Are all fusion biopsies created equal? Substantial Practice-level Variation in a State-Wide Quality Improvement Collaborative

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INTRODUCTION AND OBJECTIVE: Fusion biopsy (FBx) has experienced exponential growth due to increased access to prostate MRI and defined indications in guidelines. FBx outcomes can be impacted by MRI, radiologist, urologist, and procedure-level characteristics. We aim to define practice-level variation in FBx outcomes within the Michigan Urological Surgery Improvement Collaborative (MUSIC).

METHODS: All men undergoing targeted and 12-core biopsy in the same session from 8/2017 to 8/2019 were included. Patient demographics, clinical characteristics, MRI lesion-level data, and practice-specific variables were captured through the MUSIC registry. Practices with <10 biopsies were excluded from the patient-level analysis and those with PI-RADS specific lesions <10 were excluded from the lesion-level analysis. The primary outcome was high grade (≥GG2) cancer detection rate (HG CDR) in targets and secondary outcomes were HG CDR by PI-RADS score. Mixed-effects logistic regression models were used to assess practice-level variation in outcomes, adjusting for patient and practice level factors.

RESULTS: Over 2300 biopsies from 68 providers in 18 practices were included. The median age and PSA was 67 years and 6.8 ng/ml for this cohort. HG CDR in targets ranged from 14% to 56% (p<0.001). There was also significant variation in HG CDR across practices for PI-RADS 3 (0-44%, p<0.001), PI-RADS 4 (8-50%, p=0.001), and PI-RADS 5 (25-83%, p<0.001) lesions (Figure 1). On multivariable analysis, significant practice-level variation was observed after controlling for patient and practice level characteristics, for both targeted core and lesion-specific HG CDR. Practice FBx volume or within-practice case concentration were not significant predictors for the outcomes.

CONCLUSIONS: There is substantial practice-level variation in FBx outcomes across all domains. Determinants of variation are complex and multifactorial. Additional work to identify the contribution of the components in the FBx pathway to variation is essential to quality improvement.

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