THE UNIVERSITY OF NEW MEXICO

712945

DATE: April 14, 1978

TO: Chaim Richman

FROM: Al Smith · ARS

SUBJECT: In vivo measurements in pion patients using silicon detectors

The next patient treatment cycle is approaching and I want to remind you of the program of work previously outlined to you as a prerequisite to the clinical physics section recommending that silicon detectors be used for in vivo measurements in pion patients. A copy of the program of work is attached. I would appreciate having a full and detailed report, in writing, of your progress. The full program of work must be accomplished before I can recommend to Drs. Kligerman and von Essen that we continue your work with patients.

It is my impression that you are designing a new in vivo experiment using measurements of high LET dose vs. range shifter motion. I think that before you plan on doing any studies with patients that you should submit to me a written proposal outlining in detail the following:

1. What is the specific aim of the measurements?
2. What are the measurement techniques and instrumentation?
3. What are the intended benifits to the patient?
4. What are the potential hazards to the patient?
5. What background experiments have been performed to demonstrate that this technique has been thoroughly tested before subjecting patients to the procedure?
6. Do the measurements provide <u>important</u> and <u>necessary</u> information for the evaluation of the patient treatment?
7. What is the expected resolution, reproducibility and accuracy of the measurements?

I think that you need to discuss with Jim Bradbury the medical-legal aspect of your patient work. Neither you or your co-workers are covered by UNM liability coverage. It might be necessary for my physics people to be very intimately involved in this work, i.e., placing the dosimeters, applying voltages, etc. It is my opinion that neither you or your co-workers should be directly in contact with patients in the set-up, simulation, or treatment procedures.

ARS:mm
Attachment

Distribution: M. Kligerman
C. von Essen
J. Sala
K. Hogstrom
S. Wilson
J. Bradbury

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Minutes of Meeting with

Chiam Richman, Ken Hostrom, Jim Bradbury
and C. Kelsey.

After considerable discussion it was agreed that the following tasks will be performed before the UNM Biomedical Physics group can recommend to the radiotherapists or radiobiologists that any dosimetric or invivo measurements using silicon detectors be used:

1. A comparison under exactly the same conditions between the Richman and Dicello data. This means both sets of data should be prepared so that they are reported in terms of linear energy transfer.

2. Calculations should be performed to predict the lineal energy distributions expected from

a. different particles (e.g. p,d,t,α)

b. different energies (1-40 MeV) and

c. Detector thicknesses (all detector thicknesses used) and the LET distribution calculated from the lineal energy distribution.

3. An estimate of the Kerma correction to go from dose in silicon to dose in tissue.

4. A series of repeat measurements to demonstrate the reproducability and consistency of data under exactly the same conditions.

5. Measurements on the same beam with a difference thickness detectors to demonstrate the effect of detector thickness on particle spectra.

6. A folding of an experimentally measured narrow peak together to form a range shifted peak and a subsequent comparison of the calculated and experimentally measured range shifted peak. Chiam Richman will provide Ken Hogstrom with the narrow and range shifted peak measurements, analyzed using the same cut-off values and Ken will make the calculations.