

President

William "Rusty" Lorenzen  
Children's Hospital  
300 Longwood Avenue  
Boston, MA 02115  
617.355.7516  
lorenzen\_w@hub.tch.harvard.edu

President-Elect

Ninni Jacob  
Brown University  
Box 1914  
164 Angell Street  
Providence, RI 02912  
401.863.1738  
ninni\_jacob@brown.edu

Immediate Past President

Thomas O'Connell  
MA DPH Radiation Control Program  
305 South Street  
Jamaica Plain, MA 02130  
617.983.6891  
toconnel@world.std.com

Secretary

Margaret McCarthy  
30 N Farms Road  
Haydenville, MA 01039-9724  
413.781.7822  
mem@schoolph.umass.edu

Treasurer

Robert Gallagher  
MA DPH Radiation Control Program  
174 Portland Street, 5<sup>th</sup> Floor  
Boston, MA 02114  
617.727.6214  
robert.gallagher@state.ma.us

RETURN ADDRESS:

Publicity Committee/Editor

Tara Bandini  
Massachusetts General Hospital  
55 Fruit Street - WEHB019  
Boston, MA 02114  
617.724.4578  
tbandini@partners.org

# Newsletter



## NEW ENGLAND CHAPTER OF THE HEALTH PHYSICS SOCIETY

Volume XXXVII No. 1  
August 2001

Continuing Education Committee

Haro der Hagopian  
Duke Engineering and Services  
978.568.2524

History Committee

Jim Cherniack  
Environmental Protection Agency  
617.918.1533

Admissions Committee

Brandon Graber  
Northeast Utilities  
Millstone Station  
860.447.1791

Awards and Nominating Committee

Thomas O'Connell  
Mass. Department of Public Health  
617.983.6891

Program Committee

Ninni Jacob  
Brown University  
401.863.1738

Affiliate Relations Committee

Ron Thurlow  
NAESCO Seabrook Station  
603.773.7438

Finance Committee

Robert Gallagher  
Mass. Department of Public Health  
617.727.6214

Public Relations Committee

Ed Maher  
Duke Engineering and Services  
978.568.2522

## NECHPS ANNUAL MEETING HIGHLIGHTS

*Ninni Jacob*

The NECHPS held its 41<sup>st</sup> annual meeting at the Westford Regency Inn and Conference Center, Westford, MA, on June 5, 2001. The meeting was well attended with 103 people pre-registered.

The topic of the meeting was "Recent Developments in Medical Health Physics". I would like to thank all the speakers for their presentations. They were right on topic and kept to their allotted time, which was greatly appreciated by all the attendees. I would like to thank all the nineteen affiliates who had booths for their support. Ron Thurlow, Affiliate Chair, deserves a big thank you for all of his efforts in co-ordinating with the affiliates. Last, but not least, I would like to thank all the board members and all the attendees, because without you the meeting would have been futile.

We had a buffet lunch with a lavish spread, and good desserts. The business meeting followed lunch and then the student award was presented to **Jeomsoon Kim** of U Mass Lowell.

Jeomsoon's paper was accepted for presentation at the national HPS meeting. Her talk was entitled: "**Calculation of Bremsstrahlung Energy Distributions for First and Second Forbidden Beta Transitions in Different Absorbers**" - **J.Kim, G. E. Chabot**.

In most practical situations involving radiation attenuation, only electrons are important for their associated bremsstrahlung. In this study, we have derived algebraic expressions obtained by folding together a polynomial form for beta radiation energy distributions, including shape corrections for selected forbidden transitions, with an algebraic representation of the bremsstrahlung distribution from monoenergetic electrons.

The first speaker of the day was **Dave Allard**, currently from the Bureau of Radiation Protection in PA. Even though he is in PA, Dave has been a member of the NECHPS. For 20 years, and his dues are still current. His talk was entitled: "**New Regulations and Guidance for Dealing With Radioactivity in Solid Waste in Pennsylvania**". He spoke about the fact that because radioactive materials (RAM) have been detected in the solid waste, the Bureaus of Radiation Protection and Land

Recycling & Waste Management in PA have jointly developed final regulations requiring monitoring for radiation and radioactive materials at municipal and residual solid waste facilities in the state.

The rest of the speakers and a summary of their talks is listed below:

### **Radiation Doses From Interventional Procedures In Radiology – David Drum**

In 2001, interventional radiology comprises a very wide spectrum of diagnostic and therapeutic procedures. Many of these involve prolonged fluoroscopy at skin entrance exposure rates of 3 - 30 R/min or higher. Acute radiation injuries have been reported, and many doses, especially in children, raise concerns for stochastic effects. Rapid proliferation of these sources of ionizing radiation doses to both patients and radiologists has been offset only partially by the use of real time ultrasound and "open" MRI. Technological and pedagogical improvements are needed to improve the benefit/risk ratio for interventional radiology.

### **Some Radiation Safety Considerations for PET Imaging.- J.A. Correia**

There are several factors which make PET different from traditional Nuclear Medicine in terms of Radiation Safety. The major ones are: (1) PET radioisotopes and radiopharmaceuticals are often produced on-site due to short half lives of the nuclides; (2) All radioisotopes used in PET emit beta radiation in the form of positrons and hard (511keV) photons resulting from positron annihilation. These give rise to special problems in transport, storage and handling as well as management of patient flow order to keep personnel doses within acceptable limits.

*See Annual Meeting next page*

*Annual Meeting, con't.*

### **Advances in Intravascular Brachytherapy: An Industry Perspective - David C. Medich**

Roughly one third of the patients undergoing angioplasty for the treatment of coronary artery disease suffer restenosis of the treated artery. Currently, two separate types of intravascular brachytherapy techniques have been investigated in a clinical setting. Temporary and permanent brachytherapy techniques were introduced along with a practical framework to understand the use, safety, and efficacy of brachytherapy in the treatment of restenosis.

### **Gamma Knife- Douglas R. Shearer**

The Gamma Knife utilizes 201 cobalt-60 sources to treat lesions in the head. The construction and operating principles of the Gamma Knife were described in addition to radiation safety problems incurred in loading and reloading the sources.

### **Release of High Dose Patients- Victor Evdokimoff**

Regulatory changes now allow releasing radio-pharmaceutical therapy patients that previously required hospitalizations. There is a considerable cost and time savings for radiation safety not controlling patient exposure and contamination in a private hospital room. However, time spent with the patient and record keeping have increased to document that public exposures and contamination from a released patient meet regulatory requirements.

### **X-ray Searches for Contraband” -Robert A. Scott**

What are the legal ramifications for a physician, radiographer and police searching for contraband on persons?

### **The Change in Radiation Exposure Associated with Computed Radiography - John Copeland**

The replacement of film-based radiography with computed radiography in the clinic has led to an increase in the technique factors (kVp, mAs) used to obtain a medical image. This talk addressed the issues of change in technique factors and retake rates associated with CR and the resultant impact on radiation exposure.

## **PET Should Have Key Role in Diagnosis, Assessment of Children With Cancer**

*Submitted by William Lorenzen*

TORONTO (Reuters Health) Jun 28 - Whole-body positron emission tomography performed with 2-(fluorine-18)-fluoro-2-deoxy-D-glucose (FDG) is highly sensitive for staging and for assessing therapeutic response in pediatric cancer patients, according to a presentation here at the 48th annual meeting of the Society of Nuclear Medicine.

Researchers led by Dr. Ute Porn, of the University of Munich, Germany, used FDG PET for staging and follow-up of 39 children, 1.6 to 17.6 years of age, of whom 19 had malignant lymphoma and 20 had other malignancies. The results were compared with morphologic imaging such as CT or MRI.

Dr. Porn's group detected pathological uptake of PET in 36 of 39 patients. "Patients with malignant lymphoma avidly concentrated FDG prior to chemotherapy or radiotherapy," the team reports in a meeting abstract. "Uptake after therapy correlated well with response rates."

The number of false-positive results on CT or MRI was seven times greater than on PET. In addition, the researchers were able to distinguish tissue scar from residual tumor more effectively with PET than with CT or MRI.

"The use of PET is increasing the diagnosis of cancers in children. Morphologic imaging is not competitive but complementary to PET," Dr. Porn said.

## **Pregnancy Test Advised for Female Trauma Victims Prior to Radiation Exposure**

WESTPORT, CT (Reuters Health) Jun 28 - Trauma patients in whom pregnancy status is not known are routinely exposed to doses of radiation exceeding the maximum limit of 5 rads established by the American College of Obstetrics and Gynecologists, according to physicians from the University of Maryland School of Medicine in Baltimore.

Dr. Grant V. Bochicchio and associates found that, of 3976 women of reproductive age admitted to a trauma center between 1995 and 1999, 114 were pregnant. Nine of the pregnancies were previously undiagnosed; in four cases, the patient was unable to tell the trauma team that she was pregnant.

According to the investigators' report in the May issue of the *Journal of the American College of Surgeons*, a mean radiation dose of 4.3 rads was received by the patients with incidental pregnancy during their initial resuscitation. Cumulative radiation exposure was greater than 5 rads in 85% of patients.

There were 10 fetal deaths among those with incidental pregnancy, of which three were the result of elective abortion. These abortions were performed because of the mother's fear of an abnormal fetus resulting from the injury and the radiation exposure.

Dr. Bochicchio and his colleagues suggest that female trauma victims of childbearing age should receive a quick urine pregnancy screen, routinely undergo abdominal and pelvic ultrasonography, and have an abdominal shield when undergoing radiologic evaluation.

## **Radiosurgery Device Shows Promise in Treating Nonresectable Lung Cancers**

WESTPORT, CT (Reuters Health) Jul 02 - A radiosurgery instrument, known as the CyberKnife, may offer an additional treatment option for patients with nonresectable forms of lung cancer, according to a statement from Accuray Incorporated, the Sunnyvale, California-based maker of the device.

The device, which is approved by the Food and Drug Administration (FDA) for the treatment of head and neck cancers, is now being tested in patients with lung cancer at the Cleveland Clinic Foundation and the Stanford University Medical Center. A total of 25 lung cancer patients have been treated with the CyberKnife so far, according to the Accuray announcement.

"The first lung cancer patient was treated in July of last year and we have treated 16 patients so far," Dr. Richard Crownover, radiation oncologist at the Cleveland Clinic Foundation, told Reuters Health. "We have seen a uniformly good initial response," he said. "All but two of the patients have shown a decrease in tumor size by 1 month out," he added. "In the majority, the tumors have continued to shrink."

Dr. Crownover said that "anyone who has non-small cell lung cancer or metastatic disease is potentially eligible for the study." However, "the tumor has to be less than 5 cm and the patient must not have had prior radiation to the area," he noted. In addition, "if the patient appears to be a surgical candidate then that is the route they usually go," he said.

"The location of the tumor is not necessarily a factor in patient selection," Dr. Crownover emphasized. However, "during the procedure, we must be able to insert a small gold pellet into the tumor so that the device can track it," he explained. "If we can't insert this pellet, either percutaneously or endobronchially, then we can't use the device," he said.

"A few patients have shown late tumor recurrences as we've followed them," Dr. Crownover pointed out. "That's not unexpected because this is a phase I dose-escalation study and we are currently using the lowest dose," he added. "We will probably need to be at the upper doses before we start seeing durable tumor control."

Dr. Crownover said it is projected that the FDA will approve the CyberKnife for the treatment of lung cancer as early as 3 months from now.

**NECHPS MEETING NOTICE**

Joint Meeting of the New England and Connecticut Chapters

Date: Thursday, September 13, 2001

Location: Marriott Hotel, Providence, RI

Time: 5:30 p.m. Registration/Cash Bar  
6:00 p.m. Dinner  
7:00 p.m. Guest Speaker

Topic: The Health Physics Society  
“Health Physics Is About Education”

Speaker: John Frazier, President-Elect, Health Physics Society

Menu: Mixed Green Salad or Caesar Salad  
Baked New England Scrod  
OR  
Chicken Forestiere (i.e. Chicken Marsala with Mushrooms)  
Chef’s Choice of Potato and Vegetable  
Vanilla Ice Cream with toasted almonds, & chocolate chips

Cost: \$25.00 Members, \$35.00 Guests, and \$15.00 Students

---

DIRECTIONS TO PROVIDENCE MARRIOTT (SEE REVERSE SIDE OF SHEET)

---

Registration Deadline is September 5, 2001.

Cancellations must be made before September 5, or you are responsible for payment.

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Dinner Choice (pick one): Fish or Chicken

Mail registration (with check to NECHPS) to: Ed Maher  
42 Tuttle Drive  
Acton, Massachusetts 01720

OR Register online at **www.nechps.org** OR call (978) 568-2785

## DIRECTIONS TO THE PROVIDENCE MARRIOTT

- 95 North Bound  
(From New York)**     *Take Exit 23 (State Offices Exit). At top of ramp, at the stop sign, turn left. Marriott can be seen on the left hand side.*
- 95 South Bound  
(From Boston)**     *Take Exit 23 (Charles Street Exit). At bottom of exit ramp, take a right (this is a one way road); follow until you see VF Liquor Store on the left hand side where you will make a left turn. Follow this road for another ½ mile and the Marriott will be on the right hand side.*
- From 195 West  
(From Fall River)**     *Follow 195 West to 95 North (Boston). Take Exit 23 (State Offices Exit). At the top of the ramp, at the stop sign, turn left. Marriott can be seen on the left hand side.*
- From Hartford  
(From Rte 6 East)**     *Follow Route 6 East and take the 295 South / 6 East Exit. Follow for ½ mile to 6 East – Providence, Exit 5. Follow to 6 East, 10 North. Proceed to 6 East, 95, 195 signs. Follow signs for 95 North – Boston. Take Exit 23 (State Offices Exit). At top of ramp, at the stop sign, turn left. Marriott can be seen on the left hand side.*
- From 146 South**     *Take Admiral Street Exit. Make a left at the first set of lights. Make a right at the next set of lights (which turns on the Charles Street). Follow this road for another ¾ of a mile and the Marriott will be on your right hand side.*
- From TF Green  
Airport**     *Exit airport and follow signs for 95 North to Providence. Take Exit 23 (State Offices Exit). At top of ramp, at the stop sign, turn left. Marriott can be seen on the left hand side.*

**Providence Marriott  
One Orms Street  
Providence, Rhode Island 02904  
401.272.2400**