

# Updated estimated radiation doses for pediatric nuclear medicine studies

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**Purpose:** Estimated radiation dose is an important factor in assessing the relative risks and benefits of pediatric nuclear medicine studies, and depends on the radiopharmaceutical, administered dose, and patient factors such as age and size. Most radiation dose estimates for pediatric nuclear medicine are not based on current dose guidelines for pediatric nuclear medicine or recent radiation dosimetry models. Therefore, we have refined the pediatric radiation absorbed dose estimates for the most common procedures in pediatric nuclear medicine.

**Materials and Methods:** Estimated radiation dose (mSv/study) was calculated for the most common procedures in pediatric nuclear medicine. Administered dose was based on recently released North American consensus guidelines for radiopharmaceutical doses in pediatrics. Estimated radiation absorbed dose per administered dose (mSv/MBq) was obtained from recent work by Stabin, et al, using sophisticated phantom studies to update these values. Based on standard models, radiation dose was estimated for typical patients at age 1 y, 5y, 10 y, 15 y, and 20 y. **Results:** Using the most current data, we have refined pediatric radiation absorbed dose estimates for the most common procedures in pediatric nuclear medicine. These studies include eight studies using Tc-99m labeled radiopharmaceuticals and three F-18 PET studies. These data provide estimated doses for typical pediatric patients with a range of ages (1 y to 20 y) and sizes (9-70 kg). **Conclusions:** For the most commonly performed pediatric nuclear medicine studies, estimated radiation absorbed doses have been refined using the most recent pediatric radiopharmaceutical dose administration guidelines and data from the most current internal dosimetry models. These estimates will guide departmental quality control efforts to minimize radiation exposure and will provide the most current information for discussing radiation dose and risk with referring physicians, patients, and families.