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Editorial

Target Volume Delineation Training for Clinical Oncology Trainees: The Role of ARENA and COPP

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Standardising Target Volume Delineation in Routine Practice

Interobserver variation in target volume delineation (TVD) within the radiotherapy process remains a weakness across all tumour sites [1]. Historically, in the UK much of the drive towards standardising TVD has come from the radiotherapy trials quality assurance community. Within this context, a number of steps have been put in place to minimise the effect of outlining variation on trial outcome. These include robust, peer-reviewed protocols, use of pre-accrual outlining workshops and completion of benchmark cases. Increasingly, trial management groups are undertaking individual case reviews for patients recruited in the trial.

More recently, the Royal College of Radiologists (RCR) has worked to move this standardisation into routine clinical practice. It seeks to do this through peer-review guidance commissioned by the RCR Clinical Oncology Professional Support and Standards Board [2]. These guidelines have drawn on expertise gained in both trial and non-trial settings and are directed towards established clinicians. They aim to support contouring decisions and define minimum standards for TVD. The RCR has also launched the digital radiotherapy planning platform (COPP) project, which will enable clinical oncologists to update their radiotherapy planning skills for their tumour site(s), both through access to continuing professional development (CPD) resources and outlining workshops.

A further development will be for this to be introduced as part of the final FRCR examination. Trainees will be required to show outlining competences by replacing a number of cases in the current Final FRCR Part B oral examination with digital planning assessments. This underlines the importance of acquiring skills in TVD during training.

Standardisation of Training in Target Volume Delineation

Clinical oncology has long been considered a craft specialty, whereby trainees learn the skill of radiotherapy planning directly from their supervising consultant, but the process has not been standardised across training programmes. In 2017, the ARENA project [1] was introduced, with the aim of standardising high-quality TVD training for clinical oncology trainees through the development of a series of educational packages, based on the experience acquired from radiotherapy trials quality assurance. These packages include site-specific introductory modules on imaging and TVD, followed by a series of interactive cases. Following the completion of cases, semiautomated feedback is provided on outlining performance, including a performance score, comparison of their outline against both a reference volume and minimum and maximum accepted volumes, in addition to identification of regions where normal tissue has been erroneously included.

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Trainee Survey

The ARENA group distributed a survey to clinical oncology trainees to evaluate the quality of current TVD training and to explore the preferred format for the ARENA project. The survey was sent to 406 UK clinical oncology trainees, including those currently out of programme. In total, 131 (32%) trainees responded. Responses were received from trainees between ST3 and ST7 across 16 training programmes. Trainees were asked to answer questions relating to up to three tumour sites they had covered during their most recently completed rotation.

Teaching Methods in Target Volume Delineation

For their most recently completed rotation, the most common teaching method for site-specific TVD was direct teaching from a consultant (94%), followed by self-directed learning (83%). For those adopting self-directed learning methods, the most commonly used were radiotherapy trial protocols (89%) followed by departmental radiotherapy protocols (75%), which in practice are commonly based on trial protocols. Trainees were also given the option to comment as free text on methods used to learn TVD and these included 'Googling online anatomy websites/resources' and 'guesswork'.

Feedback

Feedback on TVD performance was variable. The most commonly reported method was trainee and supervisor reviewing outlines together (91%), followed by review forming the basis of a Direct Observation of Radiotherapy Skill assessment (74%). Despite the recent RCR peer-review guidance [2] and the Oncology Registrar Forum (ORF) advocating trainee participation in such meetings [3], only 24% of trainees received feedback from a peer-review outlining session, with 5% of trainees reporting no feedback on their outlining from their clinical supervisor. In the absence of formal RCR guidance, ORF recommend trainees spend one to two planning sessions per week with their clinical supervisor [4]. In reality, the increasing clinical workload for both consultants and trainees across the UK inevitably affects radiotherapy training opportunities, as outlined in the recent ORF survey [3]. They found that acquiring radiotherapy skills was the main training concern for trainees, with only 78 and 61% of trainees feeling competent in palliative and radical radiotherapy, respectively. In our survey, 54% of trainees are spending 1 h a week with their supervising consultant reviewing their outlining, with 16% spending no time reviewing plans together at all. Trainees commented on the variability of time spent by consultants on feedback and lack of time allowing for outlining review, echoing the ORF concerns that trainee and consultant clinical workload pressure is affecting training in radiotherapy.

Perception of Competence

Fifty-five per cent of trainees felt reasonably competent at TVD in a particular tumour site at the end of their most recently completed rotation, with 20% feeling highly competent. Perhaps unsurprisingly there was a relationship between year of training and perception of competence. Fifty-six per cent of ST3 trainees felt insufficiently competent in TVD and only 9% felt highly competent. By contrast, no ST7 trainees reported feeling insufficiently competent in TVD, whereas 65% felt highly competent and 35% reasonably competent. During the penultimate year of clinical oncology training, ST6, trainees are expected to take the final FRCR examination (FRCR part B referred to above), which assesses in part TVD competence. Interestingly, although 29% felt highly competent in TVD for a particular tumour site, 13% still felt insufficiently competent.

Preferred Format for ARENA Modules

Trainees were asked to rank in order of preference the format of both a site-specific 'how to outline' module and the form of feedback received from the interactive cases. Sixty-one per cent of trainees preferred a 'step-by-step' guide to aid outlining, followed by worked examples (18%). Most trainees ranked qualitative (i.e. word-based) feedback (51%) as the preferred type of feedback, followed by visual representation (24%), with quantitative feedback (i.e. a score) being least preferred (5%).

Tumour Sites

In order to prioritise module development, we asked trainees to rank the usefulness of modules in different tumour sites. Head and neck was ranked highest for both the TVD and 'outlining cases' modules (52 and 51% of respondents, respectively), followed by palliative (21 and 21%, respectively). For the remaining tumour sites, the more common tumour sites, such as lung, colorectal and urology, were deemed higher priority than the rarer tumour sites, such as thyroid, sarcoma and paediatric malignancies.

Collaborating to Standardise Target Volume Delineation

Our survey has shown that more work is needed to improve TVD teaching. Access to resources and feedback are particular issues. A standardised approach to TVD teaching will facilitate the sharing of resources and improve access to TVD teaching. Future ARENA modules will draw on trial protocols (already being widely used as the basis for TVD according to a trainee survey and often adopted as departmental protocols) [5] and the benchmark cases, where reference volumes and constituent expert outlines are

already available. The trials quality assurance process has led to a knowledge of common errors in each tumour site, which can form the basis of the qualitative feedback. The interactive cases developed by the ARENA team could be made available to UK trainees through being hosted on the COPP. Through this collaborative approach, we can begin to address some of the gaps highlighted by the survey, providing access to the modules and serving to supplement, rather than replace, the role of the clinical supervisor in TVD training.

Conflict of interest

The authors declare no conflict of interest.

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