

Handout outline for Annual Meeting AAPM 2017 in Denver, Colorado The Future of Medical Physics in Relation to Low-Dose Radiation Effects (Presentation 01 August 2017 at 2:45 PM by L. K. Wagner)

1. Title: Diagnostic Medical Radiation Promotes Health.
2. Purpose of Profession: Radiology advances healthcare through medical imaging.
3. Humans are easily deceived, distracted, and manipulated
4. The illusionist focuses us on what they want us to see: Patient doses should be kept ALARA is monocular vision
5. ALARA sends a monocular message: Medical radiation is bad for you
6. ALARA great mantra for radiation workers
7. ALARA shortsighted mantra for patients
8. Occupational radiation exposure differs markedly from medical radiation exposure
9. "There is no safe dose"?
10. Safety does not mean "with no risk". Safety means risk sufficiently low to justify activity.
11. "There is no safe dose" is a myth
12. Balancing benefits and risks --- the message behind the concept suggests that medical radiation is a zero-sum game.
13. & 14. Medical uses must ensure benefits exceed risks to the greatest extent possible.
15. Correlation does not imply Causation!
16. – 19. Scientific paper exhibit 1.
20. Scientific paper exhibit 2.
21. Radiation-focused message from NCRP 2007: Medical radiation exposure increased six fold since 1980.
22. Medical care concern: Was six fold increase justified by health benefits?
23. List of some health benefits from six fold increase.
24. Scientific paper exhibit 3: Japan at greatest risk for induced cancers from medical radiation.
25. Life expectancy of Japanese highest on planet
26. Scientific paper exhibit 4: Use of medical diagnostic radiation is a public health issue.
27. By 2012 mortality from cancers declined.
28. Life expectancy at all-time high
29. Life expectancy has generally increased since x-rays were discovered.
30. Use binocular vision for our profession: benefit/risk not risk alone.
31. By managing medical radiation well, we are making highly beneficial medical procedures better.
32. Conclusions:
  - a. Focusing on radiation as harmful excludes the good that radiation does for patients
  - b. Focusing on all aspects of health outcome delivers a message that considers the benefits of medical radiation in relation to the potential downside.
  - c. The message that is in the best interest of the patient's health is the one that places benefit/risk into perspective and not one that emphasizes risk at the expense of benefit.