC CENTRE

JUN
2021



Radio Ga Ga

Sensational unsubstantiated claims in the media have fostered a culture of irrational fear regarding radiation to flourish. Far too many patients are refusing safe and appropriate imaging to the detriment of their health. This lamentable development stems from the linear no-threshold (LNT) hypothesis. It assumes no dose of ionising radiation is so small as to avoid an increased risk of cancer. For exposures to high doses of radiation >100 millisieverts (mSv), the LNT model is based on a sound scientific footing and beyond reproach. In 2018, the American Association of Physicists in Medicine (AAPM) Policy No. PP-25C was formalised; it states "At doses below 100 mSv the epidemiological evidence supporting increase cancer incidence or mortality is inconclusive". Predictions of hypothetical cancer incidence and mortality from the use of any diagnostic imaging that exposes one to less than 100 mSv are highly speculative. This is according to the AAPM, International Commission on Radiological Protection (ICRP), Académie française des sciences-Académie nationale de medicine (AFSANM), World Health Organisation, and other analogous agencies.

The LNT theory also purports the sum of small exposures, over time, accumulate and equate the same risk as a single high dose. However, a 2005 report by the AFSANM found a growing body of research demonstrates the human body is not a passive accumulator of radiation damage but promptly repairs it via 'activated' processes. A recent investigation found that DNA damage from CAT scans is repaired within twenty-four hours. In 2007, the ICRP stated, "The aggregation of very low individual doses over extended time periods is inappropriate, and in particular, the calculation of the number of cancer deaths based on collective effective doses from trivial individual doses should be avoided".

Radiation hormesis is the hypothesis that low doses of ionising radiation are beneficial as they activate repair mechanisms that otherwise remain dormant. An Australian study found the frequency of chromosome breakage in cells was higher in those that had greater solar UV exposure. This supports the linear aspect of the LNT model. However, the misrepair of damaged DNA strands was highest for those with less sun exposure. Biological data demonstrates the powerful and diverse defence mechanisms are more active, efficient, and proficient against radiation-induced carcinogenesis at higher radiation doses. The LNT theory only accounts for the defence mechanisms being overwhelmed at high doses of radiation but not their activation and optimisation at low doses.

Radiation protection agencies recognise three kinds of exposure, natural background radioactivity (2.4 to 3.2 mSv/year), medical imaging (0.6 to 3.0 mSv/year), and miscellaneous (0.31 to 2.84 mSv/year). Strict adherence to the LNT theory would categorise background radiation as the most hazardous risk factor for cancer. Even if exposed to the highest levels of these three categories, one would be 90% below the 100 mSv safety threshold. A periapical radiograph is 0.005 mSv and a CBCT scan is 0.18 mSv. No regulatory body has set a limit on the number of diagnostic radiographs. Instead, it is best to adhere to the principle of ALARA (As Low As Reasonably Achievable). Strive to minimise a patient's radiation exposure but never at the expense of attaining an accurate diagnosis or optimal result.

The EPA in the US estimates 20% of the population will die of cancer. The risk of cancer fluctuates greatly depending on lifestyle and environmental effects and this most certainly does not include dental radiography. A patient refusing a dental radiograph because of the hypothetical harm of radiation is accepting the nonspecutaltive risk of a misdiagnosis or clinical misadventure. It is time to expose the facts about dental radiographs. No evidence exists that dental radiography is even a slightly relevant factor for the risk of cancer whatsoever.

Regards,

Joel N. Fransen
BSc(OT), DMD, FRCD(C)
Certified Specialist in Endodontics

Richmond Endodontic Centre
Dr. Joel N. Fransen

110-11300 No.5 Rd
Richmond, BC V7A 5J7
office@endodonticcentre.com
T 604.274.3499
F 604.274.3477

Office Hours
8am to 5pm - Monday to Friday
Extended hours are also available

Please support my 2021 B.C. Ride to Conquer Cancer. This will be my tenth year in the Ride and with your support, it will be the best yet! Thank you to the superheroes that have donated so far.

TOUR DE CURE
PRESENTED BY WHEATON

WWW.ENDODONTICCENTRE.COM