Implementation of radiographer-led IGRT for cervix cancer

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Background
IGRT in cervical cancer treatment delivery is complex due to significant target and organ at risk (OAR) motion. Implementing accurate soft tissue assessments is important to maintain robust decision making and optimal target coverage. Yet no standard IGRT solution or guidelines for radiographer review exist. This drove us to develop our own dedicated cervical cancer soft-tissue image review training and competency programme (TCP).

Methodology
TCP content agreed by a multi-disciplinary team comprising clinical oncologists, radiographers, and physicists.

Training: Inter-professional didactic lectures and practical sessions, supported by a comprehensive workbook.

Competency assessment: Radiographers reviewed a database of 20 cervical cancer CBCT images. Their soft-tissue review proficiency (after bony anatomy registration) was assessed against the gold standard. All reviews were graded as pass or fail based on assessment of target coverage and decision taken in concordance with the gold standard.


Target: Radiographer pass threshold set at 80% concordance with clinical oncologist review, akin with similar studies.

Audit round one

• 19 radiographers, of varying experience, volunteered
• Offline image review, verification and decision making process
• 5 areas of review guided by a traffic-light decision support system

Results audit round one

• 16/19 radiographers completed the TCP
• 231/320 (72%) of image reviews concurred with the gold-standard
• Four radiographers achieved ≥ 80%, signifying parity
• Not sufficient to support clinical implementation

Action plan based on round one results

Further 3D anatomy teaching and more clinical examples added to TCP. Imaging flowchart implemented and image review process switched from offline to online verification.

Audit round two

• 21 radiographers, of varying experience, volunteered
• Online verification and decision making

Results audit round two

• 21/21 radiographers completed the TCP
• 367/420 (87%) of image reviews concurred with the gold-standard
• All radiographers achieved ≥ 80%, signifying parity
• Supported clinical implementation of radiographer-led IGRT

Action plan based on round two results

Radiographer-led cervical cancer soft tissue IGRT implemented clinically under prospective audit conditions. Online review performed by two competent radiographers. Prospective audit of first 13 patients; concordance of radiographer online review and clinical oncologist offline review measured. A high level of concordance prevailed; 192/200 images reviewed (96%) agreed. Supporting the adoption of radiographer-led cervical cancer IGRT into standard practice.

Conclusion
A dedicated TCP facilitated implementation of Radiographer-led cervical cancer soft tissue verification. Result variability bolsters the necessity for Radiographer training and competency assessment before role-extension in this area.

References: