

Supplementary material for Kim Y-J, et al. A phase II study of hypofractionated proton therapy for prostate cancer. Acta Oncol, 2013;52:477–485

Appendix

The details of the equations

To calculate EQD2, the following equation was used:

$$\text{BED} = nd \left[1 + \frac{d}{\alpha/\beta} \right] - \log_e 2 \left[\frac{T - T_k}{\alpha \times T_p} \right] = \text{EQD2} \times \left[1 + \frac{d}{\alpha/\beta} \right] - \log_e 2 \left[\frac{T' - T_k}{\alpha \times T_p} \right] \quad (3)$$

n = number of fractions

d = daily dose

α/β = the dose at which the linear and quadratic components of cell killing are equal

T = overall treatment days (the first day of treatment is Day 0)

T' = overall treatment days when treated with a daily dose of 2 Gy

T_k = the kick-off time when mucosal repopulation starts

α = the initial slope of the cell survival curve, usually 0.35

T_p = potential mucosal doubling time