

Negative Predictive Value of Prostate MRI in Real World Practice: Results from a Statewide Surgical Collaborative

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INTRODUCTION AND OBJECTIVE: Prostate MRI may help reduce unnecessary biopsies given the reported negative predictive value (NPV) for the presence of clinically significant prostate cancer (PCa). However, wide variation in the quality of MRI acquisition and interpretation exists. We aimed to determine the NPV of prostate MRI across diverse practices in the Michigan Urological Surgery Improvement Collaborative (MUSIC).

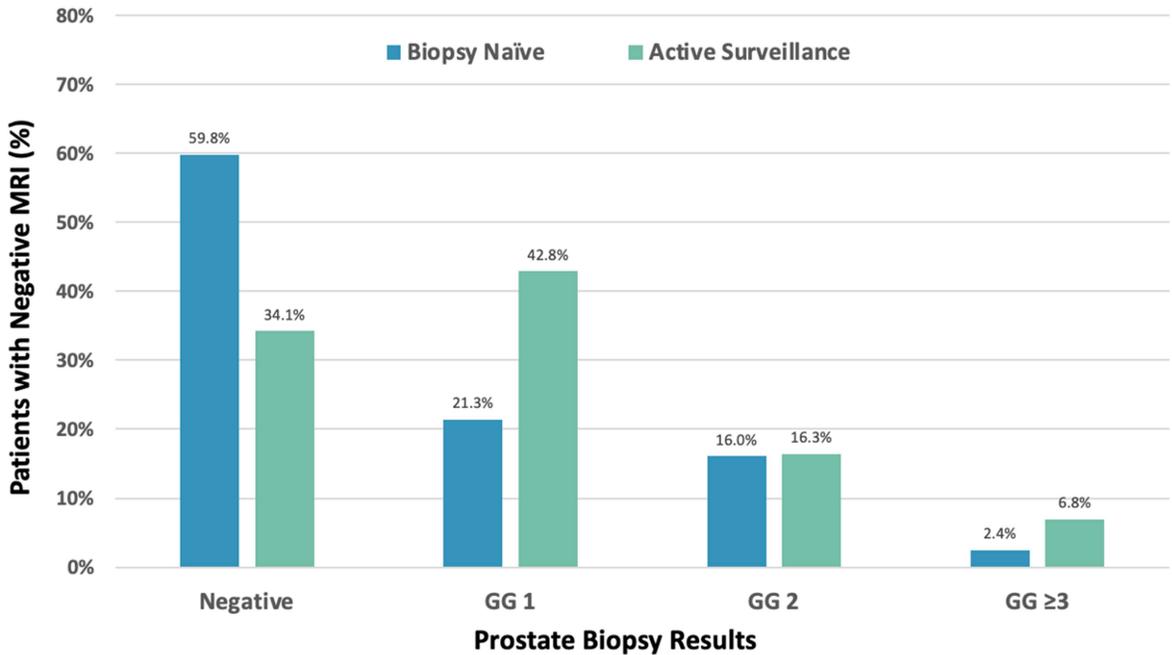
METHODS: The MUSIC clinical registry was used to identify biopsy naïve patients who underwent biopsy with negative MRI between 4/2018-11/2020 and patients with a negative MRI in the setting of active surveillance (AS) between 7/2016-11/2020. Negative MRI was defined as absence of PI-RADS 3-5 lesions. Clinically significant PCa was defined as \geq Grade Group (GG) 2. Patients were stratified by prostate specific antigen (PSA), PSA density and digital rectal exam (DRE) findings.

RESULTS: A total of 433 negative MRI and biopsies were identified across 21 practices. There were 169 (39%) performed in the biopsy naïve setting, and 264 (61%) performed during AS. Median age was 65 years (IQR 60-70), median PSA was 5.5 (IQR 4-8), 10.9% had positive DRE and 25.6% had a positive family history for PCa. The figure demonstrates the proportion of patients with negative prostate MRI by biopsy results. The NPV of prostate MRI for \geq GG2 PCa in biopsy-naïve patients was 81.7%. The NPV of prostate MRI for \geq GG2 PCa in men considering or enrolled on AS was 76.9%. The combined NPV for both cohorts was 78.6%. In biopsy naïve patients, PSA density was associated with \geq GG2 PCa ($p < 0.05$). In AS patients, PSA and PSA density were significantly associated with biopsy resulting in \geq GG2 PCa ($p < 0.05$ for each).

CONCLUSIONS: Across diverse urologic practices in the community, the NPV of prostate MRI is consistent with published level 1 evidence at expert centers. The NPV for \geq GG2 PCa determined by PIRADS score performs similarly in different clinical settings.

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Figure. Prostate biopsy results after negative prostate MRI biopsy naïve setting and confirmatory/surveillance setting.



GG – Gleason grade group