Radiation Dose Assessment Resource (RADAR) Committee
Committee Report
SNMMI Board of Directors
June 2015

Committee Charges for 2015-2016:

1. Compile and disseminate data in readily accessible electronic form as well as in Journal publications (when appropriate), for practical internal dose applications generated by RADAR and others, including radionuclide decay properties and emissions, biokinetic model parameters, absorbed fractions, and anatomic models.

2. Develop and maintain compendia of accepted decay data, absorbed fractions, and dose estimates for established radiopharmaceuticals, in readily accessible electronic form, including organ doses, effective doses, and other relevant quantities.

3. Develop new practical anatomic models and methodologies for implementation of internal and external dose calculations.

4. Develop and implement software and internet interactive tools that implement dose-related calculations and models.

5. Provide interpretation and guidance to the nuclear medicine community on practical issues regarding regulatory compliance, patient and family issues regarding radiation dose (such as after radionuclide therapy patient release), and related areas.

6. Provide practical methods for correlating radiation dose with biological factors including those that relate dose and dose rate to biological response and risk.

7. Interact with other national and international working groups via regular communication and shared congresses to develop and harmonize internal and external dosimetry models, methodologies, and data to further the development and understanding of dosimetry models and biological response relationships.

Current Working Objectives/Goals (please reference Strategic Plan):

- Begin distribution of OLINDA/EXM v2.
- Continue work on SAF calculations for various models as needs arise.
- Present CE sessions at SNMMI Annual Meetings.
- Expand our understanding of the correlation of absorbed dose with radiotoxicity and response in radionuclide therapy.
- Evaluation and assessment of dose/risk models in radiobiology.
- Continue to update the RADAR website with data, guidance documents, dose calculation tools and other features; constantly improving the site.
- Reviewing role in standardization of dose as the conversation about cumulative dose tracking evolves.
- Respond to requests for position papers and guidance documents.
Progress of Charge/Objectives/Goals to Date:

- The paper regarding the numerical benefits of medical examinations was published in a special issue of Seminars in Nuclear Medicine (44:210-214; 2014.).
- Coding and testing of OLINDA/EXM v2 continues:
  - Vanderbilt legal services and our Knoxville partner have evaluated the resubmission process and are re-evaluating working with another partner on international distribution.
  - A paper on the OLINDA/EXM 2.0 code is in preparation for journal submission.
  - A compilation of dose estimates for frequently used pharmaceuticals will be prepared using the new code and the ICRP 89-based phantoms.
- RADAR members have developed a short article noting inconsistencies in the EPA’s use of risk models. This has been published in the Health Physics Newsletter.
- RADAR has started its own newsletter that it will distribute electronically on a periodic basis, including technical articles, commentary and reader discussions of topics relevant to medical dosimetry, health physics, radiation biology, and other topics.
- RADAR submitted the paper involving calculation of SAFs for bone and marrow in a mouse model; reviewer comments have been received.
- RADAR has completed a paper involving the development of SAFs for a male and female dog model for publication. We now have DOE clearance to publish this work.
- We developed a proposal for a joint MIRD/RADAR CE session at the 2015 SNM meeting regarding the LNT model of radiation carcinogenesis. This proposal was accepted.
- RADAR members have developed a paper on radiation safety concerns in the handling of Xofigo; we intend to present this at sessions at the Society of Nuclear Medicine and Health Physics meetings and publish it in the Health Physics Journal.
- Although RADAR members were not invited to participate in or even attend a pre-SNM dosimetry mini-symposium, we resolved this through the SNM leadership.
- Continue to update the RADAR website with data, guidance documents, dose calculation tools and other features; constantly improving the site.
  - Recalculated dose estimates for all commonly used radiopharmaceuticals with the new generation realistic ICRP-89 phantom series are currently being posted on the RADAR web site.
- Reviewing role in standardization of dose as the conversation about cumulative dose tracking evolves.
  - Ongoing discussion.
- Respond to requests for position papers and guidance documents
  - Has reviewed dosimetry for several ongoing SNMMI guidance documents on standardized methodologies for nuclear medicine imaging.
Recent monthly statistics for the RADAR web site:

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Additional Goals/Objectives Added for 2015-2016:

- Begin distribution of OLINDA/EXM. Emails are received regularly by potential users wanting to get their hands on the new code.
- Provide CE training at 2014 SNMMI and HPS meetings. RADAR has a joint CE session with the MIRD Committee accepted and has accepted an invitation to speak at the pre-SNM symposium.
- Complete publication of a paper on the OLINDA/EXM software, and of new standardized radiopharmaceutical dose tables.
- Respond to further requests of SNMMI leadership for position papers and dosimetry for standardized nuclear medicine procedures. An SNM guideline GI bleeding studies was just accepted for publication.
• Continue and publish documents related to the review of dose/risk/radiobiological models and critique of standardized dose quantities and use of these models in predicting early and late effects in tissue.