



BELdART

BELgian dosimetry Audits in RadioTherapy

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Purpose

- External dosimetry audits in Belgian RT centres (occasionally in neighbouring countries)
- Photon and electron beams
- Basic dosimetric checks & E2E tests
- Supported by Belgian FOD healthcare and the Cancer Plan

- Free of charge for Belgian Centres
 - 2009-2011: BELdART-1 Audit for standard static fields
 - 2012-2016: BELdART-2 Advanced techniques (IMRT/Arc and Tomotherapy)
 - 2016- : BELdART stereotaxy: Intracranial SRS & lung SBRT (audits running)

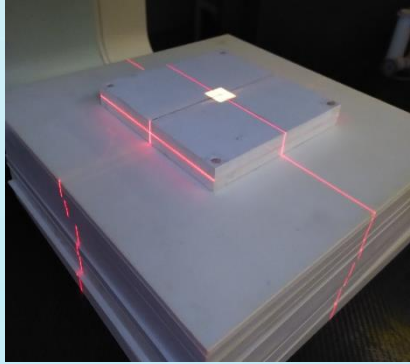
- External audits on request also available

Materials and methods

Basic tests



Holder in water tank



SW plates for small field

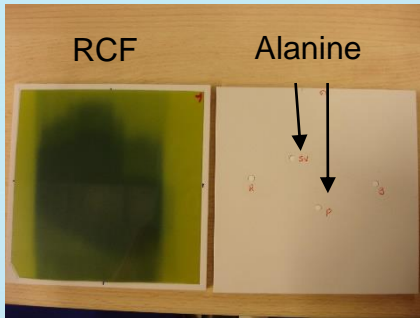
Phantoms for E2E tests



Lung SBRT

IMRT/Arc

Intracranial SRS

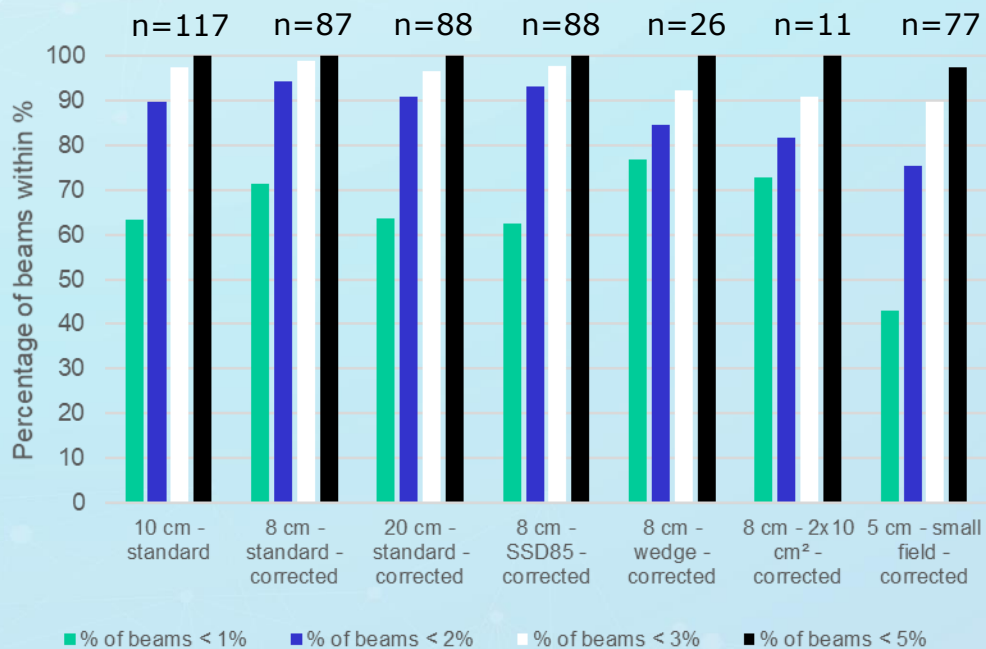


RCF

Alanine

Results (2016 – now)

Alanine/EPR basic tests



E2E tests alanine results

Technique	nr. of Beams	% of beams < 1%	% of beams < 2%	% of beams < 3%	% of beams < 5%
IMRT/Arc (prostate)	41	41.5	70.7	90.2	100.0
IMRT/Arc (seminal vesicles)	41	31.7	70.7	85.4	95.1
SRS	25	32.0	64.0	76.0	100.0
SBRT	11	9.1	72.7	72.7	100.0

E2E tests film results

Technique (γ criteria)	Percentage of beams (%)				
	nr. of Beams	PR >98%	PR 95%-98%	PR 90%-95%	PR <90%
IMRT/Arc (3%/3mm)	41	80.5	12.2	4.9	2.4
SRS large lesion (5%/1mm)	25	88.0	8.0	4.0	0.0
SRS small lesion (5%/1mm)	25	92	0	4	4
SBRT through target (5%/1mm)	11	72.7	9.1	18.2	0.0
SBRT top of lungs (3%/2mm)	11	36.4	54.5	0.0	9.1

Conclusions

- The BELdART team continues to provide dosimetry auditing service to the RT community in Belgium
- Results basic tests are very good
 - 98 % beams are within 3 % for all tests
- Results E2E tests are very good
 - IMRT/Arc: (alanine) 88 % beams within 3 % & (films) 97.6 % beams PR > 95 %
 - SRS: (alanine) 76 % beams within 3 % & (films) 98 % beams PR > 95 %
 - SBRT: (alanine) 72.7 % beams withing 3 % & (films) 95.5 % beams PR > 95%