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Identifying Active Surveillance in Claims Data

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INTRODUCTION AND OBJECTIVES: Active surveillance (AS) is now a preferred management option for low-risk prostate cancer (PCa), yet it has historically been difficult to identify AS in administrative claims data. A validated, claims-based algorithm to identify AS is needed to evaluate its use on a larger scale. Herein, we created and tested multiple algorithms to identify men initially managed with AS and validated them with a robust clinical registry.

METHODS: We identified men diagnosed with PCa from 2012-2014 in a 100% sample of Medicare claims data from Michigan. We matched these patients with their clinical registry data from the Michigan Urologic Surgery Improvement Collaborative (MUSIC) using date of birth, date of biopsy, and urologist. Using MUSIC initial treatment data as the gold standard, we determined the sensitivity, specificity, positive and negative predictive values of 8 claims-based algorithms to identify men managed initially with AS. These algorithms incorporate a combination of five factors: absence of definitive treatment, repeat PSA tests, repeat biopsy, predicted 10-year life expectancy (to improve discrimination of AS and watchful waiting), and length of follow-up. We excluded men with less than 6 months of follow-up claims data.

RESULTS: We matched Medicare claims and MUSIC data for 1235 men with newly diagnosed PCa. Seventeen percent of these men were managed with AS, 5% with watchful waiting, and 78% with active treatment. The simplest algorithms identified men without active treatment during follow-up and had sensitivities and specificities of 95.7 and 90.4% at 6-mo of follow-up and 88.2 and 93.5% at 12-mo of follow up (Table). The most specific algorithms at 12-mo of follow up used a lack of active treatment with >10y estimated life expectancy (95.7%) or 1 repeat prostate biopsy (99.1%).

CONCLUSIONS: We created, tested, and validated 8 claims-based algorithms for identifying PCa patients managed initially with AS. Our findings can be used to select an algorithm with test characteristics that suit the needs of researchers and policymakers, such as a simple algorithm with high sensitivity or a stricter algorithm with high specificity. These algorithms, validated against a robust clinical registry, can be leveraged to evaluate utilization of AS in large scale claims data.

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Algorithm	Description	Sensitivity	Specificity	Follow up needed (mo)
1	No active treatment in 6mo of diagnosis and 1 PSA within 2-6mo of diagnosis	74.04	93.67	6
2	No active treatment in 6mo of diagnosis and 10y mortality <50%	73.56	93.18	6
3	No active treatment in 6mo of diagnosis and 10y mortality <75%	90.87	90.94	6
4	No active treatment in 6mo of diagnosis	95.67	90.36	6
5	No active treatment in 12mo after diagnosis and 1 prostate biopsy within 2-12mo of diagnosis	23.53	99.08	12
6	No active treatment in 12mo after diagnosis and 10y mortality <50%	67.16	95.72	12
7	No active treatment in 12mo after diagnosis and 1 PSA within 2-12mo of diagnosis	84.31	93.69	12
8	No active treatment in 12mo after diagnosis	88.24	93.48	12

Table. Eight algorithms to detect AS with 6 or 12 months of follow-up.