Innovations in Diagnostic Imaging and the Transformation of the Clinical Practice of Radiology in Collaborative, Multidisciplinary Cancer Care

This issue of Cancer Control highlights innovations in diagnostic imaging as well as the evolving role of the radiologist in cancer care. Although significant advances have been made in imaging technology during the past decade, an even greater evolution has taken place in the role of diagnostic imaging and the radiologist in multidisciplinary cancer care. As we continue the transformation to patient-centered care, delivering the best quality and most efficient care possible, the clinical practice of diagnostic imaging has evolved. Radiologists spend less time in the reading room and more time interacting with patients and collaborating with clinical colleagues. Supervising and accurately interpreting imaging studies while being available for consultations primarily by phone but unseen and disconnected from patients is no longer adequate.

A hallmark of a patient-centered, integrated clinical care model is multidisciplinary care. Radiologists can add significant value and help provide the most efficient care possible when they participate in multidisciplinary discussions about treatment plans and actively engage with patients and clinicians. Tumor boards held weekly can help facilitate collaboration and clinical decision-making among medical and radiation oncologists, surgeons, radiologists, and pathologists. True, multidisciplinary clinics should give patients the opportunity to be evaluated by medical, surgical, and radiation oncologists in a comprehensive, single appointment setting. Doing so helps keep patients actively engaged in their care while also minimizing the time between diagnosis and treatment. Thus, radiologists should be active participants on multidisciplinary teams and fully embrace and support patient-centered care. We must keep our focus centered on our patients while providing the best personalized cancer care in a multidisciplinary setting.

The articles in this issue of Cancer Control highlight exciting advances in diagnostic imaging and address controversies and challenges in breast, musculoskeletal, head and neck, and brain tumor imaging. The first 2 articles are dedicated to breast imaging and describe important contributions specialists in breast imaging are making to patient-centered care. The next 3 articles discuss advances in skeletal scintigraphy, cardiac magnetic resonance imaging (MRI), and imaging of musculoskeletal tumors. The last 2 articles review the role of diagnostic imaging in the management of head and neck squamous cell carcinomas and high-grade glial tumors.

Dr Collado-Mesa and colleagues at the Sylvester Comprehensive Cancer Center of the University of Miami in Florida quantify value-added activities provided by their breast imaging radiologists, who spend, on average, more than 90 minutes every day on value-added, patient care activities as they continue to evolve toward a more patient-centered practice. The article describes the important value-added activities provided by their radiologists as members of a multidisciplinary breast care team, as well as the challenges faced by specialists in breast imaging, who spend more of their work day in direct contact with patients and clinical colleagues.

Dr Falcon and coauthors discuss the challenges and controversies of the imaging management of breast density. Although breast density is a recognized independent risk factor for the development of breast cancer, the risk is controversial and no consensus exists on the need for supplemental screening in such patients.

Drs Montilla-Soler and Makanji present an overview of the use of skeletal scintigraphy in oncology and discuss how advances in the field directly impact disease management and patient care.
outcomes, including how the coupling of diagnostic and therapeutic nuclear medicine agents has become a valuable tool in treating osteoblastic skeletal metastases.

Dr Jeong and colleagues review the expanding role of cardiac MRI in oncology and the emerging field of cardio-oncology to help evaluate and preserve the cardiovascular health of patients with cancer. These authors review the advances and wide range of clinical applications of cardiac MRI, including the diagnosis and evaluation of cardiac masses. With an increasing emphasis on cardiac safety during cancer therapy, cardiac MRI also plays an important role in the evaluation of cardiac dysfunction in patients with cancer.

Dr Raghavan provides a review of musculoskeletal tumor imaging, describing the strengths, weaknesses, and appropriate utilization of different imaging modalities. Advanced imaging and novel techniques, including habitat imaging and chemical shift and diffusion-weighted MRI, are discussed. Each imaging modality provides unique diagnostic information, and the imaging technique and modality selected must be tailored and personalized for each patient.

Dr Gage and coauthors provide an overview of imaging modalities in patients with head and neck squamous cell carcinomas. Use of imaging for the staging, treatment planning, and surveillance of head and neck squamous cell carcinomas as well as the strengths and weaknesses of MRI, computed tomography (CT), and combined positron emission tomography (PET)/CT are discussed. Because of the technological advances in PET/CT, the modality is playing an increasingly important role in the diagnosis and management of head and neck cancers.

Dr Sahebjam and colleagues highlight the role of diagnostic imaging in assessing the response of high-grade gliomas to immunotherapy and checkpoint inhibitors. With the unique challenges encountered in distinguishing an immune-mediated inflammatory response from tumor progression in these patients, the authors stress the critical role of diagnostic imaging in response assessment of glioblastomas to immunotherapy. The article highlights the need for radiologists to actively participate on a multidisciplinary neuro-oncology team to prevent the premature discontinuation of potentially beneficial immunotherapy in patients with glioblastoma but doing so without compromising safety in clinical trials.

Innovations and technological advances in diagnostic imaging and its equipment will certainly continue. We must not allow the transformation and evolution of the role of diagnostic imaging and the radiologist in patient-centered cancer care to stagnate. We must continue to innovate and enhance the role of diagnostic imaging in the multidisciplinary approach to personalized cancer care. We hope you enjoy this issue of Cancer Control.

"There's a way to do it better — find it."
— Thomas Edison

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