

# Survival with Stereotactic Body Radiation Therapy (SBRT) and Conventional Radiation Therapy (CRT) in Stage I NSCLC Patients in the Veterans Health Administration

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# Background: Stage I NSCLC

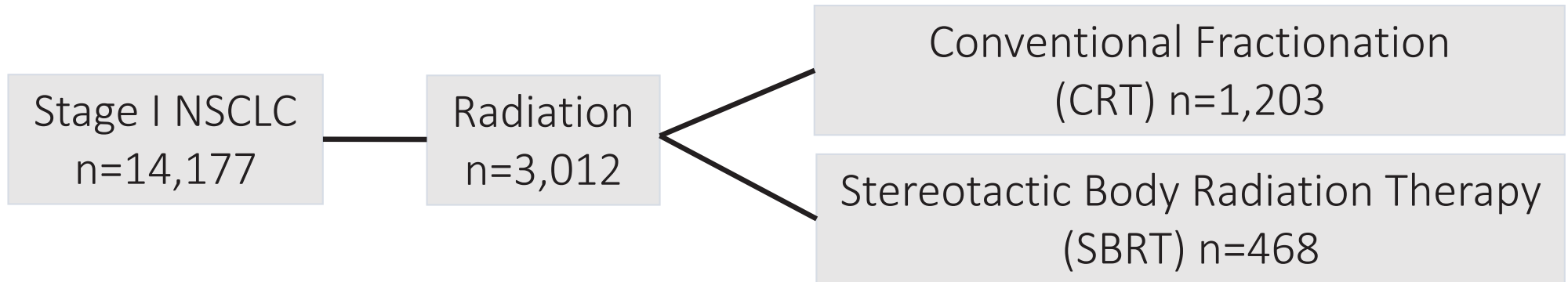
- Survival and tumor control following SBRT significantly greater than historical outcomes with conventionally fractionated RT
- At time of this analysis, direct comparison of the two regimens is lacking

	3 year LC	Median Survival
SBRT (54 Gy/3) – Timmerman	90.6%	48.1 months
CRT (70 Gy/35) – Bradley	63%	24 months
CRT (80.5 Gy/35) - Urbanic	64%	24 months

# Methods

- VA Central Cancer Registry (VACCR) and Corporate Data Warehouse (CDW) from 2001-2010
- Patients
  - Clinical stage I non-small cell lung cancer
  - Conventional radiation treatment (CRT) – 20 or more fractions by procedural codes or direct documentation
  - Stereotactic body radiation therapy (SBRT) – SBRT procedural codes or direct documentation

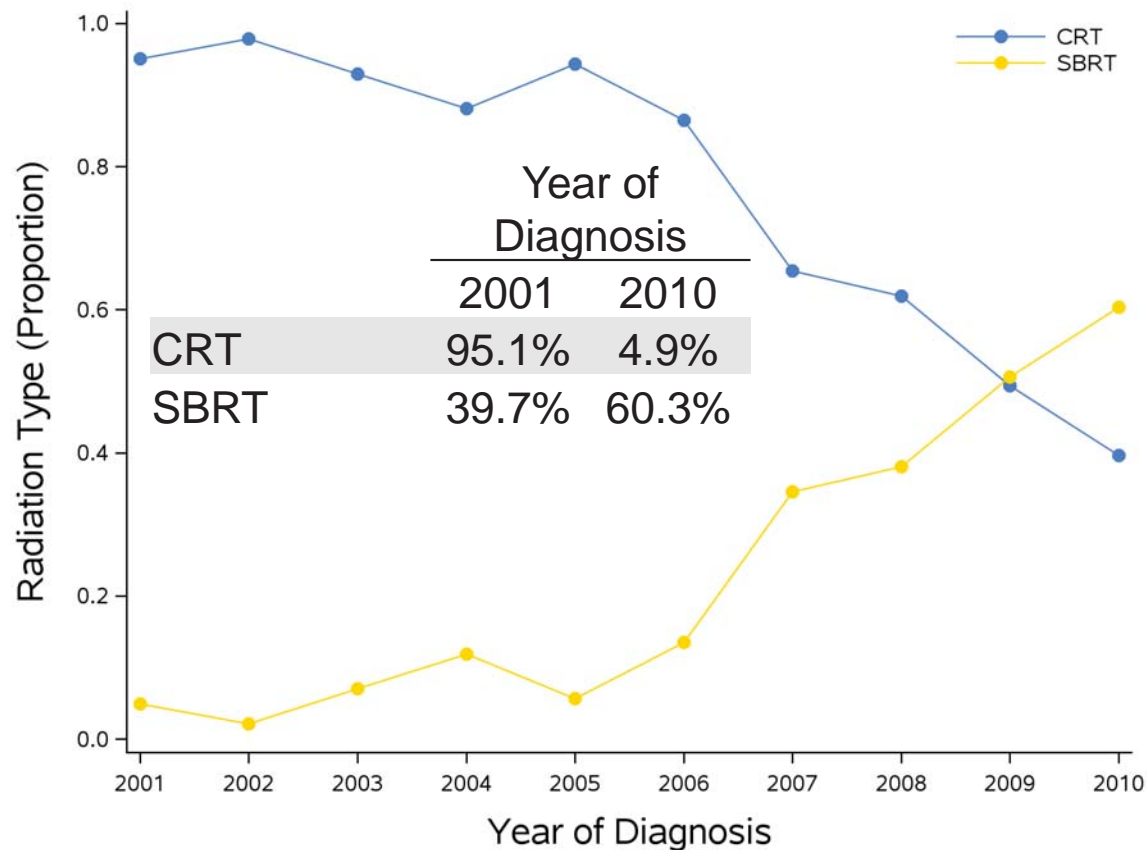
# Patients



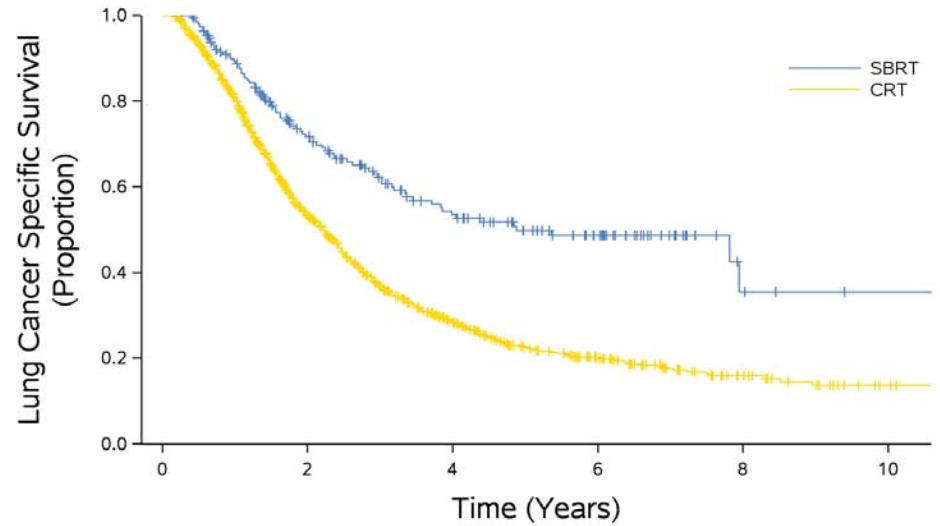
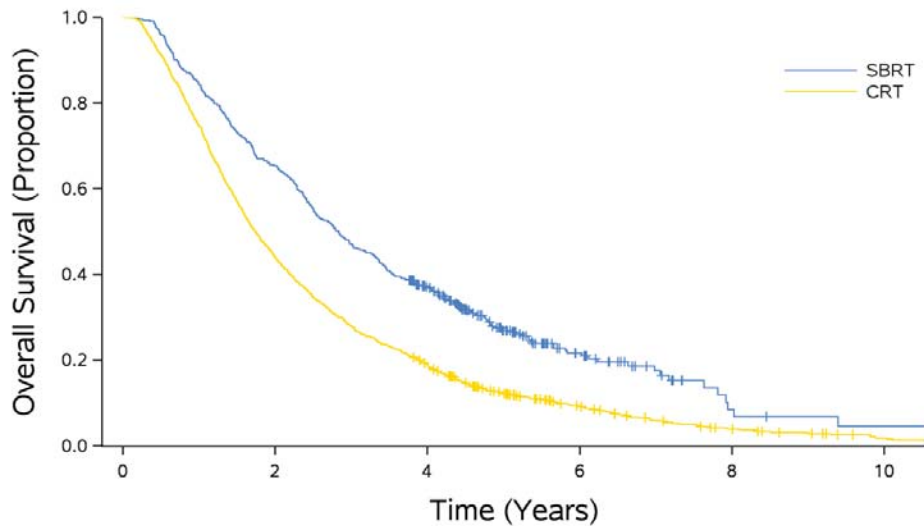
	Radiation
Mean Age	72 years
Smoking History	89.4%
Male	98.6%
Stage IA	50.5%
Squamous cell	41.5%

# Improved Survival in Radiation Cohort with Increased SBRT Utilization

	Year of Diagnosis		p value
	2001	2010	
4 year overall survival	12.7%	28.5%	<0.01
4 year lung cancer specific survival	33.9%	50.4%	<0.01



# Improved Survival Following SBRT



Number at Risk

SBRT	468	306	151	35	5	2
CRT	1203	530	224	79	27	7

4 year OS

SBRT	37.0%
CRT	18.8%
HR 0.60 (95% CI 0.54-0.68)	

Number at Risk

SBRT	193	113	65	35	5	2
CRT	981	426	173	79	27	7

4 year LCSS

SBRT	53.2%
CRT	28.3%
HR 0.48 (95% CI 0.38-0.60)	

# SBRT Survival Advantage Persists on Cox MVA

Variable	Cox Univariate Analysis			Cox Multivariate Analysis		
	HR	95% CI	p value	HR	95% CI	p value
SBRT vs CRT	0.60	0.54-0.68	<0.001	0.72	0.61-0.84	<0.001
PET vs No PET	0.80	0.72-0.88	<0.001	0.88	0.77-1.02	0.084
Treatment Era						
2001-2005	-					
2006-2010	0.78	0.70-0.86	<0.001	0.93	0.80-1.07	0.317
SCC vs Non-SCC	1.16	1.02-1.33	0.02	1.08	0.94-1.23	0.284
Stage IA vs IB	0.67	0.60-0.74	<0.001	0.72	0.64-0.82	<0.001
CCI						
0	-					
1	1.17	1.01-1.37	0.04	1.30	1.07-1.57	0.01
2	1.34	1.15-1.58	<0.001	1.52	1.25-1.85	<0.001
Age, per year	1.01	1.00-1.02	0.001	1.01	1.00-1.02	0.022

# Conclusions

- Overall survival for Stage I NSCLC patients in the VHA treated with radiation more than doubled from 2001-2010
- Overall survival and lung cancer specific survival are significantly improved with SBRT compared to conventional fractionation
- Increased use of SBRT strongly associated with improved survival