

ABSTRACT

Cancer is one of the most deadly disease in Indonesia according to World Health Organization (WHO). Cancer can be cured by radiotherapy. There are two type of radiotherapy such as external radiotherapy and brachytherapy. External radiotherapy is more wide use for cureing cancer, but but has the possibility of errors in the irradiation process so that a dose audit in the form of Patient Specific Quality Assurance (PSQA) is needed. In Vivo Dosimetry (IVD) is a form of PSQA that is used to measure patient dose along with patient irradiation. This study aims to compare the dose calculation result on the Treatment Planning System (TPS)with the dose reviced by the slab phantom form severalirradiation techniques using IVD. This study simulated irradiation to patients using a slab phantom in 3 Dimension Conformal Radiotherapy (3D-CRT), Intensity Modulated Radiotherapy (IMRT), dan Volumetric Modulated Arc Therapy (VMAT). The measurement results obtained standard deviations sequentially for 3D-CRT, IMRT, and VMAT are 18.9%, 38.1%, and 39.2%. These measurements suggest that IVD is poor for irradiation that has a lot of angle variation and segmentation. Measurements were made with the same planning but all angles were normalized at a gantry angle of 0° and the results for 3D-CRT, IMRT, and VMAT were 1.1%, 2.7%, and 3.9%, respectively. The result on normalization at 0° gantry angle is better than that at the proper angle because every irradiation always hits the IVD, but the measurement cannot be done for clinical measurs. The use of IVD is good for Total Body Irradiation (TBI) examination and electron treatment.

Keywords: IVD, PSQA, external radiotherapy, dose audit