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## Utilization of Salvage Radiation Therapy for Biochemical Recurrence after Radical Prostatectomy.

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**PURPOSE:** For men with biochemical recurrence after radical prostatectomy (RP), salvage radiation therapy (SRT), especially "early" SRT (PSA  $\leq$ 0.5 ng/mL), is a potentially curative option; however, its utilization is not well defined. We sought to determine factors associated with SRT utilization as well as variation in its administration.

**MATERIALS AND METHODS:** Patients with localized prostate cancer (PCa) undergoing RP at 33 practices participating in the Statewide Michigan Urological Surgery Improvement Collaborative (MUSIC) between 2012-2016 were prospectively followed. Eligible patients had at least 1 post-RP PSA  $\geq$ 0.1 ng/ml with  $\geq$ 6 months follow-up after first detectable PSA. Patients undergoing adjuvant radiotherapy were excluded. SRT utilization, clinical and pathologic patient characteristics were examined.

**RESULTS:** Of 1010 eligible patients with a detectable PSA, 29.5% underwent SRT. 46.9% of patients received SRT who either reached a PSA  $\geq$ 0.2 ng/ml or were treated prior to reaching that PSA level. 30.6% of patients reached a PSA  $\geq$ 0.5 ng/ml without undergoing prior SRT; of this group 42.1% later received SRT. After adjusting for patient and practice level factors, positive surgical margins, higher T-stage, and higher grade group were all associated with receipt of SRT ( $p < 0.05$ ). Even after adjusting for patient and tumor characteristics, there remained significant variation in the adjusted rate of SRT utilization across practices sites, ranging from 7% (95% CI 3-17%) to 73% (95% CI 45-90%,  $p < 0.001$ ). Practices were grouped into tertiles based on SRT utilization, and those practices that utilized SRT more frequently overall were more likely to administer SRT across all patient-based predictors of SRT utilization.

**CONCLUSIONS:** SRT utilization is low among men with a detectable PSA post-RP, with significant variation in practice-level SRT utilization that cannot be explained by patient factors alone. Factors

suggesting higher risk disease were predictors of SRT administration. These data support the potential to expand the use of SRT, particularly among low utilization sites.

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