Medical Health Physics Section
Research Project Proposal

Project Title: Radiation Safety Guidance for Death of Patients Containing Sealed or Unsealed Therapy Sources, Final

Date: September 28, 2015

Ad Hoc Committee Members, MHPS

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I. Needs Assessment

Overview:

The Medical Health Physics Section (MHPS) received a request to research data on radiation safety guidance related to the death of patients that have recently received therapeutic doses of sealed or unsealed therapy sources. Of special concern was that new therapy protocols have been developed that use radionuclides other than I-131, and is there sufficient guidance available addressing these newer treatments, such as Ra-223 therapy for bone metastases. Most are aware that NCRP-37 and NCRP-155 address death of patients that have received radionuclide therapy and discuss removal of temporary implants, organ donation, permanent implants, and precautions during autopsy, embalming and cremation. NCRP-37 was published in 1970 and does not address newer therapies. NCRP-155 was published in 2006 and does not appear to include safety requirements concerning Ra-223 infusions and possibly Y-90 microspheres.

Needs Assessment/Problem Analysis:

Question #1: Is there sufficient knowledge (and consistent guidance) and information available in journals/etc. other than NCRP that address all issues associated with the death of a patient who received therapeutic doses of radiopharmaceuticals?

Question #2: Does the section want to proceed with a Gap Analysis by HP Volunteers?

II. Scope of Work – Gap Analysis

Overview:

Provide a Gap Analysis on the status of radiation safety guidance pertaining to decedents who had received radiation therapy using sealed or unsealed sources. Based on the research performed, provide a discussion of where there are gaps in guidance with emphasis on newer therapy pharmaceuticals and permanent brachytherapy procedures. Present results to the MHPS at the next conference and/or board meeting.

Deliverables:

1. Matrix/Spreadsheet

   Prepare a comprehensive matrix and/or spreadsheet that lists nuclear and therapy procedures (permanent implant and radiopharmaceuticals) and identifies which publication addresses it and what decendent handling methods are included, e.g., cremation, burial, embalming, autopsy, etc.

   Milestone 1: Provide initial matrix/spreadsheet that will provide the framework to detail available guidance in each publication and what topics are covered. To test the usability of the spreadsheet, review NCRP-37 and fill in required information on the matrix. Submit Ad Hoc Chair for approval prior to proceeding with review of other publications.

   Information that needs to be addressed in the matrix:

   A. Therapy procedures/radionuclides of concern are:
      1. I-131 for Thyroid Ablation/Grave's Disease
      2. Sm-153
      3. Y-90
      4. MIBG I-131 for Neuroblastoma
      5. I-125/Pd-103 Seeds for Prostate Cancer
      6. Ra-223 for Bone Cancer

   B. The publications/websites/discussion sites that should be reviewed:
      1. NCRP/ICRP
      2. IAEA/IRPA/
      3. IPEM and UK Health Protection Agency
      4. NRC/CRCPD Guidance
      5. Vendor Information
      6. HPS, AAPM, SNM Journals
      7. CDC Guidance
      8. AMRSO
      9. Professional Mortician Society

C. Radiation Safety Requirements particular to:
   1. Autopsy
   2. Organ Donation
   3. Embalming
   4. Precautions during Visitation
   5. Cremation

D. Specific Guidance Criteria (list when provided by publication)
   1. "If the body contains less than ____ mCi of [radionuclide X], then no safety precautions are necessary."
   2. NCRP 155: "The most likely exposure to members of the public would be from cremation of a body that contained I-131. . . dose to individuals in the surrounding population would not be likely to exceed 0.1 mSv."

E. Level of Health Physics Oversight Needed for Post Mortem Procedures
   1. Low to none
   2. Medium (minimal surveys required)
   3. High (direct observations/oversight required/contamination concerns)

F. Special Concerns
   1. Ra-223 is an alpha emitter with several alpha daughter products. Does this present a special concern for cremation?
   2. Ra-223 has an 11 Day half-life. Does this present extra concern?
   3. Any other unique concerns noted in publications.

Milestone 2: After around 40 work hours completed, provide a status report to the Ad Hoc Chair. Adjustments to the student Agreement may be made at this time.

Milestone 3: Submit completed matrix to the Ad Hoc Chair.

2. Discussion of Findings

Provide an analysis of the research results and identify pharmaceutical and brachytherapy therapies that lack specific guidance on the management of decedents and other decedent's safety issues.

Work Hours:

It is estimated that it will take about 80 hours to prepare the deliverable. Extra time will be needed for the presentation. Two students will be required.

Student Qualifications

- The students, or at least one student, must have access to NCRP, IAEA, ICRP, and other international guidance documents.

- The students should have access to AMRSO List Server and to on-line journals such as the Society of Nuclear Medicine.

- The students should have an interest in medical health physics.

- Graduate students in the study of Health Physics are preferred, however, any student studying Health Physics would be acceptable if they have the knowledge base to conduct the research.

- The students should be able to attend the annual Health Physics meeting in 2016 to present the results of this research project. A travel grant will be provided upon completion of the project, however, it may not cover all costs to attend the meeting.

- The students will be required to work for HPS staff during the meeting.

Student Selection

The Student section of HPS will provide resumes of four students who are interested in the project. Of those, the MHPS will select two students to proceed with the project.

Compensation:

None. Travel grant will be offered to assist with transportation and lodging costs associated with presenting at the 2016 Annual HPS meeting.

Ownership of Project Results:

The matrix/spreadsheet created and the discussion results will be the property of the Health Physics Society. Presentations will be the property of the students and can use the results of the project without restriction.

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III. Approvals

Needs Assessment/Scope of Work for Gap Analysis FINAL
Approved by Ad Hoc Committee to the MHPS
Signature ____Penny Leinwander_____ Date __9/23/15___

Needs Assessment/Scope of Work for Gap Analyis FINAL
Approved by the MHPS Section
Signature ___Tom Mohaupt_____ Date _9/28/15___

Needs Assessment/Scope of Work for Gap Analyis FINAL
Approved by _____
Signature _____ Date _____

Travel Grant Concurrence
Approved by the Academic Education Committee
Signature _____Concur_____ Date 10/8/15_____

IV. Student Concurrence

I understand the requirements of the Scope of Work and commit to meeting the milestones in a timely manner. I agree to present results at the HPS annual meeting in 2016 and meet the requirements of the Student Travel Grant requirements.

Student Name: _____Signed_____Date:_____

Student Name: _____Signed_____Date:_____