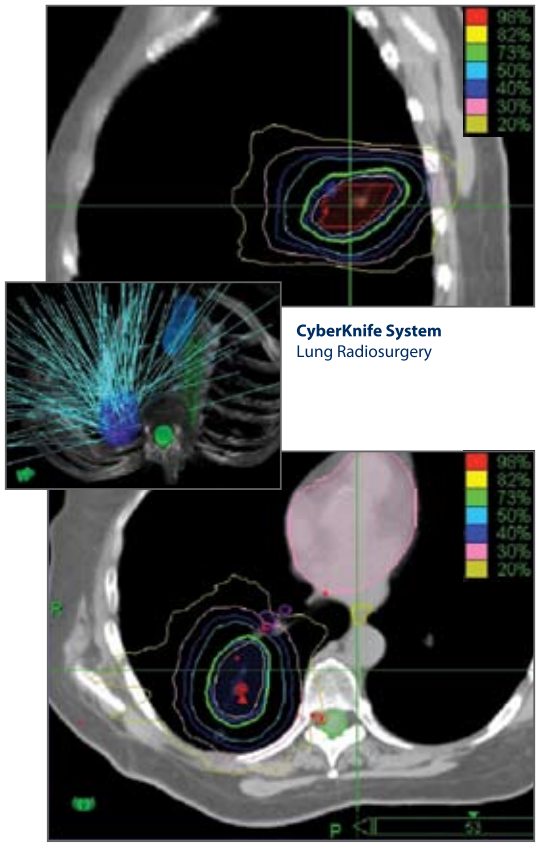
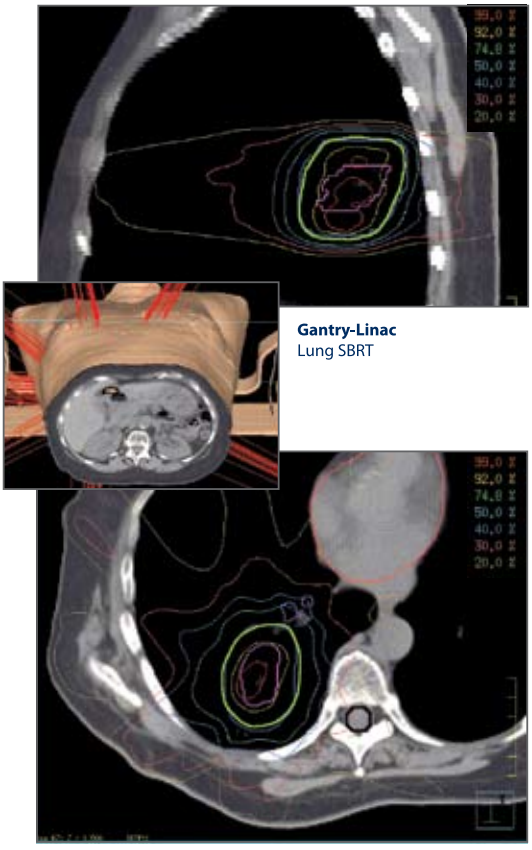
HYPOFRACTIONATED LUNG TREATMENT COMPARISON

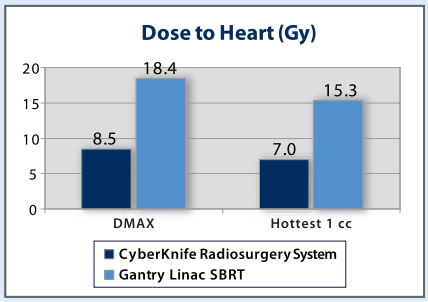
	CyberKnife® Robotic Radiosurgery System	Gantry-Linac Lung SBRT
Fractionation / Dose	12 Gy x 4 fractions, Rx at 73% of maximum	12 Gy x 4 fractions, Rx at 72.6% of maximum
Dose Calculation Algorithm	Monte Carlo	Superposition Convolution
Respiratory Motion Management Technique	Synchrony® Respiratory Tracking System Beams move in real-time with 3D target motion. Patient breathes freely while dose is delivered continuously throughout the respiratory cycle.	Respiratory Gating Beams repetitively turn on and off as the target enters and exits a fixed isocenter.
Treatment Planning System	MultiPlan® System, Version 3.0	Pinnacle, Version 8.0m
Total Treatment Planning Time	1 hour (excluding contouring)	2.5 hours (excluding contouring)
Total Door-To-Door Delivery Time Per Fraction	50 minutes Includes time required for patient immobilization, alignment, imaging, beam-on, linac traversal, respiratory motion management, and non-coplanar beam delivery.	50 minutes Includes time required for patient immobilization, alignment, imaging, beam-on, linac traversal, respiratory motion management, and coplanar beam delivery.
Image Guidance Frequency	1 set-up image plus 40 intra-fraction adaptive images	1 set-up image
Total # of Beams	116 non-coplanar beams Non-coplanar beams delivered automatically without treatment interruption or patient repositioning.	7 coplanar beams; 73 segments Interruptions for manual couch rotations, rigorous QA, and risk of gantry-patient collision have resulted in virtually no clinical adoption of gantry-based non-coplanar delivery.
Beam Collimation	Single 25mm fixed cone	120 Leaf MLC
Margin Expansion: GTV to CTV	3mm (uniform)	3mm (uniform)
Margin Expansion: CTV to PTV	3mm (uniform)	10mm superior-inferior; 5mm in axial plane
PTV Coverge	96%	93%

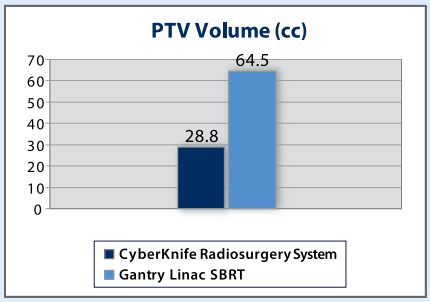


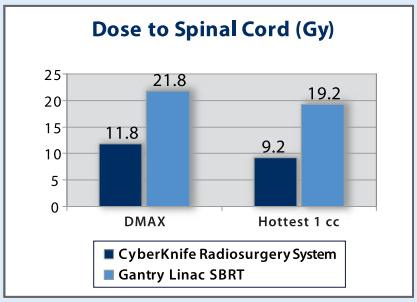
CyberKnife System
Lung Radiosurgery



Gantry-Linac
Lung SBRT







Above treatment plans developed from the same CT dataset and contoured structures. Plans were created by authorized medical physicists for the respective treatment planning and delivery system with the intent of clinical delivery.