

# Fused Image Tomography: Where Do We Go From Here?

In my recent "Annual Meeting Highlights" (see *Newsline*, August, p. 13N), I suggested that the exact portrayal of anatomy (through CT) and regional biochemistry (PET), obtained with the same imaging gantry without moving the patient, represents an important integrating force in nuclear medicine.

After the meeting, I sent a questionnaire (which appears immediately following) to those persons who presented papers or posters at the meeting. As of September 12, 100 persons responded. Figures after the questions below indicate percentages answering "yes."

- (1) The ability to obtain fused PET data and CT images without moving the patient is an important advance. 97%
- (2) The quality of the CT images should be clinically interpretable themselves. 79%
- (3) The quality of the CT images should be maximized to equal the best stand-alone CT images. 42%
- (4) The fused PET/CT images should be interpreted by a radiologist and nuclear medicine-qualified person as a team. 80%
- (5) The PET specialist should be qualified to interpret the CT images as well as the PET images. 57%
- (6) Fused PET/CT imaging should strengthen and improve the relationship between PET specialists and radiologists. 88%
- (7) PET/CT fused imaging will weaken the role of the nuclear medicine physician in the health care system. 14%
- (8) SPECT/CT as well as PET/CT should be developed. 86%
- (9) Fused imaging with the same gantry should be developed first for dedicated (ring) PET rather than dual-coincidence (hybrid) PET/SPECT systems. 60%
- (10) Fused image tomography will justify its cost by improved, and therefore less costly, treatment. 88%

I am delighted that so many believe PET/CT is an advance. And I am pleased that people want to cooperate with radiologists and impressed that respondents want CT to be interpretable per se. This is an important point. It seems clear that

SPECT/CT as well as PET/CT should be developed, but that fusion of the images from dedicated PET instruments should be developed first, if both cannot be developed by industry simultaneously.

Several qualifying statements need to be made: First, the persons responding to the questionnaire were those who are sufficiently interested to present papers or posters at the nuclear medicine meeting, and they may not reflect the opinions of those persons who are in practice only.

Second, those responding may represent those persons with a more favorable opinion of Fused Imaging Tomography than that of the average practitioner.

Examples of responses include the following:

"I think fusion is overblown in reputation. Good nuclear physicians can correlate just as well using internal landmarks."

"As one user of PET, I'm strongly willing to use the PET/CT fused imaging system. However, I have concern that the issue of sectionalism between radiologists and nuclear medicine physicians would prevent development of this special system."

"If nuclear medicine people take the bull by the horns, they could well come out way ahead."

"Many nuclear medicine physicians interpret CT images more accurately than trained radiologists."

"The real clinical utility over separate acquisitions with subsequent coregistration is yet to be demonstrated."

"I hate to say it, but radiologist and nuclear medicine docs don't work as a team now most of the time, and getting the two types of images from one device won't change this characteristic."

"The PET business will go to the radiologist who will in fact own / control the CT."

"If you're going to do PET, you better do SPECT, as SPECT will be more widely used."

“If the hybrid systems will really work, then they are going to be more widely distributed, and should lead the path. BUT! if they are only half-breeds with half performance, then don't bother till the PET/CT combo is proven to really be useful.”

“The location of the abnormality, the size of the abnormality, the sharpness of the borders of the abnormality, the uniformity or nonuniformity of the abnormality, and the number of abnormalities are qualities that could help to define the pathology and are usually not considered in the above analyses. I do not believe that we have a good way of determining the efficacy of either the individual procedures or ‘fused’ procedures.”

I hope this information is useful to manufacturers as well as to nuclear medicine and other physicians. Please let me know whether you believe these questionnaires are helpful (if they are not overdone): e-mail (hwagner@jhsp.edu) or fax (410-955-6222).

—Henry N. Wagner, Jr., MD

## NCI Announces Initiatives

**A**ccording to Barbara Croft, PhD, Diagnostic Imaging Program, National Cancer Institute, the NCI has announced the following initiatives:

*Diagnostic Imaging and Guided Therapy in Prostate Cancer* (Phased Innovation Award) (RFA CA-99-015) National Cancer Institute and National Institute on Aging.

Letter of Intent Receipt Date: October 20, 1999;  
Application Receipt Date: November 17, 1999.

The Diagnostic Imaging Program of the NCI and the NIA invite applications on the development, risk assessment, and application of improved imaging methods for the localization, biopsy and image-guided biopsy or therapy of prostate cancer. Relevant investigations could include technology development, in vitro laboratory work, preclinical animal studies or early feasibility testing in humans depending on the maturity of the methods proposed, or evaluation of the effects

of age-associated changes and comorbid conditions as they affect imaging diagnosis and treatment techniques.

For more information see the following web site: <http://grants.nih.gov/grants/guide/rfa-files/RFA-CA-99-015.html>

*Diagnostic Imaging and Guided Therapy in Prostate Cancer: SBIR/STTR Initiative* (PAR-99-149) National Cancer Institute and National Institute on Aging.

Letter of Intent Receipt Date: October 20, 1999;  
Application Receipt Date: November 17, 1999.

This is a companion announcement to the above for the small business community.

For more information, see the following web site: <http://grants.nih.gov/grants/guide/pa-files/PAR-99-149.html>