Committee Report
SNM Board of Directors
August 2012
RADAR COMMITTEE

Committee Charges for 2012 – 2013:

The charges for RADAR are:

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:

- Finalize work on the new phantoms and their use in OLINDA/EXM v2.
- Continue work on SAF calculations for various models as needs arise.
- Present CE sessions at SNM 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:

- RADAR is undertaking a revision of the Radiological Health Handbook. The original version, published in 1970, was widely used by health physicists on a regular basis. Subsequent revisions were not found to be as practical and useful. The 'RADARiological Health Handbook' will attempt to return this handbook to its practical and useful form, and contain a significant section devoted to nuclear medicine applications.
- RADAR members developed a new article critiquing a recently released 'radiation risk calculator'; it has been accepted for publication in the Health Physics Newsletter, probably in September 2012.
- A draft of the paper regarding the numerical benefits of medical examinations (http://hps.org/hpspublications/articles/Benefitsofmedradexposures.html) using radiation was sent to the coordinating MIRD Committee member for editing and starting of the publication process.
- RADAR's paper providing specific gamma ray constants and lead shielding values for over 1100 radionuclides has been published in Health Physics (102(3):271-291, 2012).
- Two RADAR members organized and presented material at a special session of the Health Physics Society's annual meeting about the release of nuclear medicine therapy patients.
- Continue work on the new phantoms and their use in OLINDA/EXM v2.
    - Quality checking of the phantom data is complete, and finalization of coding and dose factors into OLINDA/EXM is complete.
    - Three beta testing sites have been identified and will receive the code for testing soon.
    - During beta testing, RADAR members will contact the USFDA to determine procedures for possible re-evaluation and release of version 2.0
    - A paper describing the phantom series has been submitted to the Journal of Nuclear Medicine and has received favorable initial reviews. The paper should be accepted soon.
- The OLINDA/EXM 2.0 package will be presented, by invitation at the Annual Congress of the European Association of Nuclear Medicine in October 2012.
- Dr. Stabin presented a paper at the International Radiation Protection Association (IRPA) in Stockholm, Sweden in May 2012 on the impact of the new ICRP 89 phantoms on dose calculations for radiopharmaceuticals and CT exams.
- RADAR has completed its study on the calculation of SAFs for bone and marrow in a mouse model and will publish this work soon.
- RADAR has completed a study developing SAFs for a male and female dog model, and will publish these results soon.
- One CE session was presented for the 2012 SNM Annual Meeting. George Xu organized a session regarding 'Quantitative internal radiation measurement using physical and computational phantoms'. Dr. Stabin participated in this session.
- Several papers were presented to the 2012 SNM meeting - on the new OLINDA/EXM code, and on new standardized dose estimates for radiopharmaceuticals.
- 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 SNM guidance documents on standardized methodologies for nuclear medicine imaging.
- Undertaken a review of dose/risk models and critique of standardized dose quantities and use of these models in predicting early and late effects in tissue.

Additional Goals/Objectives:

- Begin beta testing and distribution of OLINDA/EXM.
- Provide CE training at 2013 SNM and HPS meetings.
- Complete publication of the new RADAR phantom series and the OLINDA/EXM software, and of new standardized radiopharmaceutical dose tables.
- Develop guidelines to be proposed for tracking of pharmaceutical doses by adult and pediatric patients.
- Respond to further requests of SNM leadership for position papers and dosimetry for standardized nuclear medicine procedures.
- 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.