

ABSTRACT

Quality Assurance (QA) of radiotherapy equipment is essential to ensure radiation dose accuracy and patient safety. This study aims to evaluate the stability and consistency of the 6 MV photon energy output of the Varian Clinac IX Linear Accelerator (LINAC) through daily dosimetry Quality Control (QC) procedures at the Radiotherapy Installation of Indriati Hospital Solo Baru during March 2026. The evaluation method employed was Gamma Index Analysis with a 3%/3mm tolerance criterion. Verification was performed by comparing the planned dose distribution from the Eclipse Treatment Planning System (TPS) with the actual dose distribution measured using an Electronic Portal Imaging Device (EPID) detektor. The results showed that all daily measurement data (22 days of observation) were consistently above the international passing threshold of $\geq 95\%$. The average daily Gamma Passing Rate (GPR) obtained was 97.0%, with fluctuations ranging from a minimum value of 96.5% to a maximum value of 97.4% ($\sigma = 0.25\%$). Based on the statistical approach recommended by AAPM TG-119, the calculated local Confidence Limit (CL) was 3.49, establishing a minimum local GPR acceptance limit of 96.51%. This analysis confirms that the radiation output of the Varian Clinac IX is in a highly stable and consistent condition, thereby providing high clinical safety assurance regarding the accuracy of radiation dose delivery to patients.

Keywords: Varian Clinac IX, EPID, Daily QC, Dosimetry, Gamma Index Analysis, TG-119.