

# Long-Term Outcomes of Stereotactic Body Radiation Therapy for Low- and Intermediate-Risk Prostate Adenocarcinoma: A Multi-Institutional Consortium Study

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# Disclosures for Dr. Kishan

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# Background

- Traditionally, external beam radiotherapy approaches for low- and intermediate-risk prostate cancer (PCa) have delivered small daily doses of radiation over an extended time frame (8-9 weeks)
- This “fractionation” of radiation is thought to help preferentially kill tumor cells and minimize chronic tissue damage
- PCa, somewhat uniquely, appears to be more sensitive to higher doses per treatment session, which suggests that shorter radiation schedules (with higher dose per treatment, but fewer total treatments) could be efficacious

# Background

- Stereotactic body radiotherapy (SBRT) pushes this hypothesis to the limit by condensing the treatment course to four to five treatments
- While a growing body of evidence supports the use of SBRT for the treatment of low- and intermediate-risk PCa, some trepidation exists regarding its long-term efficacy and safety
- NCCN guidelines continue to state that "longer follow-up and prospective multi-institutional data are required to evaluate longer-term results"

# Method

- This is an individual patient-level analysis of twelve prospective studies of SBRT
  - Ten institutional studies
  - Two multi-institutional trials
- Included patients treated between 2000-2012 in order to enrich for patients with longer follow-up
- Overall, we included 2142 patients with a median follow-up of 6.9 years

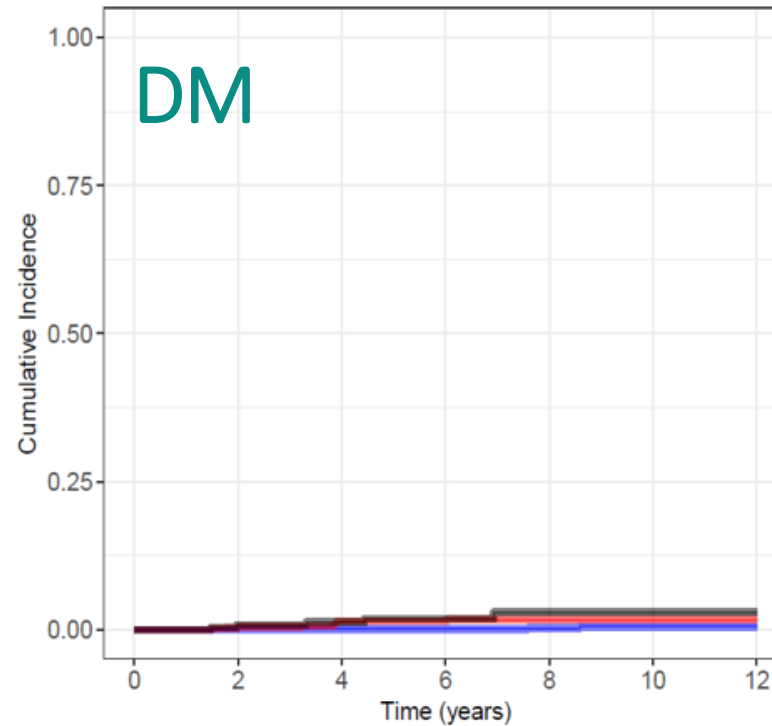
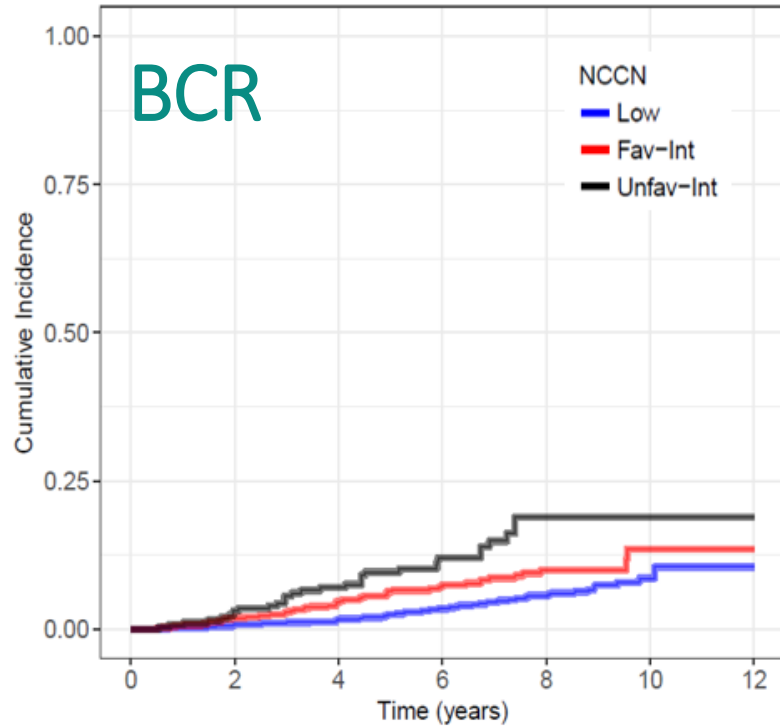
# Patient Characteristics

|  |                       |
|--|-----------------------|
| <b>Age, mean (median) [range], years</b>         | 67.9 (68) [41-92]     |
| <b>Risk Grouping</b>                             |                       |
| <b>Low-risk</b>                                  | 1185 (55.3%%)         |
| <b>Favorable intermediate-risk</b>               | 692 (32.3%)           |
| <b>Unfavorable intermediate-risk</b>             | 265 (12.4%)           |
| <b>Gleason Grade Group</b>                       |                       |
| <b>I</b>   | 1355 (63.2%)          |
| <b>II</b>  | 614 (28.7%)           |
| <b>III</b>                                       | 173 (8.1%)            |
| <b>Clinical T stage</b>                          |                       |
| <b>T1c</b>                                       | 1595 (74.4%)          |
| <b>T2a</b>                                       | 430 (20.1%)           |
| <b>T2b</b>                                       | 104 (4.9%)            |
| <b>T2c</b>                                       | 13 (0.61%)            |
| <b>Initial PSA, mean (median) [range], ng/mL</b> | 6.4 (5.7) [0.09-19.9] |

# Treatment Characteristics

|  |                |
|--|----------------|
| <b>Treatment Platform</b>  |                |
| CyberKnife   | 1479 (69.0%)   |
| Gantry-Mounted   | 664 (31.0%)    |
| <b>Fractionation</b>   |                |
| Daily  | 1013 (47.3%)   |
| Every other day  | 1015 (47.4%)   |
| Weekly   | 114 (5.3%)     |
| <b>Androgen Deprivation Therapy Use</b>  |                |
| Total  | 115 (5.4%)     |
| Low  | 43 (3.6%)      |
| Favorable  | 47 (7.0%)      |
| Unfavorable  | 25 (9.4%)      |
| <b>Duration of Androgen Deprivation Therapy, mean (median) [range], months</b> | 3.6 (3) [1-36] |

# BCR and DM Outcomes



## Kaplan-Meier Estimates

### 7-Year BCR Rates

Low: 4.5%

Favorable Intermediate: 8.6%

Unfavorable Intermediate: 14.9%

### 7-Year DM Rates

Low: 0.1%

Favorable Intermediate: 1.7%

Unfavorable Intermediate: 3.0%

Number at risk

|             |      |      |      |     |     |    |    |
|-------------|------|------|------|-----|-----|----|----|
| Low         | 1185 | 1116 | 1010 | 811 | 392 | 44 | 13 |
| Fav - Int   | 692  | 659  | 535  | 376 | 144 | 13 | 5  |
| Unfav - Int | 265  | 236  | 173  | 117 | 31  | 1  | 1  |

Number at risk

|             |      |      |      |     |     |    |    |
|-------------|------|------|------|-----|-----|----|----|
| Low         | 1185 | 1121 | 1021 | 826 | 409 | 53 | 18 |
| Fav - Int   | 692  | 669  | 550  | 389 | 148 | 14 | 6  |
| Unfav - Int | 264  | 238  | 179  | 122 | 32  | 1  | 1  |

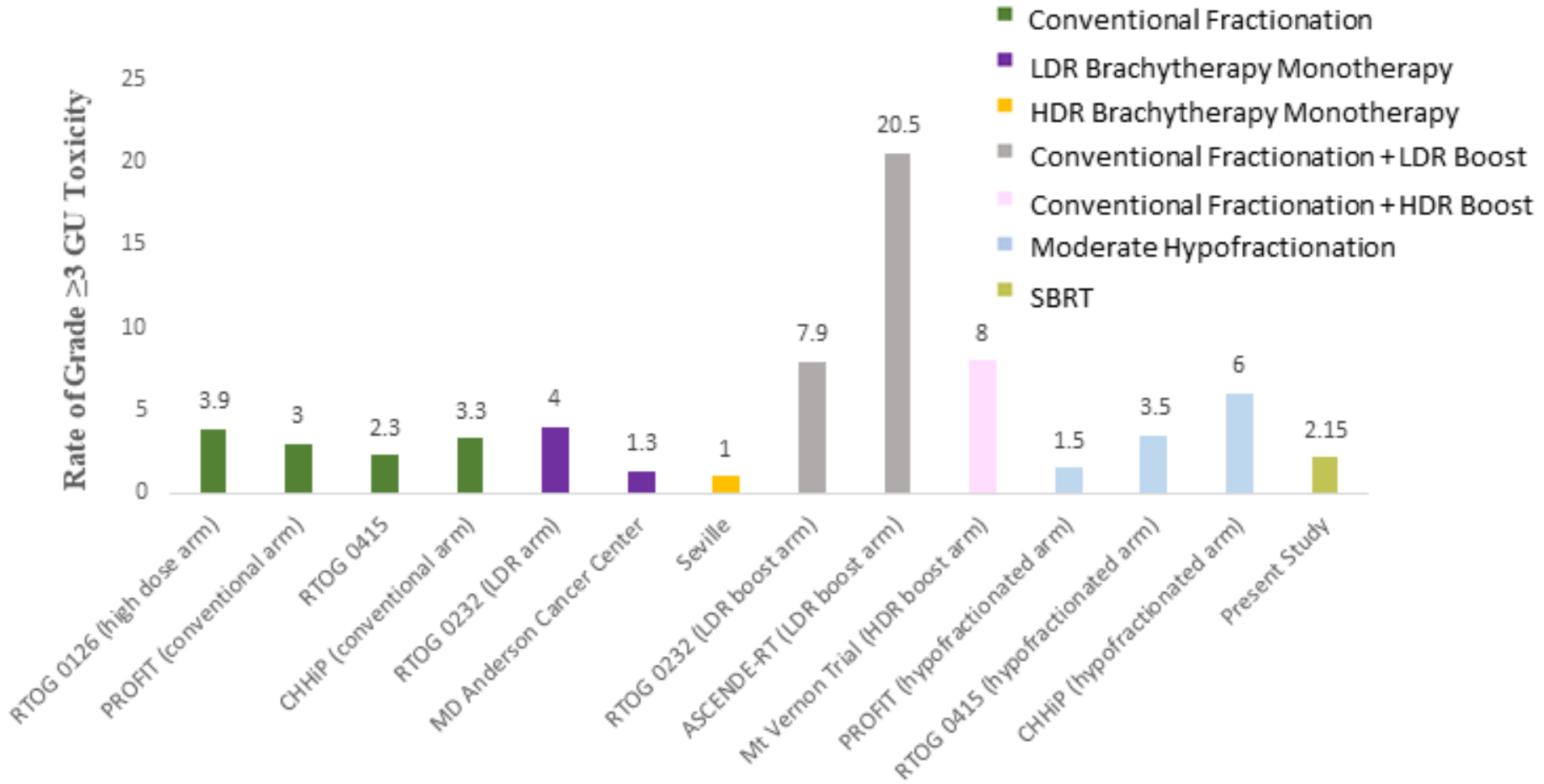




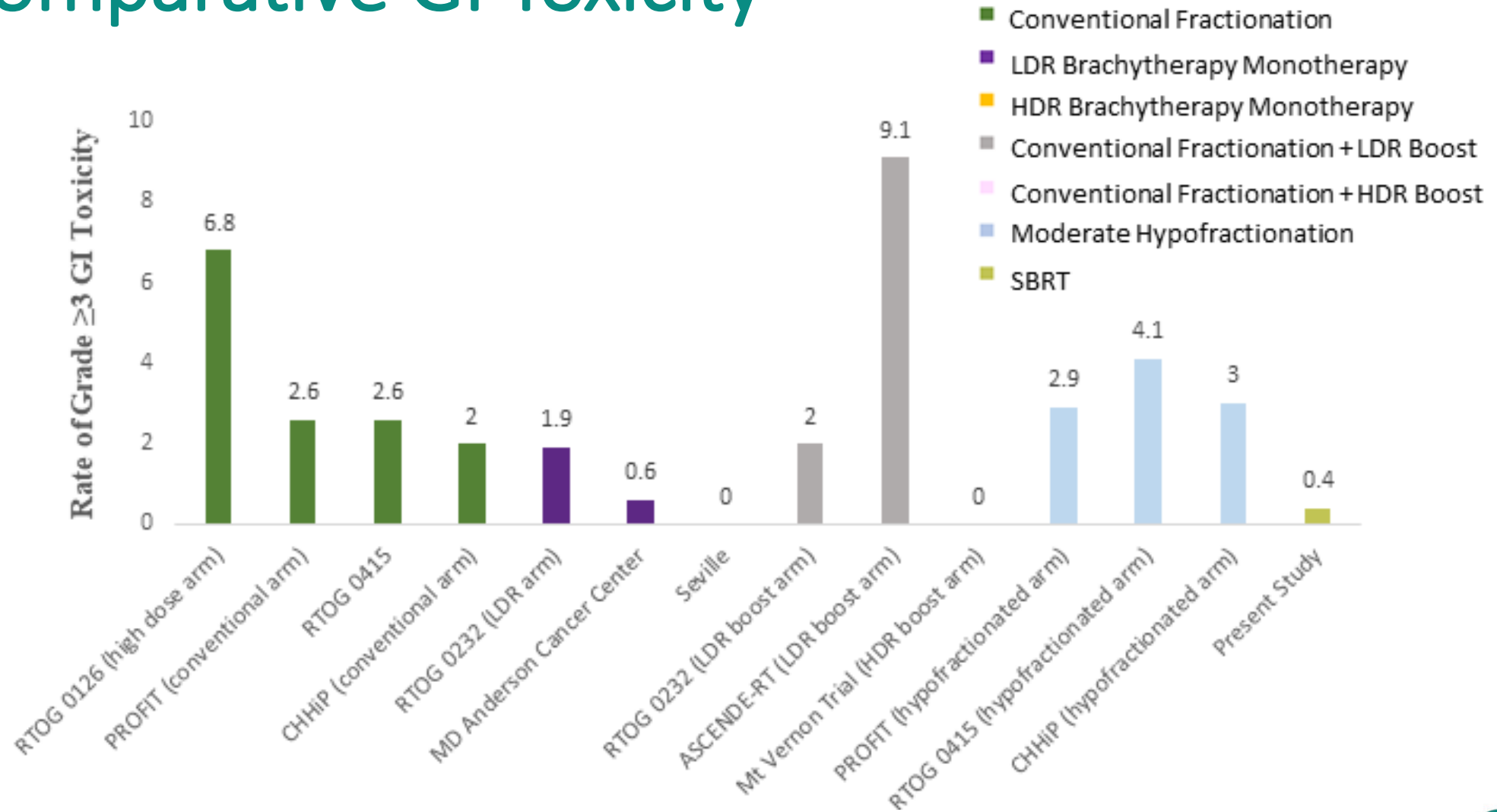
# Composite Grade $\geq 3$ Toxicity Outcomes

|          | Crude Incidence | Cumulative Incidence Estimate (95% Confidence Interval) |                  |                  |
|----------|-----------------|---|------------------|------------------|
|          |                 | 5-Years   | 7-Years          | 10-Years         |
| Acute GU | 0.6%            |   |                  |                  |
| Acute GI | 0.1%            |   |                  |                  |
| Late GU  | 2.1%            | 1.7% (1.2%-2.3%)  | 2.3% (1.6%-3.0%) | 3.0% (1.9%-4.1%) |
| Late GI  | 0.3%            | 0.4% (0.1%-0.7%)  | 0.4% (0.1%-0.7%) | 0.4% (0.1%-0.7%) |

# Comparative GU Toxicity



# Comparative GI Toxicity



# Conclusions

- The long-term safety and efficacy profile of SBRT compares favorably with other established radiotherapy modalities in the treatment of low- and intermediate-risk disease
- SBRT should be considered a standard of care option for low- and intermediate-risk PCa