cells. The aim of contribution is assessment of capability of Poisson formulation of LQ model for TCP to predict PC for various fractionation schedules in HDR brachytherapy and timing definitive treatment.

Material and methods: Clinical pooled outcomes from EBM offer the values of PC & SR for standard treatment (EBRT & ICRT) and treatment with prolonged OTT. PC (stratified according to clinical staging I, II, III) have been utilized for estimation/derivation of the repopulation factor RF (extra dose/day necessary to keep the same level of PC). The radiobiological analysis was provided using own program "BioGray" (tool for simultaneous radiobiological modelling BED, TCP, NTCP including DVH). Two standard treatment schedules (EBRT 25F/1.8 Gy + [HDR 5F/6 Gy/A or 4F/7 Gy/A]) were evaluated by OTT (from 50 to 90 days). In addition, simultaneous calculation of BED & TCP was provided (varying RF from 0 to 1 Gy/day).

Results: From available clinical outcomes of EBM was derived value RF = 0.4 Gy/day (95% CI; 0.3-0.5). To achieve the same level of PC (for forced gaps) the extra dose is recommended (e.g. add HDR fraction in week or increase dose per fraction).

Conclusions: OTT is one of the major independent prognostic factors of treatment effectiveness. Prolongation of OTT can devalue exact planning process and treatment delivery. The compensation of repopulation from this point of view is justified. The BioGray seems a useful tool for radiobiological modelling (TCP/NTCP) in various clinical situations in the programme QA.

Impact of prolongation of treatment time on pelvic control for Ca of uterine cervix – radiobiological modelling TCP versus clinical outcomes from EBM

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Purpose: Several studies have demonstrated decreasing pelvic control (PC) & survival rates (SR) in carcinoma of uterine cervix when overall treatment time (OTT) in definitive RT is prolonged. This loss of PC presents in mean value 0.8%/day originated by repopulation of tumour