

with PBT. The models performed well in this cohort and only small adjustments of the model intercepts were needed. This study indicates that photon based NTCP models are applicable among patients treated with protons.

PO-0783 Standardizing mediastinal nodal CTV delineation in Stage III NSCLC: results of a two-phase dummy run

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Purpose or Objective

Lymph node delineation in stage III non-small cell lung cancer (NSCLC) remains the subject of discussion as the inclusion or omission of a lymph node or station can have an important impact on both oncological outcome and toxicity. The Belgian College for Physicians in Radiation Oncology aims to improve the quality of radiotherapy in Belgium. Within this framework the Project on Cancer of the Lung (ProCaLu) focuses on standardizing delineation for locally advanced NSCLC. A two-phase contouring dummy-run on a single test case was performed to analyze the baseline interobserver variability on target definition and delineation and evaluate the effects of a national consensus before the start of a peer-review program for routine clinical practice.

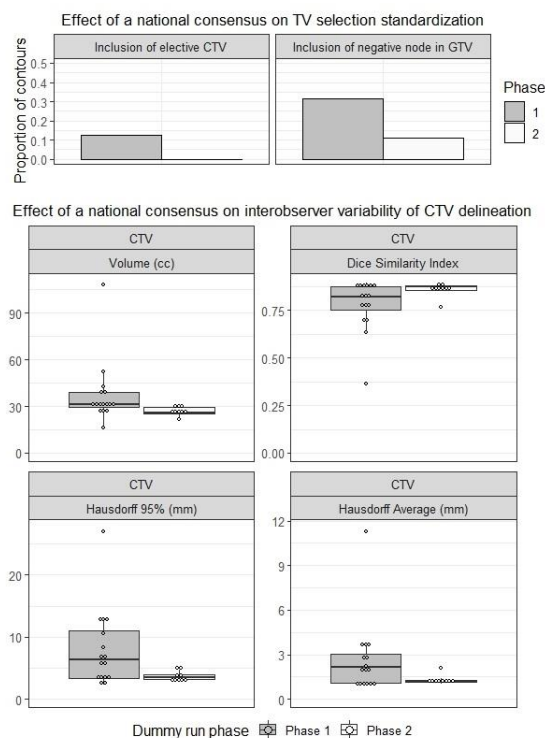
Material and Methods

All 25 radiotherapy centers in Belgium and Luxembourg were invited to take part in a delineation dummy-run by sending contours from at least one radiation oncologist (RO) dedicated to lung cancer treatments. The case consisted of a squamous cell carcinoma of the right upper lobe with nodal extension to station 4R staged cT1bN2M0 (TNM 7). The results of chest CT, PET/CT and endoscopic samplings were provided to participants and the planning CT was made available through a secure transfer platform. RO's were asked to delineate and upload back the GTV and CTV for the nodal disease. More than a year later and after the formulation of a national consensus based on current ESTRO guidelines (inclusion of only involved nodes with a 5 mm CTV margin) [Maarten L1] the case was resent to all centers with the same purpose. On all received contours, a description of the TV definition and delineation was obtained through visual inspection. Using an open-source software (3D Slicer with SlicerRT), the DICE Similarity Index and Hausdorff distances were analyzed to compare the delineations. To allow an evaluation of uniformity with these metrics, independent GTV and CTV contours by the first author were used as reference.

Results

At the first phase, 16 contours sent by 14 RT centers were analyzed. Important variations were due to the inclusion of a negative node in GTV (n=5) or elective CTV (n=2). The median volumes and interquartile ranges (IQR) were 11.9cc (10.4-14.1) for GTV and 31.2cc (29.3-39) for CTV. A preliminary analysis of the second phase was performed on 9 contours from 9 centers, 4 of which did not participate in phase 1. Median GTV and CTV volumes were 9.3cc (8.2-11.1) and 25.7cc (25.4-29.1) resp. One center included a negative node and none included elective CTV. The reference volumes were 11.4cc for GTV and 27.7cc for CTV. The volume comparisons demonstrated a reduction

in IQR for all metrics ranging from 22% to 90%. Most variations are due to target definition (GTV or CTV). Cropping patterns to other structures is also associated with variability.



	Phase 1 (n=16)		Phase 2 (n=9)		Difference IQR [*] reduction
	Median	IQR [*]	Median	IQR [*]	
GTV					
Volume (cc)	11.9	[10.4 - 14.1]	9.3	[8.2 - 11.1]	22%
DICE Similarity coefficient*	0.84	[0.76 - 0.87]	0.83	[0.79 - 0.87]	27%
Hausdorff Average (mm)*	1.4	[0.9 - 1.9]	1	[0.9 - 1.2]	70%
Hausdorff 95% (mm)*	4.4	[2.9 - 11.3]	3.2	[2.8 - 4.3]	82%
Hausdorff Maximum (mm)*	9.9	[6.2 - 20.3]	6.6	[6.5 - 8.6]	85%
CTV					
Volume(cc)	31.2	[29.3 - 39]	25.7	[25.4 - 29.1]	62%
DICE Similarity coefficient*	0.82	[0.75 - 0.88]	0.87	[0.86 - 0.88]	85%
Hausdorff Average (mm)*	2.1	[1.1 - 3]	1.2	[1.1 - 1.3]	89%
Hausdorff 95% (mm)*	6.3	[3.4 - 11.1]	3.5	[3.2 - 4]	90%
Hausdorff Maximum (mm)*	11.5	[7.4 - 20.3]	7.7	[6.4 - 8.8]	81%

* Independent contour used as reference to evaluate uniformity.

^{*} Interquartile range (1st and 3rd quartiles)

Table 1: Uniformity of delineations through dummy run phases

Conclusion

The preliminary results of this dummy run hint that uniformity in target definition and delineation in NSCLC can reasonably be pursued. Full results will be reported.

PO-0784 Repeat Stereotactic Body Radiation Therapy for Salvage of Local Failure after Definitive Lung SBRT

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Purpose or Objective

Stereotactic body radiation therapy (SBRT) for early-stage non-small cell lung cancer (NSCLC) provides high rates of local control. However, the optimal management of local failures after SBRT is unknown, and data describing the role of reirradiation with additional courses of SBRT for isolated local recurrences after previous lung SBRT are sparse. The purpose of this study is to investigate the safety and efficacy of repeat lung SBRT as salvage for patients with local failures after previous definitive SBRT for NSCLC.