

In the management of prostate cancer, there is now a wide resurgence of interest in the role of interstitial brachytherapy for selected patients. Prostate seed implantation differs from traditional brachytherapy in three important aspects: 3D anatomy-based dosimetric planning, real-time diagnostic imaging guidance, and fast dose fall-off due to lower energy radionuclides. In addition, it differs from HDR brachytherapy in that the radioactivity distribution is less amenable to optimization and alteration. These considerations lead to the unique nature of prostate seed implants, which may be characterized as precise yet volatile. There is a growing body of evidence to suggest that a substantial part of the medical physicist's contribution to this multi-disciplinary modality has a direct impact on the factors that may singly or jointly determine the treatment outcome. It is therefore of paramount importance for the medical physics community to establish a uniform standard of practice for prostate implantation, so that the therapeutic potential of the modality can be maximally and consistently realized.

It was against this background that the Radiation Therapy Committee of the AAPM formed Task Group No. 64, which was charged (1) to review the current techniques in prostate seed implant brachytherapy, (2) to summarize the present knowledge in treatment planning, dose specification and evaluation, (3) to recommend practical guidelines for the clinical medical physicist, (4) to identify issues for future investigation. The dosimetry formalism for interstitial brachytherapy was standardized by the AAPM Task Group No. 43. A code of practice for brachytherapy physics in general was outlined by Task Group No. 56. The present Task Group effort addresses the clinical

medical physics issues unique to permanent prostate seed implants. The intention of the effort is to guide the practising medical physicist in successfully implementing or improving the prostate implant procedure, and to provide a survey of the current standard of practice in this evolving field.

1. Review the current techniques in prostate seed implant brachytherapy.
2. Summarize the present knowledge in treatment planning, dose specification and evaluation.
3. Discuss issues for future investigation.