



UNIVERSITY OF WISCONSIN-MADISON

# SCANDIDOS DELTA 4:

Outcomes and usage in a  
multi-location clinic

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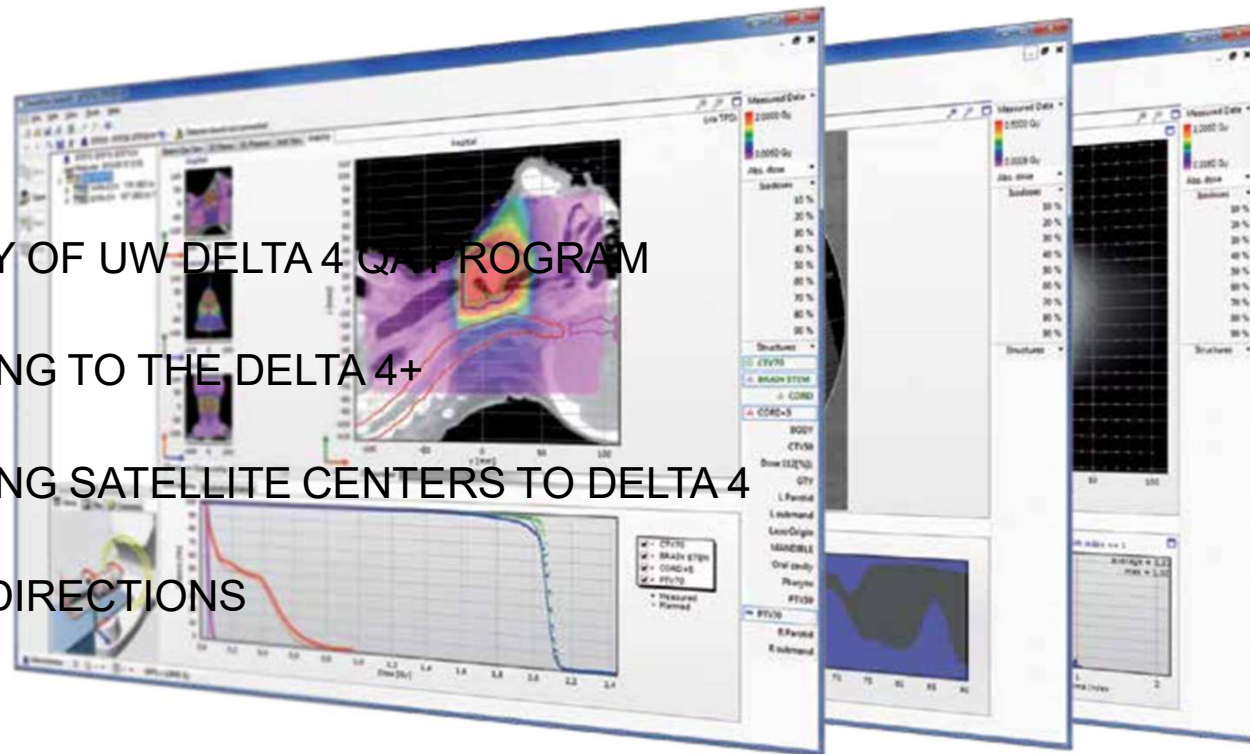
August 7, 2017

01 | SUMMARY OF UW DELTA 4 QA PROGRAM

02 | UPGRADING TO THE DELTA 4+

03 | UPGRADING SATELLITE CENTERS TO DELTA 4

04 | FUTURE DIRECTIONS





## Our history with the Delta4

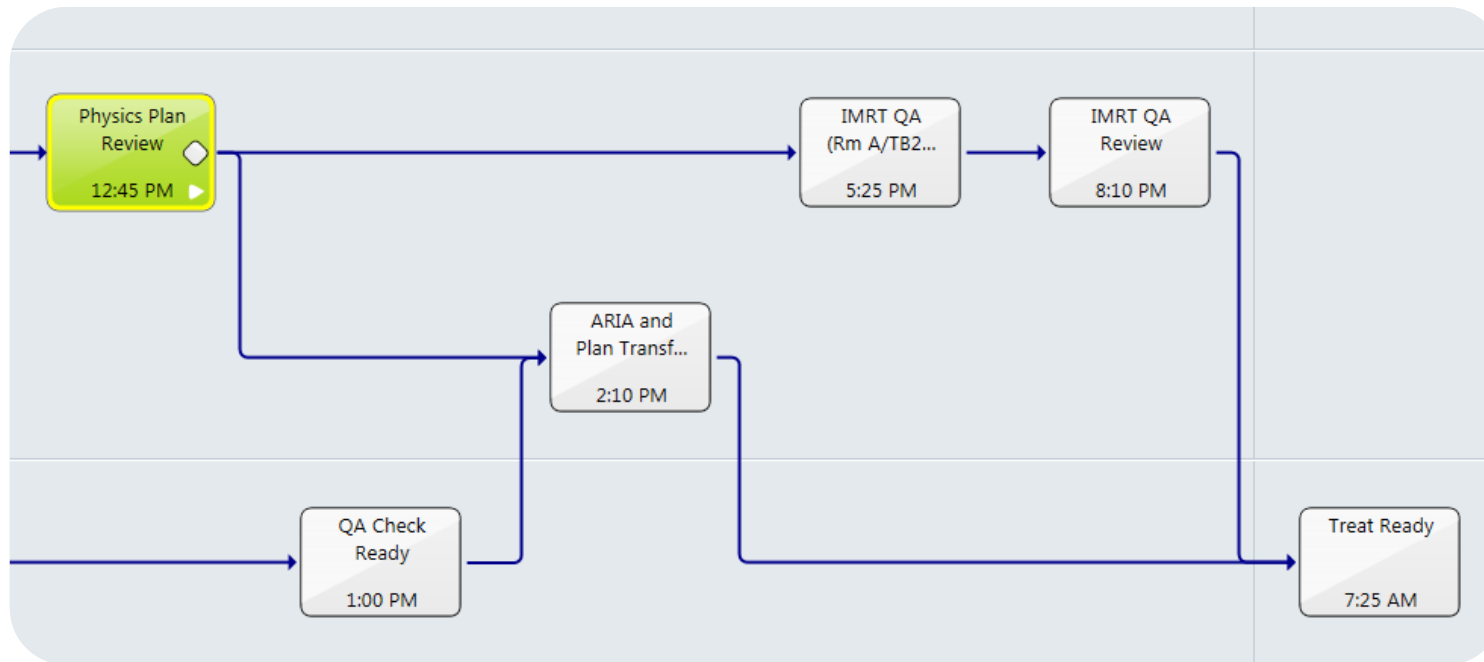
- First unit commissioned in 2006
- Established as primary IMRT QA tool in 2012
- Upgraded to Delta4+ in 2016
- Currently employ 5 systems

# UW IMRT QA policy

- Performed on all plans prior to treatment start
- Also before 3 fractions/10% on machine transfers
- >95% data points must pass 3%/3 mm global Gamma evaluation, using 20% threshold
- Median absolute dose < 3%



# IMRT QA scheduling

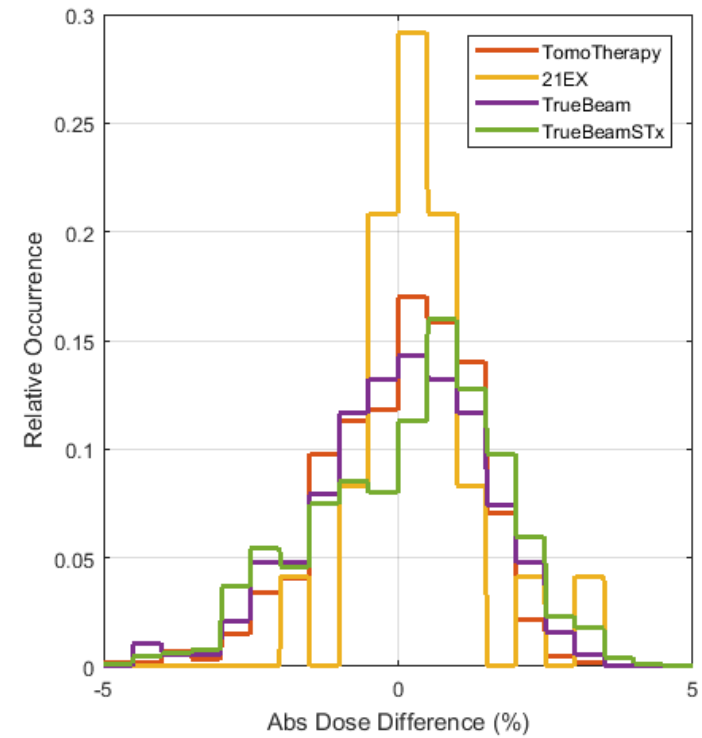


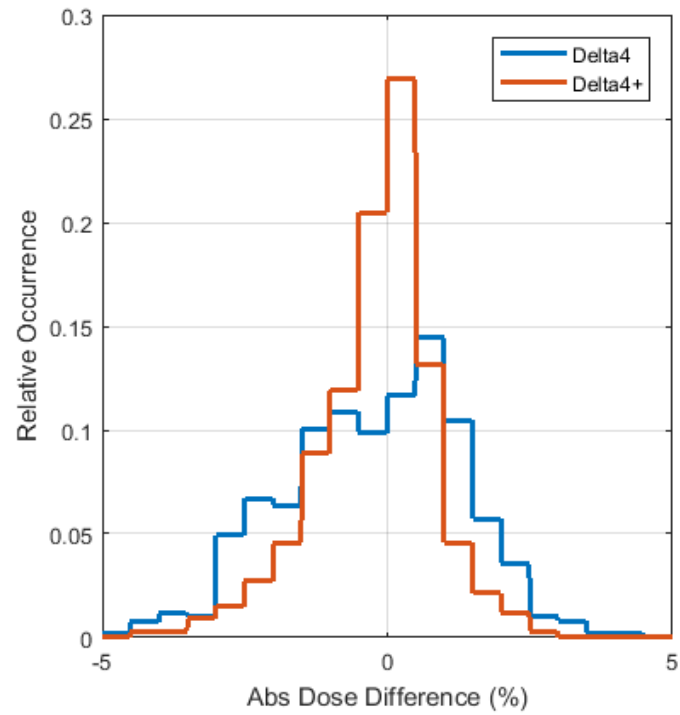
## IMRT QA decision matrix

Plan Type	TomoTherapy	TrueBeam/21EX	ViewRay
Length < 4 cm	Delta4 IMRT QA (High Resolution)		
4 cm < L < 19 cm	Delta4 IMRT QA		ArcCHECK IMRT QA
19 cm < L < 38 cm	Delta4 IMRT QA (Extended Field)		
Length > 38 cm	Exit Detector IMRT QA	N/A	N/A

## Delta4 performance

- 2135 clinical plans measured since 2012
- 46% conventional, 53% TomoTherapy
- Pass rate (>95% at 3%/3mm): 96.3%
- Mean pass rate: 98.9%
- Absolute dose:  $0.2\% \pm 1.3\%$





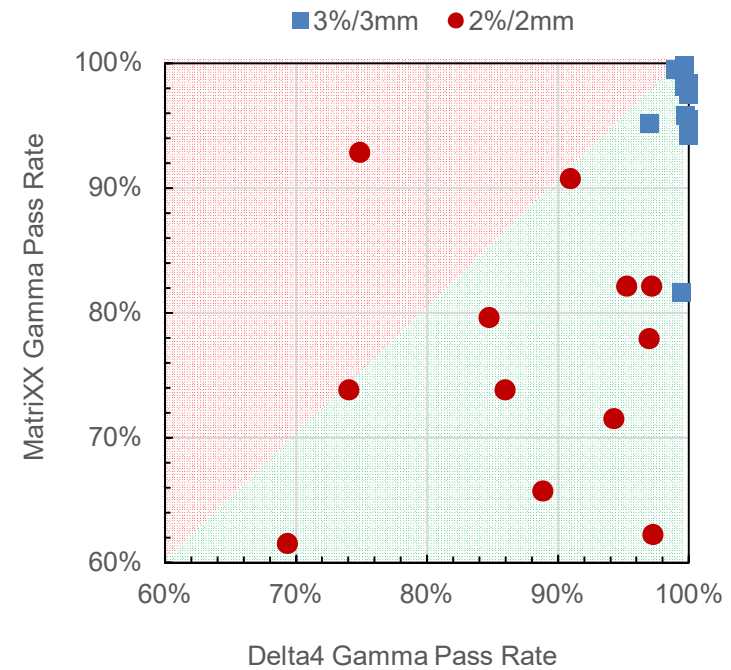
## Delta4+ Upgrade

- Pass rate increased from 95.8% to 98.8%
- Absolute dose SD dropped from 1.4% to 1.0%
- No service events in 2+ years



## MatriXX to Delta4

- Trilogy and TomoTherapy satellites converted to Delta4
- Commissioning plans were delivered on both QA systems for comparison
- Pairwise analysis showed significant improvement with Delta4 ( $p = 0.007$ )

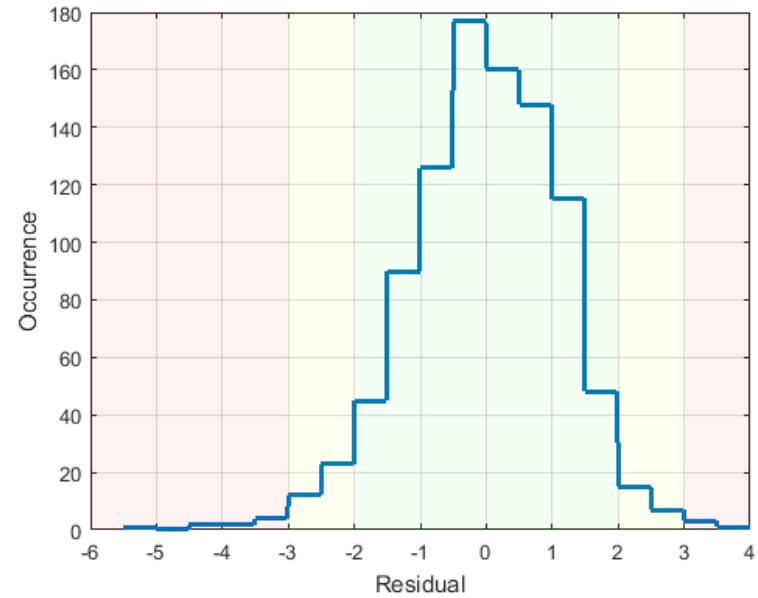
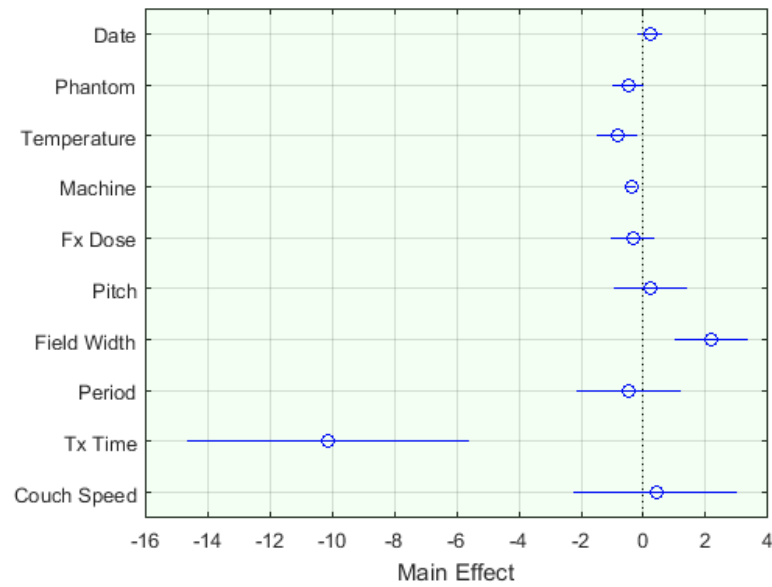


# Future directions

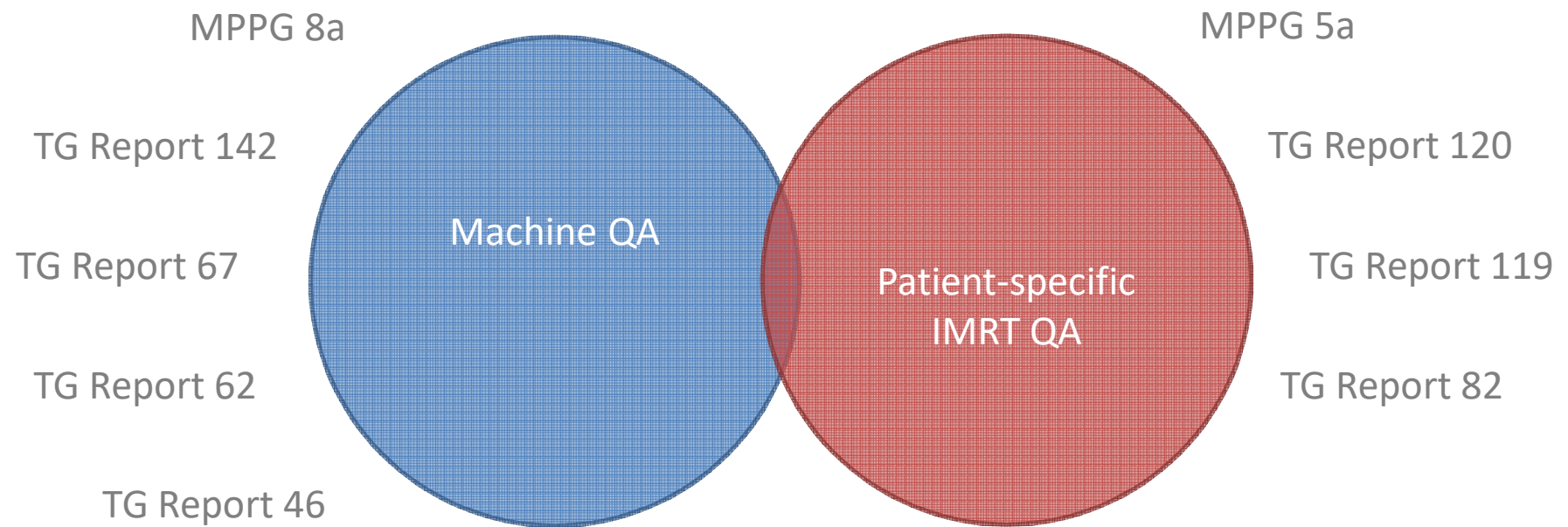
- Improving treatment planning techniques
- Beam model refinement
- Leverage IMRT QA to improve machine QA



# Improving planning & beam models with Delta4



## Patient-specific QA paradigm





THANK YOU