Pengkajian kalkulasi TPS untuk medium homogen dan inhomogen dengan menggunakan dosimeter matriks dan film gafchromic = Review of the TPS calculation for homogeneous and inhomogenous medium using matrix detector and gafchromic film

Irma Juwita Ayuning Tias, author

Deskripsi Lengkap: http://lib.ui.ac.id/detail?id=20422650&lokasi=lokal

----

Abstrak

ABSTRAK

Pelaksanaan kontrol kualitas peralatan yang merupakan komponen jaminan kualitas (QA) termasuk audit eksternal independen sangat esensial dalam menjamin ketelitian radioterapi. Prosedur sebuah program QA tergantung pada keadaan masing-masing pelaksana radioterapi. Penelitian dilakukan menggunakan on site audit dengan detektor matriks dan film gafchromic untuk beberapa simulasi penyinaran meliputi fantom homogen dan inhomogen serta variasi lapangan dan wedge. Dari 39 titik pada central axis yang diuji menggunakan detektor matriks, 37 titik dikategorikan Pass dengan Optimal Level ($\sigma < 3.3\%$) dan 2 titik Pass dengan Action Level ($\sigma = 3.3\% - 5\%$). Sedangkan hasil uji dengan detektor film gafchromic, 24 titik dikategorikan Pass dengan Optimal Level dan 11 titik Pass dengan Action Level sedangkan 4 titik Fail. Hasil audit keseluruhan didapatkan dengan memasukkan nilai deviasi maksimum hasil pengukuran 80% lapangan dengan detektor matriks. Dari 39 bidang yang diuji, 28 dikategorikan Pass dengan Optimal Level dan 6 bidang Pass dengan Action Level. 5 Bidang Fail dengan nilai deviasi mencapai 6.11%; 5,26%;7.51%; 5.16%; dan 5.26%. Nilai deviasi tersebut tidak memenuhi batas yang direkomendasikan. Laporan audit disusun berdasarkan kasus yang diuji. Dari 16 kasus, menurut hasil pengukuran detektor matriks 3 kasus dinyatakan Fail. Dari 16 kasus, menurut hasil pengukuran detektor film gafchromic, 4 kasus dinyatakan Fail.

<hr>

ABSTRACT

External dosimetry audit of radiotherapy equipment as a part of Quality Assurance (QA) is recognized as best practice to help avoiding and identifying dosimetric errors as well as to ensure accurate dosimetry of radiotherapy facilities. Procedures on QA Program might differ between radiotherapy facilities and units. This experiment was carried out as an on site audit using matrix detector and gafchromic film on several irradiation simulations including homogenous and inhomogenous phantom, field variations, and wedge factors. Dose in 39 central axis points were measured by using matrix detector; 37 points were categorized as Pass with Optimal Level ($\sigma < 3.3\%$) and 2 points were categorized as Pass with Action Level ($\sigma = 3.3\% - 5\%$). Measurement result of gafchromic film shown that 24 points were categorized Pass with Optimal Level, 11 points Pass with Action Level, and 4 points were Fail. The whole audit results were determined also by maximum deviation of 80% field measured using matrix detector. From 39 planes measured, 28 planes were categorized Pass with Optimal Level and 6 planes were Pass with Action Level. 5 planes were categorized Fail because its maximum deviation reached 6.11%; 5.26%; 7.51%, 5.16%, and 5.26%, exceeding the recommended limit. Audit reports were determined by case. From 16 cases that had been audited using matrix detector, 3 cases were considered Fail. From 16 cases that had been audited using gafchromic film, 4 cases were considered Fail.inhomogenous phantom field variations and wedge factors

Dose in 39 central axis points were measured by using matrix detector 37 points were categorized as Pass with Optimal Level 3 3 and 2 points were categorized as Pass with Action Level 3 3 5 Measurement result of gafchromic film shown that 24 points were categorized Pass with Optimal Level 11 points Pass with Action Level and 4 points were Fail The whole audit results were determined also by maximum deviation of 80 field measured using matrix detector From 39 planes measured 28 planes were categorized Pass with Optimal Level and 6 planes were Pass with Action Level 5 planes were categorized Fail because its maximum deviation reached 6 11 5 26 7 51 5 16 and 5 26 exceeding the recommended limit Audit reports were determined by case From 16 cases that had been audited using matrix detector 3 cases were considered Fail From 16 cases that had been audited using gafchromic film 4 cases were considered Fail.