

Quality Quest *for* Health



A Burning Platform

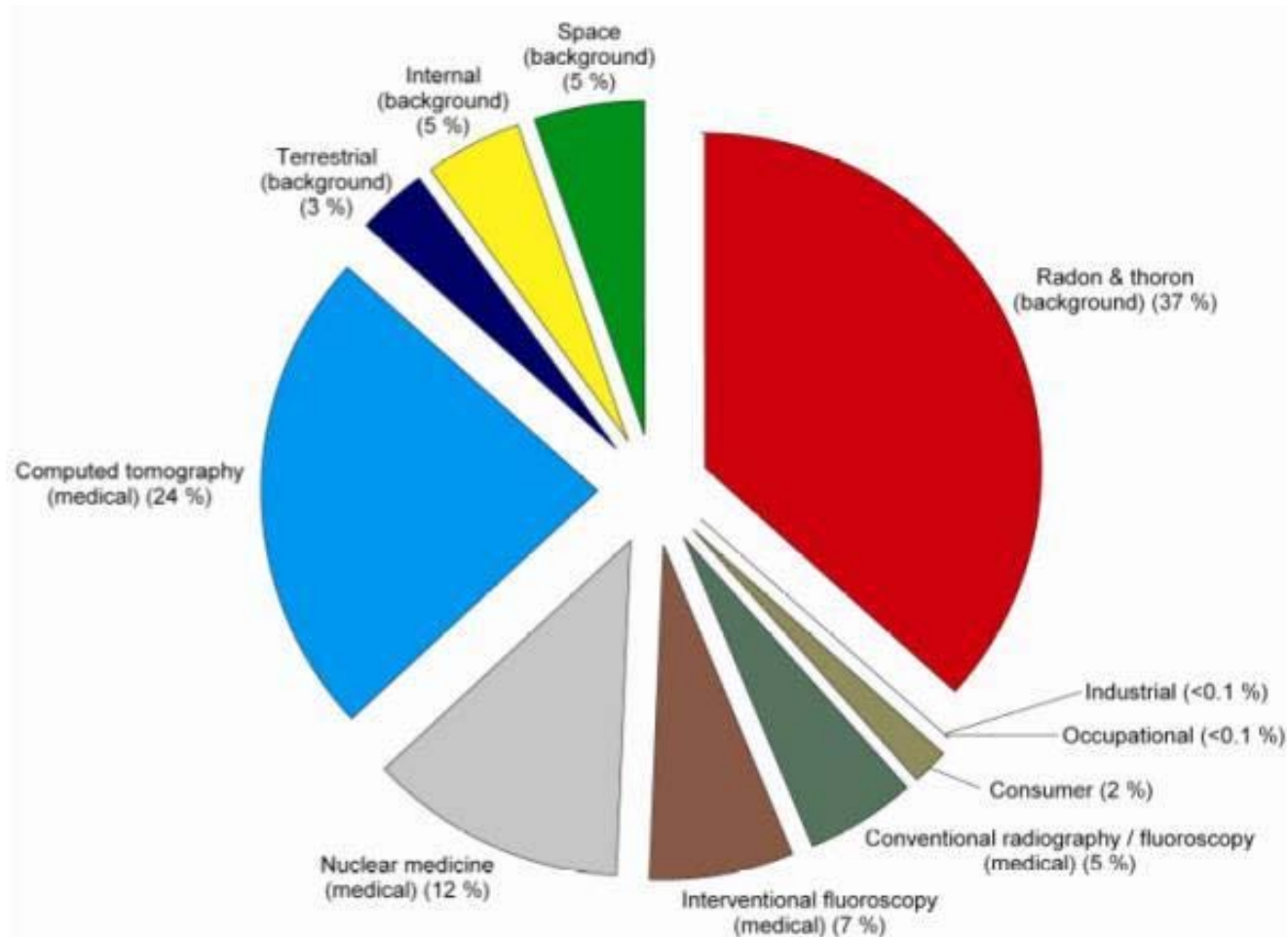
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A Burning Platform

- U.S. population's total radiation exposure has nearly doubled over two decades due to increased CT, nuclear medicine, and interventional fluoroscopy.
- 2006
 - 67 million CT scans
 - 18 million nuclear medicine procedures
 - 17 million interventional fluoroscopy procedures
- 75 million CT scans in 2007 (10% of population)

Radiation Source, 2006



Lifetime Risk of Cancer

- Approximately 29,000 future cancers could be related to CT scans performed in 2007.*
- Estimated risk from one CT coronary angiography **
 - 1 in 270 women and 1 in 600 men age 40
 - Double for 20 year-olds
 - Half for 60 year-olds

* Berrington de Gonzalez A, et al. AIM 2009, 169(22) p 2071- 77

** Smith-Bindman R. et al. AIM 2009, 169(22) p 2078 - 86

Calibration Error

- 13-fold variation between the highest and lowest dose for each type of exam assessed in a study of CT scans in adults.*
- Accidental exposure to very high doses can cause hair loss, burns and even death.


* Smith-Bindman R. et al. AIM 2009, 169(22) p 2078 - 86



59-year-old schoolteacher, awoke with facial paralysis. CT and MRI scans in the ED were normal. 2 weeks later began losing hair in a band-like distribution. The following week she awoke with vertigo and confusion and returned to the ED, where repeat CT and MRI scans were normal. Fatigue, malaise, memory loss, and confusion began soon thereafter and have continued, making it difficult for her to work.

Review of first CT – 100 times average CT dose, 10 dose from brain-perfusion study, 3 times daily dose for treating brain cancer.

378 similar patients identified by the FDA

 * Smith-Bindman R. et al. NEJM 2010, 363; p 1-4

Bell's Palsy



A careful, complete examination excludes other possible causes of facial paralysis. Strongly consider other etiologies if all branches of the facial nerve are not affected.



Scott Jerome-Parks

Fatal radiation overdose left him deaf, struggling to see, unable to swallow, burned, with his teeth falling out, with ulcers in his mouth and throat, nauseated, in severe pain and finally unable to breathe.

Requested case be studied and talked about publicly so that others might not have to live his nightmare.

During treatment for tongue cancer a computer error directed a linear accelerator to irradiate his brain stem and neck on three consecutive days.



Lack of Clinical Information

- Imaging or radiation dose history is not available
 - Repeat scans
- Standardized dose reports just beginning to be available
- Unaware of recommended criteria to guide decisions
 - Scans without sufficient justification



Waste of Resources

- Until recently the fastest growing physician-directed expenditures in the Medicare program, far outstripping general medical inflation
- Incidentalomas with down-stream costs associated with subsequent evaluation.



FDA

Recommends that the healthcare professional community continue to develop and adopt criteria for appropriate use of CT, fluoroscopy, and nuclear medicine procedures, or other procedures that use these techniques.





Minimize Risk, Maximize Benefit

- Appropriate justification
- Optimization of radiation dose