A Cost Analysis of Skeletal Related Events among Elderly Men with Stage IV Metastatic (M1) Prostate Cancer

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Methods

Objectives

• Nearly two thirds of the men diagnosed with PCa in the United States are aged 65 years or older and are at increased risk of skeletal related events (SREs).

• Current methods for estimating costs of SREs may not reflect the differences in health care utilization costs among older patients in advanced stages of the disease.

Methods

Study Design

Case-control study design (Figure 1).

Dataset

Linked Surveillance, Epidemiology and End Results (SEER)-Medicare database.

Study Sample

Patients aged 66 years or older, diagnosed with stage IV (M1) prostate cancer between 2000 and 2007.

SREs

• Five mutually exclusive SRE categories were created: 1) pathological fracture only, 2) pathological fracture with concurrent surgery to the same bone, 3) spinal cord compression only, 4) spinal cord compression with concurrent surgery to the same bone, and 5) bone surgery only.

Covariates

• Demographic characteristics: See Table 1.

• Clinical and treatment characteristics: See Table 1.

Analytical approach

• A propensity score matching technique combined with a difference-in-difference (DID) estimation method.

Analysis

• Descriptive and bivariate analyses were conducted for the unmatched and matched samples.

• Total annual health care costs were estimated for patients with SREs in the unmatched sample.

• Generalized linear models with a log-link and gamma variance functions were utilized to estimate incremental and DID cost estimates.

Sensitivity analysis

• Pre-cost post differences were calculated for 3- and 6-month follow-up periods.

Results

Figure 1. Study design and analytical approach

Figure 2. Difference-in-difference (DID) cost estimates for skeletal related events among patients with stage IV (M1) prostate cancer diagnosed in 2000-2007

Figure 3. Sensitivity analysis

Table 1. Descriptive and bivariate analyses of the full, unmatched and matched samples

Table 2. Total annual skeletal care costs, pre- and post-index incremental costs by type of skeletal related event (SRE)

Results cont.

• The health care utilization costs among metastatic prostate cancer patients with SREs was $24,329 (95% CI: $21,010- $27,648) higher compared to those without SREs.

• Costs of SREs varied by type; spinal cord compression and concurrent surgery to the bone ($68,894; 95% CI $66,431-$65,631) was the most expensive.

• The specific method used to compare and isolate costs attributable to SREs could provide useful information to payers to quantify the economic impact of prostate cancer-related SREs.

• The analysis suggests that treatment and procedures to prevent SREs have the potential to yield cost offsets.

Conclusions

• The health care utilization costs among metastatic prostate cancer patients with SREs was $24,329 (95% CI: $21,010- $27,648) higher compared to those without SREs.

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Disclosure

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