

Publicly Available Medical Radiation Dose Tracking APPS and Websites for Diagnostic Imaging Intended for Patients

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APPS

RADiDOC

- UCLA
- iOS 8.2 or later
- consult mode: enter age, gender, +/- DLP, study type (XR, CT, NM, fluoroscopy, MRI, mammography) —> calculates dose, ACR dose level, baseline cancer risk, increased cancer risk from study, natural background radiation equivalent/transatlantic flight equivalent
- radiation log mode: allows tracking of cumulative radiation dose over multiple studies
- radiology 101 section: explains fundamental concepts for patients
- references cited

Dosimetry

- Cyprus; Nazim Coskun, MD
- In English and Turkish
- Apple App store
- Mobile app for nuclear medicine calculations
- Includes pediatric dosing

Track Your Dose

- 2014
- iOS 8.0 or later
- allows users to keep record of personal radiation exposure from medical imaging studies and will calculate cumulative radiation dose per year (including all logged medical imaging studies, location background radiation exposure and flight-related radiation exposure)
- enter study type (XR, CT, NM, fluoroscopy), date —> calculates dose (mSv)
- additional features: allows you to track average radiation exposure where you live (mSv per year), amount of radiation attributable to cigarettes, radiation exposure from airplane flights

WEBSITES

UCSD: Rad Risk calculator

- https://ehs.ucsd.edu/Radiation_Risk/request/home
- 2021[©] UCSD
- enter study type (XR, CT, NM, fluoroscopy), gender —> calculates total exposure/effective dose equivalent (mSv), compares to amount of annual natural exposure in the San Diego area (1.6 mSv)
- references cited

XrayRisk

- <https://www.xrayrisk.com/>
- last update on website 1/28/18
- allows users to track imaging history and estimate personal risk
- enter age, sex, study type (XR, CT, NM, fluoroscopy/interventional procedures, MRI, mammography, ultrasound) with DLP (optional) —> calculates total effective dose, baseline cancer risk, additional cancer risk
- resources linked, references cited
- additional features: FAQs, free patient radiation handout
- Supported by ASRT

Doses from Medical Radiation Source

- <https://hps.org/hpspublications/articles/dosesfrommedicalradiation.html>

- Health Physics Society (Published Date not provided)
- Provides dose estimates in mSv from typical exams.
- Provides dose estimates from Plain Film X Rays, Entire procedures, Nuclear Medicine Exams, provides dose estimates to those who are pregnant or breast-feeding, and provides estimates on fetal exposure in 3 month periods.
- References cited

Omni Calculator

- <https://www.omnicalculator.com/health/medical-radiation>
- Last updated: Jan 02, 2019
- Table of contents:
 - X-ray radiation and the other radiation types
 - Effective doses for medical procedures and their natural background radiation equivalent
 - Medical radiation calculator - how can I find the radiation dose?
- Authorship indicates dose from <https://www.xrayrisk.com/> above

RADAR: Medical Procedure Radiation Dose Calculator and Consent Language Generator

- <https://www.doseinfo-radar.com/RADARD%27iskCalc.html>
- Home site: <https://www.doseinfo-radar.com/RADARHome.html>
- “This form gives radiation dose estimates for certain radiographic and nuclear medicine procedures, based on literature reported values. Individual organ doses and total body effective doses are given for these specified examinations, and some combinations of examinations. In addition, a short statement is generated, which may be useful as part of a patient consent form document, explaining the radiation doses as numerical values and as equivalent days of exposure to natural background radiation.”
- Has option for Spanish translation
- Michael Stabin, PhD, CHP
Vanderbilt University, Nashville, TN

Environmental Protection Agency

- <https://www.epa.gov/radiation/calculate-your-radiation-dose>
- Related information in Spanish
- Medical and non medical sources options for entry into calculator

TranslatorsCafe: Calculator of the Effective Radiation Doses for Medical Imaging Procedures and Their Equivalents

- <https://www.translatorscafe.com/unit-converter/en-US/calculator/medical-imaging/>
- All links accessed in May 2019
- Croation, French, Spanish and Russian translations are available

UCSF: Radiation Dose Calculator

- <https://radiationdose.ucsf.edu/#/>
- “This tool will help you estimate the total amount of radiation your protocol will administer to patients.”

Canadian Radiation Dose Calculator

- <https://fedorukcentre.ca/resources/canadian-radiation-dose-calculator.php>
- Both medical and non medical sources
- University of Saskatchewan

American Nuclear Society

- <https://www.ans.org/nuclear/dosechart/>
- Medical and non medical sources

Other resources:

The Limitations of Online Radiation Dose Calculators

<https://www.radiologyinfo.org/en/info/safety-dose-calculators>

Android Apps on Google Play:

(Accompanying text is direct quote, unedited from site)

PET Radiation Dose Calculator - Apps on Google Play

“A calculator to estimate radiation dose from PET radionuclides. The user can vary, the nuclide, the radioactivity (MBq), the form of the radioactive source (point source, vial, syringe), the distance from the source and the amount of shielding

between the dose measurement and the source. Dose estimates are given in Sv, mSv and microSv. The skin dose is also provided in the particular [sic] use case that all radioactivity is contained in 10ml, and 0.5ml of this contaminated the skins surface."

medical radiation dose calculator - Android Apps on Google Play

and

Medical radiation counseling -Tablet - Apps on Google Play

"The main screen is structured by four buttons. You can explain how well the dose is optimized and what effects it has. If you click the Optimization button and you will see the calculate tools for entrance surface dose. On this screen, you can see how much dose is optimized through the compare the DRLs in your country with the dose in your hospital. Next, click the Effective analysis button and you can see the effective dose value of the selected test and the degree of the ratio compared with 100mSv and 200mSv. Click the counseling data button, you can see the several educational data about medical radiation and risk. On the Optimization and Effective analysis screen, you can change the reference data by click the DB data control button."

I Radiation Dose - Apps on Google Play

This app is a radiation protection awareness tool for health professionals that provide easy access to information about eye radiation doses and protection guidelines.

Description

- Learn what is required for proper eye lens protection from radiation-induced lens opacities and cataract
- Calculate occupational eye radiation exposure during interventional procedures e.g. Percutaneous coronary intervention (PCI), Image-Guided Liver Biopsy, endoscopic retrograde cholangiopancreatography ..etc.
- Estimate annual eye radiation dose based on the workload and compare to the ICRP dose limit
- Show the percentage dose reduction with using radiation protection tools e.g. ceiling screen and leaded glasses
- Indicate risk of radiation-induced cataract
- Get easy access to relevant radiation protection guidelines for the healthcare personnel exposed to recurrent small doses of ionizing radiation to the eye lenses and those without formal radiation protection expertise
- Learn how to monitor eye dose? And who should be monitored?
- Learn about radiation eye dose in Kuwait

- Provide access to training materials
- Notifies app users about ongoing or upcoming conferences, meetings or webinars, and other related information related to occupational radiation protection and monitoring of eye lenses.
- This App is produced in collaboration with the International Atomic Energy Agency (IAEA) through technical cooperation project KUW9009 to provide a higher level of outreach with convenience for clinicians. The project is partially by the Kuwait foundation of the advancement of sciences (KFAS) under project code (PR17-13NR-01).

The international committee of radiation protection (ICRP) published its review of recent studies and evidence that there were some deterministic effects of radiation exposure where threshold doses are lower than previously considered. For the eye lens, the threshold for absorbed dose is now considered to be 0.5 Gy. On that basis, ICRP has reduced the annual eye lens dose limit for staff by a factor of 7.5 from 150 mSv to 20 mSv. This app is an awareness tool for health professionals that provide easy access to information about eye radiation doses and protection guidelines.”

Additional Notes:

- Only sites that have no charge for resources are included
- Information does not include radiation therapy resources.
- For web links, search was via Google[®], in English.
- Some APPS listed appeared to be dose calculators but did not work. These were not included.

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