Category: Innovations in Data Integration and Infrastructure Development – Work in Progress – Faculty

A Study of Prostate Cancer Active Surveillance Using Electronic Health Record Data

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1. Background

Prostate cancer is the most prevalent cancer in men. For low-risk prostate cancer, active surveillance (AS) is increasingly accepted and has become the standard of care. While randomized controlled trials have shown that AS was accepted by patients with good adherence, population-based cohort studies have reported strikingly low adherence and rural-urban and racial disparities in adherence.

2. Goals

We aim to study the utilization of active surveillance for prostate cancer and disparity patterns in real clinical practice.

3. Solutions and Methods

We used real-world electronic health record (EHR) data extracted from the Washington University's and Barnes Jewish Christian's (BJC's) EPIC system. The AS schedule is defined as a prostate-specific antigen (PSA) test every six months, or digital rectal exam (DRE) every one year, and biopsy every two years. We evaluate the utilization and adherence of AS tests within two years after initial diagnosis of prostate cancer (International Classification of Disease) [ICD-10=C61]) as well as the rural-urban (defined by the Rural-Urban Commuting Area [RUCA] codes in Zone Improvement Plan level) and racial disparities.

4. Outcomes

We identified 359 patients who are eligible for AS among the total 3,564 patients with initial prostate cancer diagnosis between June 2018 and December 2024 and had at least two years of follow-up. This includes 38 rural (RUCA³4) and 320 urban patients, and 75 non-Hispanic Black (NHB) and 274 non-Hispanic white (NHW) patients. The overall rates of adhering to AS tests are 31.8 percent, 8.4 percent, 41.2 percent, and 1.4 percent for PSA (³four times), DRE (³two times), biopsy (³one time), and all three tests respectively. The utilization of PSA tests is lower in rural vs. urban (mean 2.16 vs 2.86 times, $p=0.026$). The utilization of DRE is higher in NHB vs. NHW (mean 0.707 vs. 0.281 times, $p<0.001$), but the utilization of biopsy test is lower in NHB vs. NHW (mean 0.333 vs. 0.544 times, $p=0.009$).

5. Lessons Learned and Future Directions

The real-world EHR data presents a low patient adherence to the AS tests after the initial diagnosis of prostate cancer. The rural-urban and racial disparities exist and depend on the type of AS tests. It is feasible to use real-world EHR data for cancer care surveillance. The current data is limited in strictly defining AS eligible patients, and further data integration is required.