For several years radiation beams have been modulated by mechanical and dynamic wedges, compensators, individual shields and unequal beam weights. Nowadays three dimensional conformal treatment and intensity modulated radiation therapy techniques (IMRT) provide very precise conformation of the dose to the target volume while sparing adjacent healthy tissues. On the other hand conformal radiotherapy requires very precise definition of anatomical structures, improved patient repositioning systems. New challenge represents quality control program and treatment verification.

IMRT was introduced in clinical practice in Center of Oncology, Glivvice in year 2000. Such treatment is delivered by Clinac 2300 with dynamic MLC option, on the base of dose distributions calculated by CadPlan-Helios treatment planning system, and sent via Varis to accelerator.

The aim of this paper is to present our experience with IMRT technique with particular regard to IMRT treatment plan (definition of PTV and calculation factors like Termination Tolerance, Priority Factor, Scatter Factor).

8.
EVALUATION OF A NEW SYSTEM FOR IN-VIVO DOSIMETRY BASED ON MOSFET DETECTORS

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Purpose: In Holycross Cancer Centre in Kielce in vivo dosimetry is performed with new miniature detectors called MOSFET. MOSFETs are advertised by Thomson &Nielsen company as almost ideal detector for in-vivo dosimetry: they are isotropic, can be treated as point detector fully transparent to treatment beam, having zero temperature and negligible energy effect, can be used either for electron and photon radiation, in teletherapy and brachytherapy, can be used in several QA procedures, very easy and convenient for handling and very low time consuming. Our experience both from extensive tests and clinical use will be presented.

Results: From our experience MOSFETs detectors can be treated as isotropic, are fully transparent for radiation, can be used both in teletherapy and brachyterapy. For application in brachyterapy special catheters with lead localisation markers must be used. The energy dependence cannot be considered as negligible. For 6 and 15 MV X photons calibration factors differ of about 5%. Reproducibility depends strongly on the dose. It decreases very much for very small doses (for dose 60 cGy - 1 standard deviation is of 2,5%). Very useful advantage of MOSFET detectors is their applicability for surface dose measurements. More details will be presented during the congress.

Conclusion: MOSFET detectors can be effectively used for in-vivo dosimetry in tele and brachytherapy. The reproducibility should be improved.

9.
COMPARISON BETWEEN CONVENTIONAL SIMULATOR PLANNING AND CONFORMAL 3-D PLANNING FOR CERVICAL CANCER TELETHERAPY

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The using of simulator planning based on bony landmarks for pelvic irradiation of cervix cancer is associated with a risk in a geographical miss, which may be generated by inadequate knowledge of the individual anatomy. 3D treatment planning system let us know an individual topography of pelvic organs, enables to mark a PTV and it allows more adequate coverage. PURPOSE The aim of this study was to evaluate a benefit resulting from 3D treatment planning for teletherapy of cervical cancer. MATERIAL AND METHOD In our study on 15 patients with cervical carcinoma in the stage IIIB simulator planning of „box" technique was performed. Next we defined the PTV in 3D-planning system and compared the dose distribution, obtained with both methods, in the target volumes and organs at risk using dose-volume histograms. RESULTS In 4 of 15 patients the encompassment of the PTV by the treated volume was inadequate in case of simulator planning. The treated volumes based on 3D-planning were 8% smaller than volumes based on simulator planning. The treated volume/ planning target volume ratio was 1,64 for simulator planning and 1,50 for 3D planning. 3D-planning system resulted in a reduction of the irradiated bladder volume(-12%) and the bowel volume (-9%). The bladder and bowel