

# 14<sup>th</sup> World Cancer & Anti-Cancer Therapy Convention

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## *Bogusław Maciejewski*

*Cancer Center-Institute, Poland*

### **To boost or not to boost in radiotherapy**

Since G H Fletcher introduced a concept of boost dose to radiotherapy in the late 60s, a few different forms of such additional irradiation has been developed and tested in clinical radiotherapy. Dose escalation is physical term and means an increase in total dose. However, if it is accompanied with extension of overall treatment time biological effect is the same, i.e. 60 Gy in 30 fx in 42 days, 70 Gy in 35 fx in 49 days and 80 Gy on 40 fx in 55 days are biologically equivalent because dose intensity ( $DI=TD/OTT$ ) is the same for these three fractionation schedules ( $DI=1.428$  Gy/d). Therefore the aim of boost is to increase DI delivering higher TD without OTT extension. It is possible by delivering relatively high single dose a day after completing fractionated irradiation, i.e. DI for 60 Gy/42 days in equal 1.428 Gy/day but giving an extra 16 Gy boost dose it gives 76 Gy/43 day with  $DI=1.767$  Gy/day. It can be achieved by delivering a second daily fraction within the last 2.5 week of fractionated schedules, or HDR-brachytherapy boost or intraoperative single dose (IORT) are also used in practice. The results of these studies were presented and critically discussed. From radiobiological point of view, effective boost can only be considered when probability of local tumor control anticipated prior to therapy is below 60% (advanced tumors), boost volume covers at least 75-80% of the primary volume and a boost dose equals 1.5-2 X D10 (D10 is the dose which decreases tumor cell surviving by the Log and generally equals 7-10 Gy). Traps and benefits of the BOOST dose will be discussed based on clinical examples.

### **Biography**

Bogusław Maciejewski has completed his PhD and Scientific Title of a Full Professor in Radiotherapy. He has done many research projects in the UCLA Los Angeles, Gray Lab London, MGH Harvard University Boston, MDACC Houston and other Cancer Centers in Europe. He was the Director of Cancer Center-Institute Gliwice, Poland till 2015. He is the author of over 200 papers which are published in reputed journals (IF=1650 and citation index=3500). He was awarded the G F Fletcher Gold Medal and Gold Medal of Life Achievements in Oncology by all European Oncologic Societies. He is an Honorary Member of American College of Radiology, Radiotherapy Expert of the IAEA in Vienna and for 10 years he was a Member of European Board of Radiotherapy. His major interest focuses on the importance of treatment time and tumor repopulation; and altered dose fractionation in Clinical Radiotherapy for human tumors.

[Boguslaw.Maciejewski@io.gliwice.pl](mailto:Boguslaw.Maciejewski@io.gliwice.pl)

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