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Review of textbook “Decision Tools for Radiation Oncology: Prognosis, Treatment Response and Toxicity” by Carsten Nieder and Laurie Gaspar (Editors)

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The field of radiation oncology is changing rapidly, not only because of new technological developments in the field but also because of better understanding of biological principles that separate patients with the same diagnosis code into categories of those who will survive and those who will succumb to their disease, those who will primarily benefit from systemic therapies and those who will progress locally. Translational research, imaging studies of pre- and post-treatment disease status and, above all, the integration of separate findings into decision trees and algorithms using sophisticated tools of a new field of bioinformatics, allows for rapid advancement of the radiation oncology as a clinical science and requires practicing physicians to stay on top of current literature.

“Decision Tools for Radiation Oncology” is a concise summary of new developments in the field of personalization of clinical care that any radiation oncologist should be aware of, if she or he aspires to deliver the care on the level of leading academic institutions. Authors and editors are to be applauded for choosing this specific angle—which patients and tumor characteristics dictate a choice of a particular treatment selection—and largely sticking to it throughout the entire textbook.

The introductory chapters lay the foundation for how the health technology integrates into the decision tools’ development and describe the statistical methods of outcome evaluation, paying special attention to clinical nomograms—the prime example of the diagnostic tools used in contemporary cancer clinics. Perhaps a brief description of centrographic

statistics—a powerful method of comparing the outcomes between different treatment modalities across multiple studies—would help clinicians understand the publications that are now appearing in the literature, such as the comparison of outcomes for surgery, external-beam radiation therapy, and brachytherapy for prostate cancer.

All chapters strive to provide a comprehensive coverage of new molecular markers that are both prognostic and predictive for various common diagnoses. The authors of the chapter on Brain Tumors describe the role of now standard markers 1p/19q co-deletion, MGMT promoter methylation status, and IDH1/IDH2 gene mutations and how this information may affect the decision outcome for appropriate treatment selection. The chapter on Head and Neck cancer discusses the HPV status of patients with oropharyngeal cancer, and indeed states that future studies will determine how the two patient groups (HPV-positive and HPV-negative) may be treated differently. The section on the Nasopharyngeal cancer introduces the Epstein-Barr virus DNA quantification as a prognostic biomarker, which forms the basis for the first head and neck trial of the newly formed NRG Oncology (NRG-HN001). The chapter on breast cancer appropriately discusses how current gene assays, primarily used by medical oncologists to determine the effectiveness of adjuvant chemotherapy, can and should be considered by radiation oncologists when patients are counseled regarding the benefit of adjuvant radiation therapy. Unfortunately, a critical publication by Mamounas et al. that analyzed the predictors of locoregional recurrence after neoadjuvant chemotherapy based on the results of NSABP B18 and B27 and provided a nomogram-based decision approach for discussion of adjuvant radiation therapy in the setting of pathological response to neoadjuvant chemotherapy is not mentioned in this chapter and represents a significant shortcoming. The international collaboration of authors put a great chapter together on the current approaches of treating

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lung cancer. They primarily focused on discussion of prognostic factors for outcomes and toxicity for standard fractionated radiotherapy. A greater focus on the role, outcomes, selection of patient, and technical aspects of SBRT for early-stage lung cancer would have been a welcome addition to this chapter, given that this technology is now a standard of care in this population of patients. Gastrointestinal malignancies are expertly covered in the textbook. Perhaps the controversial topic of pancreatic cancer management could also focus on a novel biomarker Smad4/Dpc4 which has been shown and subsequently validated to predict for local vs systemic disease progression. The knowledge of Smad4 status should be incorporated in the decision-making tools and indeed is currently used by RTOG 1201 for stratification of patients with locally advanced pancreatic cancer along with plasma levels of CA19-9. The authors of the chapter on Bladder Cancer should be especially applauded for bringing this controversial topic in North America, highlighting the appropriate selection of pa-

tients for bladder-preservation treatment approach. The data on MRE11 and TIP60 as predictive markers of treatment outcomes with cystectomy and radiotherapy is the type of data that must become the cornerstone of decision tools in the management of bladder cancer. Although validated only once at this point, this information will be collected on future NRG Oncology Bladder Preservation multi-institutional trials.

Overall, the textbook “Decision Tools for Radiation Oncology” represents a laudable international effort in updating practicing clinicians as well as clinicians-in-training on the novel developments in the field of radiation oncology with a special focus on decision tools and nomograms, bringing data on new biomarkers and novel imaging techniques, and teaching the readers how best to incorporate various patient and tumor-specific characteristics into the discussion of radiation therapy benefits and shortcomings. Future editions will undoubtedly bring even more cutting-edge knowledge to the readers and are impatiently anticipated.