AbstractID: 6639 Title: Dosimetric guidance on using brachytherapy (LDR or HDR) to offset a flawed permanent prostate implant

Purpose: To provide practical dosimetric advice on mending suboptimal permanent implants using low dose-rate (LDR) or high dose-rate (HDR) brachytherapy (BRT). The problem is to make the combination of the two radiation treatments (the initial, flawed one and the compensatory boost) clinically isoeffective with the planned dose.

Methods: The device of isoeffective dose (IED) is the appropriate tool for this purpose as it accounts for the physical (temporal distribution of dose) and biological (radiosensitivity, repair kinetics, proliferation rate) treatment setting.

Results: I give, as a function of separation time from the initial, flawed treatment, and stratified by risk group representative values for the additional dose (LDR or HDR) needed to make the combined treatment isoeffective with a prescription of 144 Gy of permanently-implanted ^{125}I seeds.

Conclusions: While the IED concept, within the constraints stated in the presentation, is rigorously valid, its practical implementation depends importantly on the relevant radiobiological parameters, and in this respect the reader is urged to use his own critical judgment.