

Program: Should You be Afraid of X-ray Radiation from Medical Imaging?

Speaker: Mervyn D. Cohen, MD, PhD, professor emeritus, IUPUI; pediatric radiologist, IU Health Physicians

Introduced by: Alison Brown

Attendance: 123

Guests: Paul Lew, Richard Peine, Farouk Khairy, Susan Fordyce, Charles Hyde, Noah Palmer, Sheri Roizen, Janet Harris, Greg McCauley

Scribe: Dick Garrett

Editor: Ed Nitka

Surely everyone in today's audience was eager to hear the answer that arises from the speaker's title. Should I have another CT scan to look at my knee or wait another few months to see if the treatment worked? Should I keep submitting to the dentist for yet another panoramic X-ray? Dr. Cohen's talk was historical and general: he did not present CT scan dosage, effects, or specific recommendations, so these questions remain unanswered.

Dr. Cohen was a good presenter with obviously excellent credentials; his delivery style was relaxed and easy to listen to. He delved into the history of x-rays and talked about some of its early uses.

The main theme of his talk focused on the media and its use of hyperbole to catch the reader's attention, causing the general public to believe that there is a dangerous connection between CT scans and cancer. Twenty-seven of his approximately 65 slides focused on these "fake headlines". Why are they exaggerations? Because there is a tendency for the authors in academic and other situations to aggrandize themselves by attracting attention to new and exciting findings, even though they may have insufficient data to support their case. Once these published medical articles are picked up by the press, they tend to pick out the spectacular material and ignore the caveats, footnotes and other data that moderate the message. He pointed out that a 2012 article published in Lancet is the basis of many media articles that are in circulation even yet today -minus the qualifiers.

In referencing the inadequate scientific data that leads to incorrect decisions, he very briefly explained some of the shortcomings of their work. What studies are available? What conclusions can be drawn from these studies, where do they fall short? By publishing in the finest medical journals, they certainly fooled editors and referees; these critical readers must have seen some value in their work otherwise they would not have allowed the papers to be published. Where did these folks go wrong?

Dr. Cohen briefly explained the complexity of determining very low dose radiation damage. Even with our current state of knowledge, we simply do not know whether a threshold level to damage exists. The LNT (linear no-threshold) model likely overestimates risk in the very low dose region, but actual data in complex organisms is lacking. There are too many variables at play.

At the end of his presentation, he asked us all to look at the costs and benefits of that next CT scan. Both the medical community and equipment manufacturers are working to reduce accumulated radiation dose via new hardware technology and software techniques, but... In all likelihood for the majority of people, annual dental X-rays, an occasional chest 'film', or even a CT would be inconsequential. May some individuals be more susceptible to very low-level radiation damage? Possibly, but alas, there is no conclusive data at this point.



Mervyn D. Cohen, MD