

## ANALYSIS OF *in vivo* DOSIMETRY USING SEMICONDUCTOR DETECTORS IN A Co-60 RADIOTHERAPY BEAM

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Results of *in vivo* dosimetry carried out on the Alcyon Co-60 radiotherapeutic beam using the SCANDITRONIX DPD-3 system with EDE-5-type semiconductor detectors, will be presented.

Differences Between planned and measured entrance dose for open fields and for fields formed using wedge compensation filters were studied over a period of 15 months, for patients positioned to receive their first fraction. Of the different sites studied, most were head&neck and breast localizations.

## INTRODUCING A NEW ICRU REPORT: PRESCRIBING, RECORDING AND REPORTING ELECTRON BEAM THERAPY

Landberg T., Wambersie A., Akanuma A., Brahme A., Chavaudra J., Dobbs J., Gerard J.P., Hanks G., Horiot J.C., Johansson K.A., Naudy S., Möller T., Purdy J., Suntharalingam N., Svensson H.

The ICRU published several Reports about volumes and doses specifications for radiotherapy, such as the Report 29 (1978), devoted to photon and electron beam therapy. This report 29 becoming obsolete, a new Report was published in 1993 for external photon beam radiotherapy, the Report 50, recommending new definitions and more accurate specifications. With electron beams specific problems are raised, and the ICRU considered suitable to prepare a special Report for them, to be published in the near future. The main features of the present draft are as follows:

**1. Volumes specifications** in agreement with the ICRU Report 50,

- Volumes to be determined before treatment planning: gross tumour volume (GTV), clinical target volume (CTV), organs at risk volumes (OR).
- Volume to be determined during treatment planning: Planning target volume (PTV).
- Volumes resulting from the treatment plan chosen: treatment volume (TV), irradiated volume (IV).

**In the future Report on electron beams, an additional volume is defined**, the internal target volume (ITV) geometrical concept representing the volume encompassing the clinical target volume, taking into consideration

margins due to the variations of the clinical target volume in position, shape and size. A similar concept has been extended to organs at risk, the planning organ at risk volume.

### **2. Dose specification**

The general statements for photon beams apply:

- dose at a reference point (ICRU point) situated at or near the center of the planning target volume and, when possible, near or on the central axis of the electron beam at the depth of the peak dose.
- Minimal and maximal doses in the planning target volume
- Dose delivered to the organs at risk
- Additional information is recommended, when possible (e.g. DVH).

With electron beams, the dose homogeneity expected within the PTV ( $\pm 5$  to  $\pm 10$  %) requires an adaptation of the therapeutic range concept, such that the value of the isodose surface encompassing the PTV be situated between 85 % and 95 % of the reference dose. The peak absorbed dose on the beam axis should always be specified, even if it is different from the reference dose.

**At last, as in Report 50, three levels of dose evaluation for reporting are considered, depending on the aim of the treatment and the data available.**