



**Association of
American Cancer Institutes**



**American College of
Radiology Imaging Network**

Special Imaging Workshop – October 7, 2003

American College of Radiology
Reston, Virginia

REPORT

Preamble

In the next decade, biomedical imaging will play an increasingly pivotal role in laboratory and clinical cancer research, and the treatment of cancer patients. Biomedical imaging was recognized by the National Cancer Institute as a critical area for future development and emphasis core area through the establishment in 1997 of the Biomedical Imaging Program (now Cancer Imaging Program). National Institutes of Health (NIH) Director Elias Zerhouni and NCI Director Andrew von Eschenbach have reiterated the importance of imaging to improving cancer care and to furthering the understanding of cancer pathophysiology. *The growth and application of imaging to cancer research and treatment can be fostered by a coordinated effort between radiology departments and cancer centers.*

Recognizing that cultural barriers exist between radiology departments and cancer centers, a meeting was convened October 7, 2003 at the American College of Radiology's (ACR) headquarters in Reston, Virginia. The meeting was co-sponsored by the Association of American Cancer Institutes (AACI), the American College of Radiology Imaging Network (ACRIN), and the NCI and was attended by 9 chairs of radiology, 9 cancer center directors, 11 individuals representing radiology departments or cancer centers, or both, and 3 representatives from the NCI. A list of participants appears at the end of this report. The foci of the meeting were to "Increase the Bandwidth" between radiology departments and cancer centers by identifying the barriers to productive collaboration and by identifying potential initiatives for the promotion of imaging studies in cancer research.

Barriers to Interdisciplinary Research

Prior to planning, effort was spent to articulate some of the cultural and economic issues that are barriers to successful collaborations:

- The cultural differences between radiology and cancer research are real and these are reflected in the divergent missions of cancer centers and academic radiology departments.
- Radiology chairs are faced with the dilemma of developing research at a time when the "slack funds" they previously used to accomplish this goal are diminishing. Declining clinical revenues and the consequent inability to support research and provide protected time is not unique to radiology. However, this problem is particularly severe in radiology, being exacerbated by the large salary discrepancies between academic and private practice radiology groups.

- Most radiology faculty work the considerable majority of time in providing clinical service, the demands for which are increasing. This leaves little time for involvement in research.
- The organization of cancer centers' culture into “programs” and “shared services” and the processes of evaluating and funding cancer centers were opaque to most radiologists on the panel.
- A substantial majority of the cooperative group clinical trials reviewed through the NCI include an imaging component. However, it is rare for these plans to be vetted through radiology or, even rarer, to have involved radiologists early in the study design. The involvement of radiologists late in the process reduces enthusiasm and pride of ownership.
- Radiology departments generally lack research space, training programs that emphasize a research experience for clinical trainees, and external funding sources.

Recommendations

After articulating these barriers, the meeting then developed the following recommendations for improving collaboration between cancer centers and radiology departments with respect to cancer imaging. Although all of these actions can be initiated immediately, impact may not be apparent or measurable in the near-term.

1. Strategic Planning - Working together, cancer centers and their associated radiology departments should develop strategic plans for integrating imaging and cancer research in their own institutions. There was a general consensus that responsibility for initiation of this activity should be shared between center directors and radiology chairs, yet will depend on the individual institutional culture. As they are developed, the coordinated strategic plans should be shared with the NCI, who would be responsible for dissemination.
2. Integration – Efforts should be made to programmatically involve radiologists in cancer center activities and vice-versa in an effort to educate each other about their respective cultures and research capabilities. Furthermore, this coordinated effort could be leveraged intra-institutionally with the participation of other disease-oriented centers and departments
 - a. Cancer centers should be encouraged to have key imaging components, such as an “Imaging Shared Service” or “Imaging Research Program” in the NCI core grant. Investment in technology for a shared service should be recognized as appropriate for disciplines other than cancer research and therefore have shared institutional investment. Hence, cancer centers should partner with other administrative units in joint recruiting and supporting cancer imaging scientists. *The coordination of these facilities with other disciplines must be recognized as appropriate during cancer center review.*
 - b. Radiology departments, especially in institutions with cancer centers, should consider appointing radiology faculty to be specialists in oncological imaging. Such *Onco-Radiologists* would interface with cancer center faculty better than current anatomically-oriented departmental structures. These faculty would be

appropriate to direct programs or initiatives within the cancer center. Further consideration should be given to requesting partial salary support for such faculty to function as components of the NCI-mandated Protocol Review and Monitoring System (PRMS).

- c. There should be programmed *formal and informal interactions* between radiologists and cancer center members; and between cancer center directors and radiology chairs. Examples are seminars, lunches, symposia, etc.
 - d. There are institutional needs for cutting edge *image analysis*, including reading centers, imaging informatics, data basing, computer-aided diagnosis, etc. These needs should be addressed in any strategic plan.
3. Training – There are real shortages in imaging scientists with cancer expertise and in cancer researchers with imaging expertise. These shortages are expected to become more severe with increased demand and competition from industry.
- a. The NCI and National Institute of Biomedical Imaging and Bioengineering (NIBIB) have R25 and T32 training programs, which are underutilized by radiologists. A significant problem is the requirement for two years' commitment, which is impracticable for radiology programs, given the avidity for radiologists in both community and academic practice. *The NCI and NIBIB should revisit these programs to increase participation of radiologist researchers.*
 - b. *Industry sponsorship* could be helpful in providing funds for training, as industry often benefits from cross-trained scientists.
 - c. Imaging science should be introduced *early in the medical school curriculum.*
4. Clinical Trials – Participation of radiologists in the formulation of oncology clinical trials was identified as an endeavor that could have a near-term impact. It was generally felt that radiologists would have more interest if they were involved early in study design.
- a. Cancer centers and radiology departments should establish “*Radiology Response Assessment Teams*” or shared facilities to participate in clinical trial design and implementation. This could follow the model being developed at the University of Chicago. These teams would advise in the implementation of conventional imaging as well as providing a resource for incorporation of more cutting edge imaging modalities, such as molecular imaging, as appropriate.
 - b. Clinical trials should include both cancer center-initiated (e.g. therapy or prevention) and radiology-initiated (e.g. imaging based) trials.
5. Future meetings - Moving forward, the meeting arrived at the following ideas for achieving the espoused goals:
- a. A future meeting of this group was strongly encouraged.
 - b. AACI and ACRIN should continue to share the lead in this endeavor, although the participation of SCARD (Society for Chairs of Academic Radiology Departments) should be investigated.

- c. Diversify the group involved in the ongoing discussion. Future meetings should involve industry (equipment manufacturers and pharmaceutical companies), and patient advocates (incorporated into cancer centers and ACRIN's organization already).
 - d. Future meetings should also include the role of imaging in cancer interventional trials.
 - e. A "Progress Review Group" should be considered for this area at the NCI.
6. Economics - The economic demands on academic radiology departments have to be articulated, acknowledged and addressed in any plan. Academic radiologists can make as little as 25 percent of the salaries of their colleagues in private practice. While it is not the role of AACI, ACRIN, or the NCI to solve this issue, it is real and should be acknowledged in any plan. Several "entrepreneurial" models are available.
- a. Notably, neither group looked to the other to solve the economic problems inherent in this initiative. It was well recognized that investment in imaging would require institutional commitments and that there may be a financial "zero sum game" to overcome at most institutions. Integration and establishment of imaging programs need not be limited to cancer centers and radiology departments. There are other administrative units within health science centers and in more basic sciences that could beneficially participate, especially for molecular imaging. Possible sources to fund new initiatives are industrial and philanthropic support.

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