unpleasant surprises may yet eventuate. There is no doubt that substantial improvements in supportive care have enhanced our ability to deal with early treatment toxicity and has raised our expectations as to what our patients will tolerate. This talk also draws attention to shortcomings in the way we assess and measure some of the delayed consequences of both old and new therapies.

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IMRT, SECOND CANCERS, AND THE SPECIAL CASE OF CHILDREN.
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Objective: To assess the impact of IMRT on the risk of second malignancies following radiation therapy. Material and methods: IMRT allows dose to be concentrated in the tumor volume while sparing normal tissues. This is a step forward, expected to make our patients tolerate. This talk also through the multi leaf collimator is higher, around 1.5% of the same dose from an unmodulated field. Consequently, the volume while sparing normal tissues. This is a step forward, expectation as to what our patients will tolerate. This talk also careful documentation of the clinical experience in the pattern to be realized.

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TUMOR TARGETING AND TISSUE PROTECTION BY IMRT OF HEAD AND NECK (HN) CANCER: CURRENT CHALLENGES
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Current challenges in targeting the tumor in HN IMRT include the need for better definition of the gross tumor volume (GTV) and the clinical target volume (CTV), and efforts to determine whether dose escalation can be planned for parts of the GTV predicted to be non-responding to therapy. Better imaging of the GTV using innovative techniques and better understanding of the relative accuracy of clinically available imaging modalities, notably CT/MRI vs. FDG-PET, are expected to be gained from on-going radiology research. In contrast, only careful documentation of the clinical experience in the pattern of local/regional tumor recurrences following IMRT can lead to better understanding of the extent of the CTV for each clinical scenario. Relevant experience in these issues will be presented. Sensitivity of patient tissues, blood vessels, and nerves to high dose are embedded within the GTV in the HN. This limits the ability to escalate the fraction and total doses to the GTV, and in particular it increases the toxicity of dose escalation concurrent with chemotherapy. If we could identify resistant sub-volumes within the GTV, dose escalation to these smaller volumes may be safer. The identification of resistant sub-volumes may be achieved with innovative imaging modalities (discussed elsewhere in this conference), or it may be based on imaging the shrinkage of the GTV at certain time points during RT, facilitated recently by contrast enhancement. Whether or not, it is clinically sound to re-contour the GTV and re-plan during the course of RT, will be discussed, taking into account the differences in tumor burden between the radiologically detectable and non-detectable parts of the original GTV. Reducing xerostomia by sparing partly the parotid salivary glands has been a major achievement of IMRT. Dose-response relationships in the glands have been investigated with notable differences among some of the publications. The reasons for these disagreements may be related to recent experimental data about the importance of the spatial distributions of the doses within the glands. How much do sparing of the parotid gland saliva improve patient-reported xerostomia and quality of life, and what are the limitations in achieving further improvements, will be discussed. Late dysphagia is one of the main factor limiting the intensity of chemo-RT regimens for locoregionally advanced HN cancer. In order to study the utility of IMRT in reducing dysphagia and related aspiration, it is necessary to identify the anatomical structures whose damage causes these abnormalities, to test whether IMRT can reduce the risk of IMRT is possible without compromising tumor irradiation, and to assess whether a clinically relevant benefit is gained. Studies addressing these issues will be described.

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TCP AND NTCP IMPORTANT: TOOLS OR TOYS?
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As long ago as 1937 (Holthusen), it was recognized that radiotherapy is a delicate balance between cure and complications. Consequently, there is a perennial need to prospectively estimate the effectiveness of alternative dose distributions for the individual patient. Due to widely varying patient geometries and disease characteristics, the issue cannot be settled on the basis of clinical trials and requires patient-specific mathematical important. Initial efforts to predict tumor control probability (TCP) and normal tissue complication probability (NTCP) were based on simplified theoretical ideas, but that has given way to more data-driven and empirical approaches. Recently, large datasets have been accrued based on 3-D treatment planning to provide an improved basis for NTCP Important. TCP and NTCP model-building represent fundamentally different problems which seem superficially similar. Normal tissues often have similar geometrical and physiological status with a given patient population (exception: lung for lung cancer patients). As is well-known, tumors vary greatly in important phenotypical and pathological parameters, including the ability of tumor cells to withstand hypoxia; nutrient delivery efficiency; probability of microscopic extension; tumor regression, etc. This heterogeneity is an obstacle to developing truly accurate TCP models. In contrast, significant data has been collected and used to improve the dose-volume-fractionation treatment tolerance variation in various normal tissues. NTCP models can be considered tools, rather than ‘toys’, when: (1) the model building process carefully avoids over-fitting the data (fairness), (2) the model is shown to correlate well with the underlying dataset (effectiveness), and (3) any new case to which the model is being applied is similar to (some) data in the basis/training dataset (similarity). Unfortunately, it is currently not easy to discern when these conditions have been met. Moreover, the desire to modify the dose distribution under consideration to reduce the NTCP value,