

## Review Form 1.7

Journal Name:	<a href="#">Asian Journal of Medicine and Health</a>
Manuscript Number:	Ms_AJMAH_104429
Title of the Manuscript:	Compliance Test of Percentage Depth Dose (PDD) Using LINAC Machine Brand Electa Precise Against American Association of Physicists in Medicine (AAPM) PDD With Electron Beam Energy Variation at Radiotherapy Installation RSUP Prof. Ngoerah in Denpasar
Type of the Article	Original Research Article

### **General guideline for Peer Review process:**

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(<https://www.jurnalajmah.com/index.php/AJMAH/editorial-policy> )

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**PART 1: Review Comments**

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p><b>Compulsory REVISION comments</b></p> <ol style="list-style-type: none"> <li>1. <b>Is the manuscript important for scientific community?</b> (Please write few sentences on this manuscript)</li> <li>2. <b>Is the title of the article suitable?</b> (If not please suggest an alternative title)</li> <li>3. <b>Is the abstract of the article comprehensive?</b></li> <li>4. <b>Are subsections and structure of the manuscript appropriate?</b></li> <li>5. <b>Do you think the manuscript is scientifically correct?</b></li> <li>6. <b>Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.</b></li> </ol> <p><u>(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)</u></p>	<ol style="list-style-type: none"> <li>1. The manuscript is of importance because it describes a methodology for validating one essential dosimetric parameter, namely, the PDD, during the commissioning phase of LINACs. It will assist medical radiation centres/hospitals in the choice of LINACs appropriate for radiation therapy. It also provides insight to LINAC designers, into standard protocol compliance measures. It provides a level of quality assurance in terms of radiation safety and accuracy, in delivering radiotherapy treatment.</li> <li>2. The physicist is checking whether the PDD of a specific LINAC complies with the AAPM PDD protocol when the LINAC electron energy beam is varied. The title conveys the aim of the research, but the sentence could be simplified. Possible simplified title could be: "PDD variation against electron energy beams, as per AAPM PDD protocol, for Electra Precise LINAC."</li> <li>3. The abstract should have a summary of the background, the aim, the methodology, the results, and the conclusion. This abstract does not have a background as to why the experiment is being done. For instance, it should be mentioned in the abstract that the experiment is being conducted, as part of one of the commissioning tests required to ensure the LINAC is ready for clinical use. The measurement methodology is not mentioned in the abstract. The conclusion mentioned in the abstract, is beyond the scope of the experiment. The experiment is about compliance with AAPM PDD protocol, which is one of several tests that have to be done before the LINAC is ready for clinical use.</li> <li>4. In general, the subsections comply to the format of writing a manuscript/article. The Results and Discussion subsection outlines the results clearly. However, discussion of the results is minimal.</li> <li>5. The Method subsection provides little information on the main instrumentation used, especially the ionization chamber. It does not mention whether a reference chamber was used to correct for dose fluctuation. It does not describe how the PDD scanning was done, and the incremental step and direction, at which measurements were taken, within the water phantom. It does not specify that all key conditions for consistent measurements, were kept constant, namely, temperature, chamber voltage, water level, etc. The duration of the PDD measurement at each point is not specified. That the PDD was measured along the central axis of the beam, and that the source to surface distance (SSD) was kept constant, at what distance, are not explained. These parameters influence the precision, consistency and reproducibility of the data collected, at each point. These measurement factors are essential in scientific experiments and should be included within the methodology section.</li> </ol> <p>For electron beams, ionization chamber readings provide depth-ionization curves, that are converted to depth dose curves, by multiplying the ionization current/charge at each measurement depth by the stopping power ratio at that depth. This significant conversion is not pointed out in the methodology subsection.</p> <p>The discussion in the result subsection pertains only to the fact that the results comply with the AAPM reference. However, the AAPM PDD protocol report number is not mentioned anywhere, not even in the Reference subsection. The results could have been further substantiated against calculated PDD curves from the British</p>	

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	<p>Journal of Radiology standard, the IEC (International Electrotechnical Commission) and the IAEA protocol. Furthermore, the limitations of the experiment as well as scope for further research work are missing from the Discussion section.</p> <p>A more precise conclusion is that the LINAC PDD variations is in line with the AAPM PDD protocol. This does not, however, extrapolate to the fact that the LINAC is now ready for clinical use. Other commissioning tests might be required before clinical use.</p> <p>In terms of verifying whether the PDD variations with electron energy beams, is in accordance with predetermined AAPM protocol, this research work is useful, under the assumption that the results were obtained under constant measurement conditions. That is, the temperature, water level, etc., were kept constant, the voltage of the chamber was constant, the PDD was measured along the electron beam's central axis, at constant SSD (source to water surface distance) which is usually 100 cm. These measurement conditions determine the accuracy and reproducibility of the data collected.</p> <p>6. The references are recent, and hence refer to QA of latest LINACs, which is relevant for this experiment. References could have been supplemented with other PDD standard protocols from IAEA and British Journal of Radiology.</p> <p>7. <b>Additional comment:</b> In the statistical explanation, is it necessary to use two hypotheses, H0 and H1? If the null hypothesis H0 is rejected, then it implies that there is a difference in variations.</p>	
<p><b>Minor</b> REVISION comments</p> <p>1. <b>Is language/English quality of the article suitable for scholarly communications?</b></p>	<p>The use of future tense in the Abstract and Data Analysis is not appropriate. Present tense is required. The quality of the sentence construction in describing the experiment requires attention. The paragraph describing the R values, under Results, can be clearer and more succinct. The use of punctuation can be reviewed, in some instances.</p>	
<p><b>Optional/General</b> comments</p>		

**PART 2:**

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p>Are there ethical issues in this manuscript?</p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

**Reviewer Details:**

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