

TL DETECTORS IN VERIFICATION OF PLANNING SYSTEM'S FOR CONFORMAL AND VMAT TECHNIQUES OF X-RAY EXTERNAL BEAM

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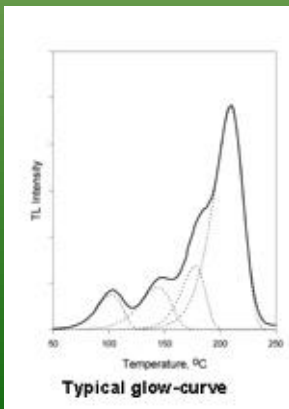
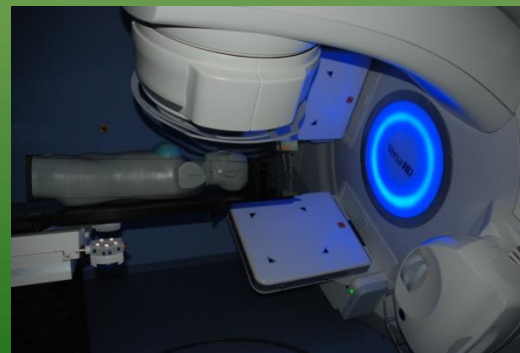
Email of corresponding author: mpaluch-ferszt@us.edu.pl



Comparison doses for 2 treatment techniques in 3 treatment localizations with the use of 6 MV beams.

For verification :

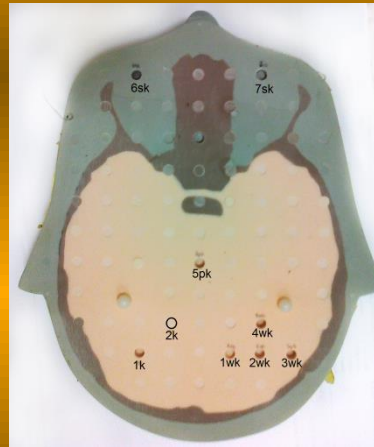
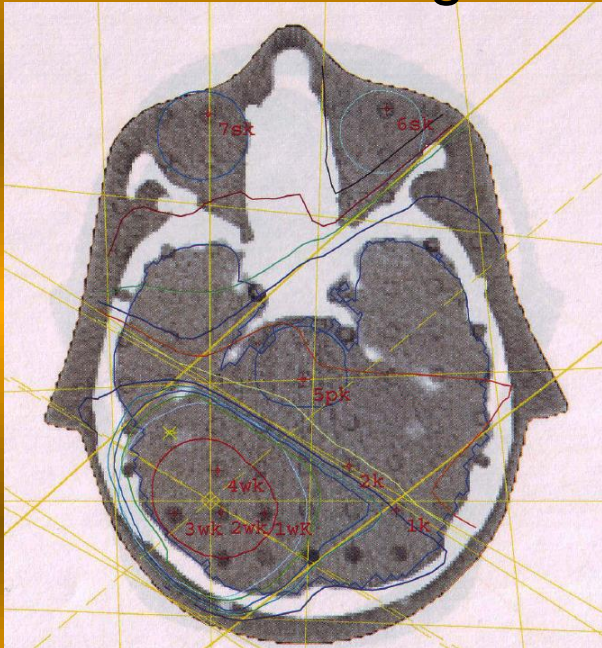
- Oncentra MasterPlan and Monaco,
- anthropomorphic phantom: CIRS *ATOM*®
- linear accelerator Versa HD, Elekta,
- TL detectors : MTS-N(TLD-100) manufactured in Poland



Verification of treatment plans using TLD in head area with the use of 6 MV beams

Conformal technique

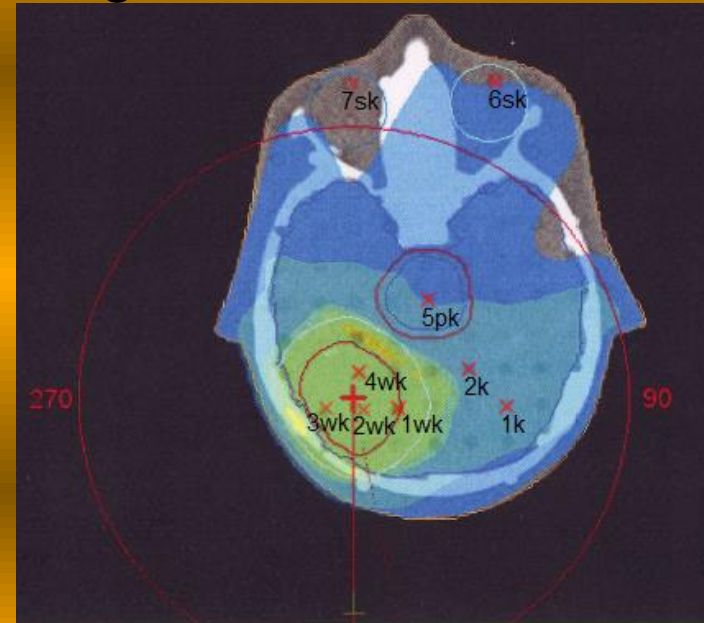
Calculating a plan using a Collapsed Cone Convolution algorithm



TLD located in phantom scan and shown on treatment plans

VMAT technique

Calculating a plan using a Monte Carlo algorithm



Verification of treatment plans using TLD in head area with the use of 6 MV beams

Conformal technique

Location Number of TLD

CTV 1wk

CTV 2wk

CTV 3wk

CTV 4wk

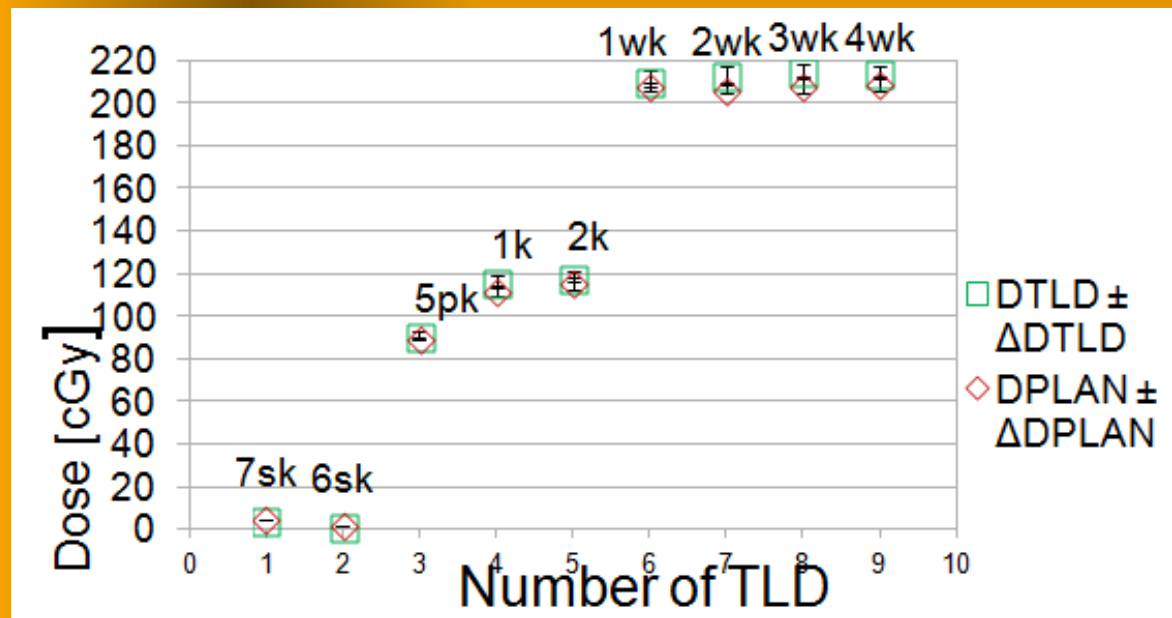
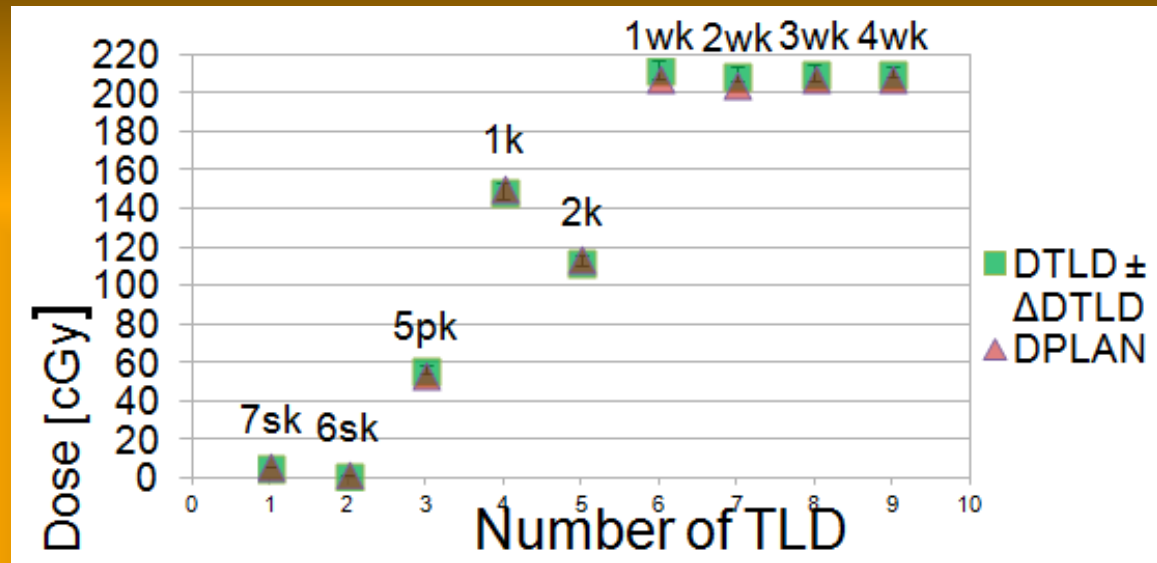
lens rights 7sk

lens left 6sk

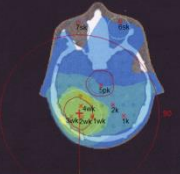
brain stem 5pk

brain 1k

brain 2k



VMAT



Verification of treatment plans using TLD in chest area with the use of 6 MV beams

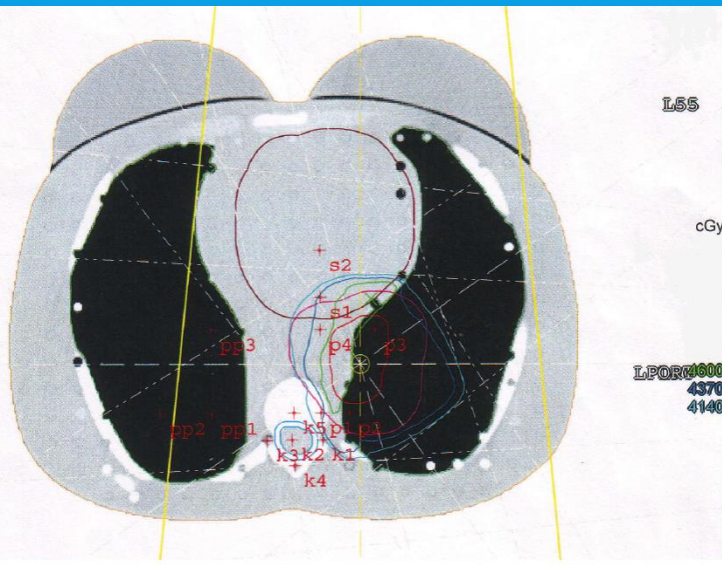
Conformal technique

Calculating a plan using a Collapsed Cone Convolution algorithm



VMAT technique

Calculating a plan using a Monte Carlo algorithm

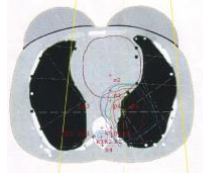
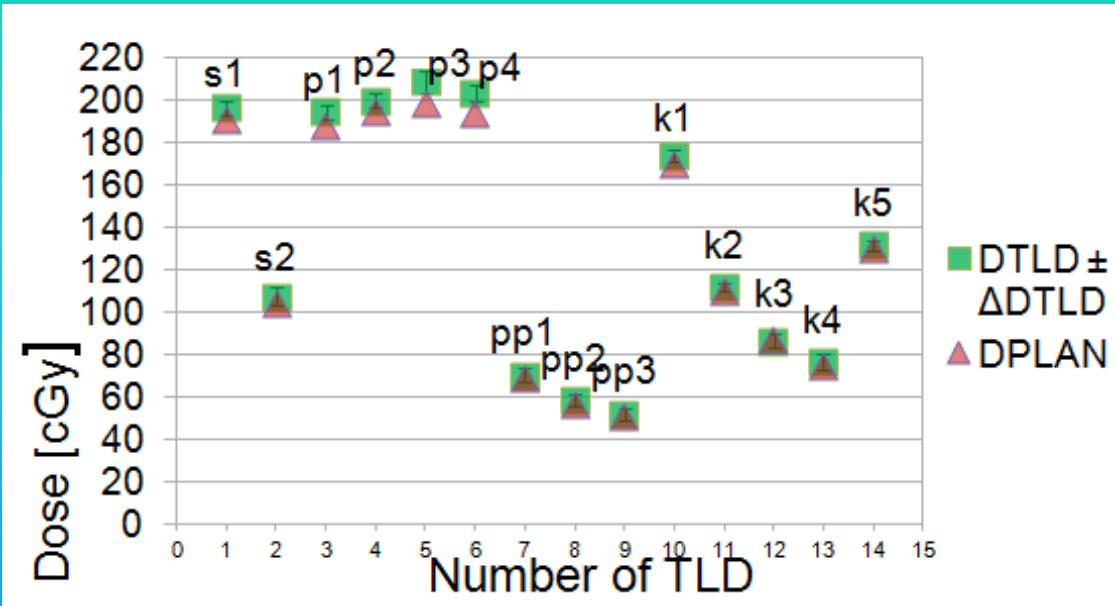


TLD located in phantom scan and shown on treatment plans

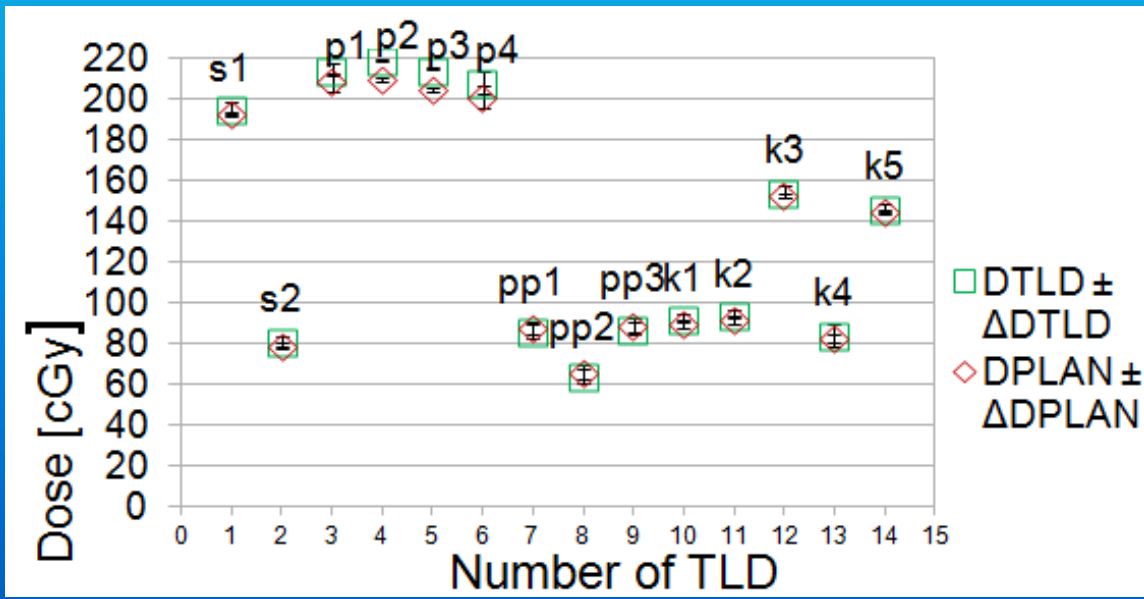
Verification of treatment plans using TLD in chest area with the use of 6 MV beams

Conformal technique

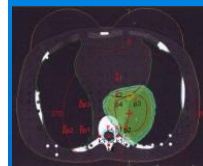
Location	Number of TLD
CTV	p2
CTV	p3
PTV	p1
PTV	p4
heart	s1
heart	s2



lung right	pp1
lung right	pp2
lung right	pp3
spinal canal	k1
spinal canal	k2
spinal canal	k3
spinal canal	k4
spinal canal	k5



VMAT



Verification of treatment plans using TLD in **pelvis** area with the use of 6 MV beams

Conformal technique

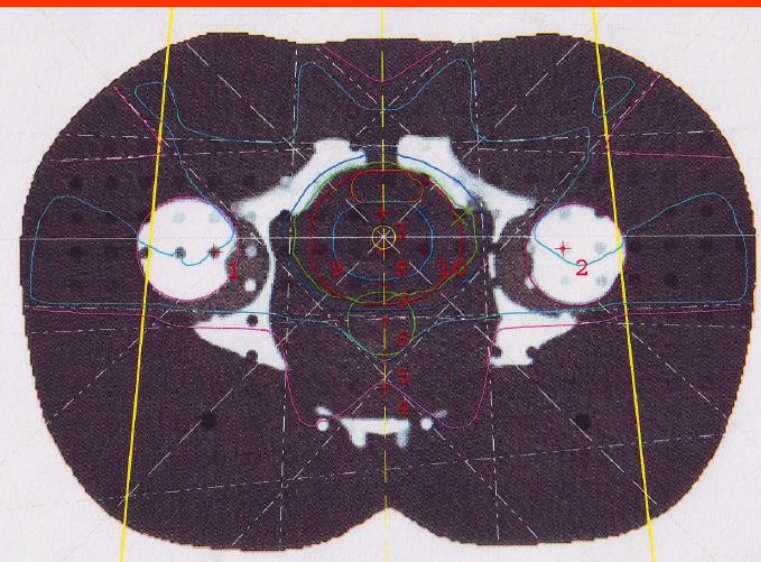
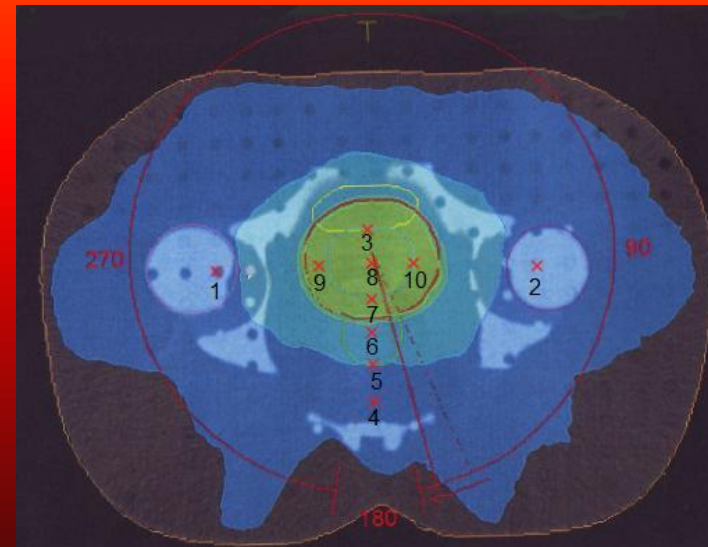
Calculating a plan using a Collapsed Cone Convolution algorithm



VMAT technique

Calculating a plan using a Monte Carlo algorithm

TLD located in phantom scan and shown on treatment plans



Verification of treatment plans using TLD in **pelvis** area with the use of 6 MV beams

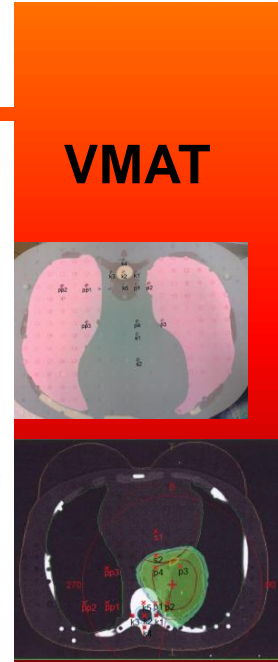
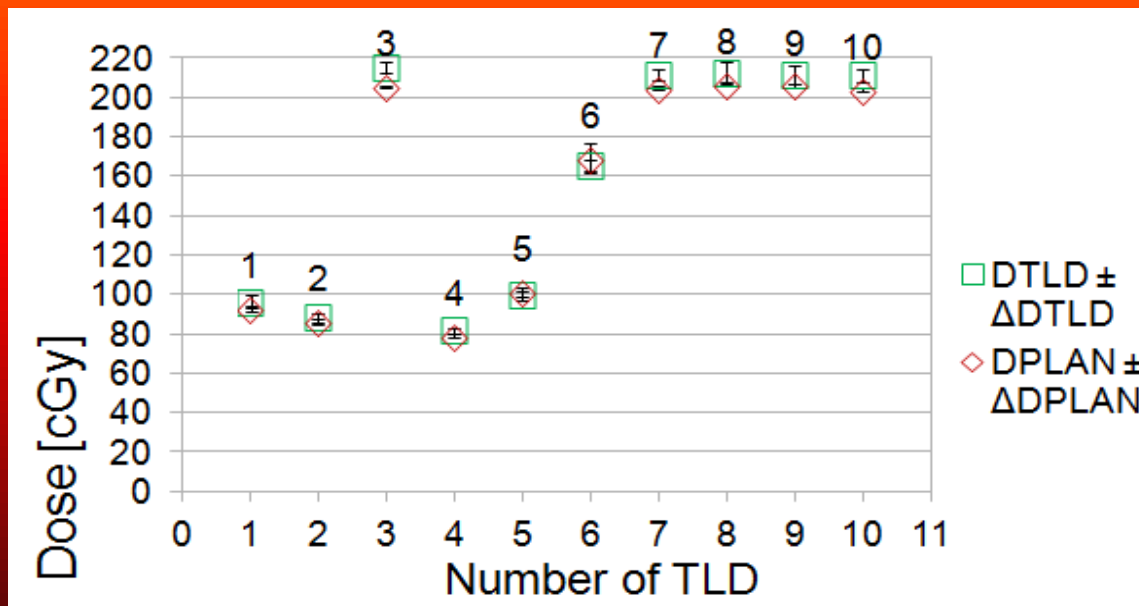
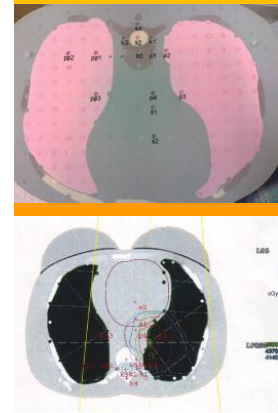
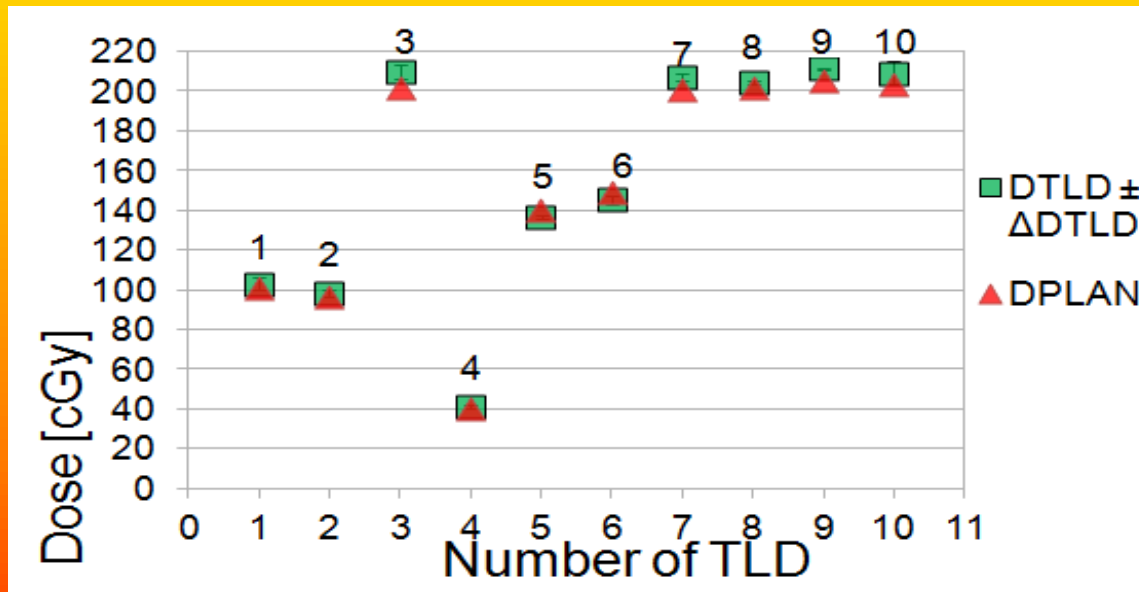
Conformal technique

Location Number of TLD

CTV 3
 CTV 8
 CTV 10
 PTV 7
 PTV 9

Rectum 4
 Rectum 5
 Rectum 6

Head of femur R 1
 Head of femur L 2



VMAT

Conclusions

- To protect different critical organs it is worth to consider for choosing treatment techniques.
- Detectors MTS-N from Poland are a good tool for radiation protection dosimetry.

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Thank you for your attention

