

Workload of medical linear accelerator at a high throughput cancer treatment centre in Sri Lanka

BACKGROUND

Bunker design and shielding are fundamental to the radiation protection of staff and the public in a radiation therapy department. The workload is an important factor in the design of protective barriers [1]. With the advent of Intensity Modulated Radiotherapy (IMRT), the workload of linac increased significantly since it requires more monitor units (MUs) per treatment [2,3]. The aim of this study was to evaluate the workload of linac at Apeksha Hospital, Maharagama, Sri Lanka.

METHODS

This study was conducted in the Varian (Varian clinic 2300CD) unit of Apeksha Hospital, Maharagama, Sri Lanka. The data was collected from 1st of August 2020 to 30th of November 2020. All the treatment data were accumulated using the Varian ARIA oncology information system. The total workload during the study period (four months) was calculated and then averaged to one week to obtain for the average workload. The physics workload measurement was ignored in this study. There was no any research related workload during this period of measurement.

RESULTS

Table 1: Number of patients treated under each treatment procedure (6 MV) and the total dose delivered at isocentre. The notations are indicated as follows: 3D-CRT –3-dimensional conformal radiotherapy, IMRT – Intensity modulated radiotherapy.

Month 3D-CRT IMRT

	Number of patients	Total dose delivered at isocentre (cGy)	Number of patients	Total dose delivered at isocentre (cGy)
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August 2020	742	544251.724	548	584667.019
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September 2020	842	577595.859	661	694643.231
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October 2020	624	164220.279	706	145698.781
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November 2021	541	135562.912	471	98496.459
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Table 2: Number of patients treated using 3D-CRT (15 MV) and the total dose delivered at isocentre.

Month 3D-CRT

	Number of patients	Total dose delivered at isocentre (cGy)
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August 2020	492	174388.137
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September 2020	709	270901.168
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October 2020	513	98529.337
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November 2021	270	61328.650
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Table 3: Average workload for one week for treatment procedures.

3D-CRT IMRT

	Workload for 6 MV (cGy/week)	Workload for 15 MV (cGy/week)	Workload for 6 MV (cGy/week)	Workload for 15 MV (cGy/week)
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	89	983.056	38	431.764
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CONCLUSIONS

The average workload for one week was 1918.97 Gy/week for 6 MV photons and the average workload for one week was 403.37 Gy/week for 15 MV photons.

REFERENCES

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Session Classification: Session 8. Occupational radiation protection in medicine

Track Classification: 4. Occupational radiation protection in medicine