



Contribution ID: 29

Type: Talk

Radiotherapy LINAC Breakdowns in Low- and Middle-Income Countries

Thursday, 13 April 2023 10:00 (20 minutes)

Access to Radiotherapy Linear Accelerators (LINACs) remains a significant challenge in Low and Middle-Income Countries (LMICs) for effective cancer treatment. The complexity of LINACs is further compounded in LMICs by environmental, socio-economic, and geographical factors, resulting in frequent breakdowns, with downtimes lasting from days to months. Recent studies have identified the Multi-Leaf Collimator (MLC) subsystem as having a disproportionate failure rate, especially in LMICs, which calls for re-evaluation. Through an analysis of Indonesian facilities, we provide insight into the causes of downtime and failure pathways for RT LINACs in LMICs. We also show that MLC accounts for 59% of all mechanical faults in LINACs, with downtime being 7 times longer in LMICs than in High-Income Countries (HICs). Further analysis of MLC leaf width demonstrates that narrow 5mm leaves contribute to $18.27 \pm 6.5\%$ of all breakdowns, while wider 10mm leaves make up $15.87 \pm 4.3\%$. These findings highlight the need to review the current generation of Radiotherapy LINACs and design future models that are more robust and suitable for all environments.

Speaker's Title

Mr.

Speaker's Gender

Man

Speaker's Preferred name (if any)

Greg

Speaker's Pronouns

He/Him

Speaker's Name

Gregory Peiris

Primary author: PEIRIS, Greg (The University of Melbourne)

Presenter: PEIRIS, Greg (The University of Melbourne)

Session Classification: Room 1 (Laby Theatre)

Track Classification: WG3: Accelerator technologies for industrial & medical applications