Examining the Use of Combination Therapies for Metastatic Breast Cancer: A Comparative and Cost Effectiveness Study

Author
Gogate, Anagha U.

Abstract
Objectives: The goal of this research is to examine the diffusion, comparative effectiveness and cost-effectiveness of combination therapies for metastatic breast cancer (mBC).
Methods: The IBM® MarketScan® Commercial Database was used to identify women with claims indicative of HR+/HER2- metastatic breast cancer. We then identified users of palbociclib/letrozole, palbociclib/fulvestrant and everolimus/exemestane combinations between January 1, 2012 and December 1, 2018. First, we described treatment patterns for each combination regimen over time, by geographic region and by urban/rural status. Then, we narrowed focus to second-line combinations (palbociclib/fulvestrant and everolimus/exemestane) and used multivariable ordinary least squares to estimate time on treatment. Two-part models and negative binomial regression models were used to estimate the number of inpatient days and emergency department visits (ED) visits while on combination treatment. Finally, we used a five-state Markov model to estimate the cost per quality-adjusted life-year (QALY) gained for patients receiving palbociclib/fulvestrant versus everolimus/exemestane.

Results: Palbociclib/fulvestrant overtook everolimus/exemestane as the more commonly prescribed second-line combination regimen almost immediately after its approval in February 2016. In comparison to providers in urban areas, rural providers were slower to adopt the newest combination available. Holding baseline characteristics constant, receiving everolimus/exemestane was statistically significantly associated with a) 53.1 fewer days on treatment prior to discontinuation, b) a 7 percentage point increase in the predicted probability of having any ED visits during follow-up and c) a 6 percentage point increase in the predicted probability of having any inpatient days during follow-up, compared to palbociclib/fulvestrant, holding other baseline characteristics constant. Among those who had any healthcare service utilization, there was not a statistically significant association between the combination of treatments received and the number of ED visits or inpatient days during follow-up.
In the base-case, palbociclib/fulvestrant cost, on average, $477,891 per additional QALY gained compared to everolimus/exemestane. Probabilistic sensitivity analysis showed that palbociclib/fulvestrant was cost-effective compared to everolimus/exemestane in only 8.4% of simulated scenarios at a willingness to pay threshold of $100,000 per QALY gained.
Conclusions: When making decisions about treatment, patients and providers may consider these study findings alongside their own preferences for minimizing costs or avoiding additional ED and hospital visits.

Number of pages
121

Degree date
2020

School code
0153

Source
DAI-B 82/2(E), Dissertation Abstracts International

Place of publication
Ann Arbor

Country of publication
United States

ISBN
9798664730760

Advisor
Wheeler, Stephanie B.

Committee member
Trogdon, Justin G.; Weinberger, Morris; Reeder-Hayes, Katherine E.; Rocque, Gabrielle

University/institution
The University of North Carolina at Chapel Hill

Department
Health Policy and Management

University location
United States -- North Carolina

Degree
Ph.D.
Source type

Dissertations & Theses
Language

English
Document type

Dissertation/Thesis
Dissertation/thesis number

28026705