Estimating the Direct and Indirect Resource Burden of Treatment Management With Current Standard of Care or Elacestrant for ER+, HER2-, *ESR1*-mutated Advanced or Metastatic Breast Cancer Patients: A Population-Level Provider Model

Abstract #130614

Gregory A. Vidal[1], Frank Cinfio[2], Jack Badaracco[2], Corey Pelletier[3], Matthew Gitlin[2]

[1]West Cancer Center and Research Institute, Memphis, Tennessee, [2]BluePath Solutions, Los Angeles, California, [3]Menarini Group, New York, NY

INTRODUCTION

- Breast cancer is the most common cancer worldwide that continues to have a large impact in global burden in terms of morbidity and healthcare resource utilization.[1]
- Greater than 70% of breast cancers are estrogen receptor-positive (ER+), human epidermal growth factor receptor 2-negative (HER2-), for which endocrine therapy forms the backbone of therapy.[2]
- Current treatment guidelines recommend exhausting all endocrine therapy options for ER+, HER2- breast cancers prior to transitioning to chemotherapy-based options in the metastatic setting.[3,4]
- *ESR1* mutations represent a type of acquired resistance in up to 40% of patients that predominantly occurs after endocrine therapy, particularly aromatase inhibitors, reducing the efficacy of available regimens.[5-9]
- Elacestrant is a next-generation oral selective estrogen receptor degrader (SERD) for which efficacy and safety were demonstrated in the EMERALD phase III trial.[10]
  - Elacestrant was associated with significantly prolonged progression-free survival (PFS) and a manageable safety profile for elacestrant versus SOC endocrine therapy in patients with ER+, HER2-, *ESR1*-mutated metastatic breast cancer following progression on prior endocrine and CDK4/6 inhibitor therapy.
  - Patients with at least 12 months of prior CDK4/6 inhibitor therapy experienced a median PFS of 8.6 months with elacestrant versus 1.9 months with SOC endocrine therapy, with an absolute difference of 6.7 months.[11]
- Elacestrant is the first treatment specifically for patients with ER+, HER2- advanced or metastatic breast cancer tumors that harbor *ESR1* mutations who may benefit that is tailored with a manageable safety profile.
- Understanding the resource implications of elacestrant as a novel treatment strategy is essential for healthcare decision-makers, providers, and patients alike.

OBJECTIVE

- To estimate the clinical and healthcare resource utilization (HRU) events avoided by treating patients with elacestrant vs the current SOC in a cohort of patients with ER+, HER2-, *ESR1*-mutated ABC/MBC.

METHODS

Decision Analytic Model

- A decision analytic model estimated the clinical events and HRU offsets resulting from treating patients with elacestrant over a 3-year time horizon.
- The analysis took a community oncology facility-level perspective and estimated the average number of patients with ER+, HER2-, *ESR1*-mutated ABC/MBC with disease progression following at least one line of endocrine therapy treated at a facility each year.
- The model analyzed a scenario in which the current treatment mix of eligible patients fully converted to elacestrant.
- Median duration, PFS, and OS for each treatment were based on clinical trial data.
  - Second-line specific OS/PFS was utilized in the analysis when available.[12-19]
- Grade ≥ 3 adverse events (AE) were included if the reported incidence was at least 5% in any one of the treatment arms included in the analysis.
  - The model assumed that any grade ≥ 3 adverse events required a hospitalization.
- The length of stay associated with each AE was based on data obtained from the Healthcare Cost and Utilization Project.[20]
- Healthcare resource utilization data were stratified by progression status.
- Progression-free healthcare resource utilization (HRU) counts were based on second line utilization while post-progression HRU values were derived from the third line values reported in the literature.[21,22]

Population

Postmenopausal women or adult men with ER+, HER2-, *ESR1*-mutated ABC/MBC with disease progression following at least one line of endocrine therapy treated at a facility.

Perspective

United States Community Oncology Facility

Current Treatment Mix

- Fulvestrant
- Anastrozole
- Letrozole
- Exemestane
- Fulvestrant + abemaciclib
- Fulvestrant + palbociclib
- Fulvestrant + ribociclib
- Fulvestrant + alpelisib
- Everolimus + exemestane
- Everolimus + fulvestrant
- Capecitabine

Time Horizon = 3 Years

Intervention Elacestrant

Inputs

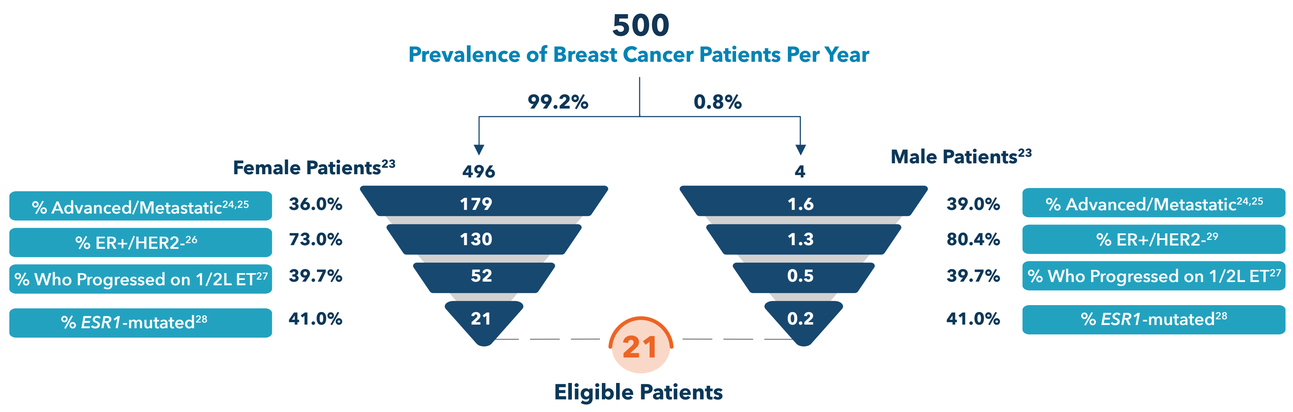
Overall survival (OS), progression-free survival (PFS), median duration of treatment, grade ≥3 adverse events (AEs), healthcare resource utilization (inpatient, emergency room, and outpatient visits), work productivity loss and activity impairment

Outcomes

Number of deaths avoided, number of patients requiring subsequent treatment, number of fulvestrant administrations avoided, number of adverse events (AEs) avoided, days in the hospital (due to AEs) avoided, outpatient visits avoided, inpatient visits avoided, emergency room visits avoided, number of hours of missed work avoided, number of hours of activity impairment avoided

Eligible Patient Population

Figure 1. Estimated Number of Eligible Patients Per Year



ER = estrogen receptor; *ESR1* = estrogen receptor 1 gene; ET = endocrine thereapy; HER2 = human epidermal growth factor receptor 2
*The model uses published data to derive the number of advanced/metastatic ER+/HER2- breast cancer female patients eligible for treatment. The estimated eligible patient population is based on a hypothetical starting cohort of 500 breast cancer patients.

Indirect Measures

- Work and activity impairment were included in the model to estimate the societal impact of MBC on the patient.
  - Data ranging from 32%-54% and 37%-49% for work and activity impairments, respectively, were based on a sample of adults with HR+/HER2- breast cancer and were stratified by treatment.[29]
- According to a report from the Institute for Women's Policy Research, women spend 4.4 hours per day on unpaid household and care work, while men spend 3.5 hours per day.[30]
- Impaired **work** hours was estimated by multiplying the percent of employed patients[31] by the percent of work that was impaired by a 40-hour work week.
- Impaired **activity** hours was estimated by multiplying the number of hours of unpaid household and care work by the percent of activity impairment for each treatment.

Work impairment was defined as the sum of the proportion of work time missed and proportion of impaired work time in the past 7 days. Activity impairment was defined as the degree regular activity was impaired in the past 7 days.[29]

RESULTS

Figure 2. Analysis Highlights

Patients Entering the Model

21 Patients — Initiate treatment each year

Events Avoided

~1 death avoided over 3 years

27 GRADE ≥3 AEs avoided over 3 years

131 hospital days avoided due to adverse events over 3 years

Subsequent Therapy

5 Patients on subsequent therapy over 3 years

Patients Treated Over 3 Years

64 Patients — Initiate treatment over a 3-year time horizon

 # Admistrations Avoided

791 Fulvestrant admins avoided over 3 years

Reduce the frequency of injections and associated hospital visits by converting to oral therapy

 # Visits Avoided

1,719 total visits avoided over 3 years
- **1,449** outpatient visits
- **215** inpatient visits
- **55** ER visits

The overall reduction in outpatient, inpatient, and emergency room visits

 # Hours Missed Work and Activity Impairment

11,935 total lost hours avoided over 3 years
- **5,853** hours missed work
- **6,082** hours activity impairment

The overall reduction in the number of hours for missed work and activity impairment

Analysis Values Defined

- Total # of AEs: cumulative # of Gr ≥ 3 anemia, diarrhea, fatigue, hand and foot syndrome, hyperglycemia, infection, leukopenia, neutropenia, rash, and stomatitis events
- Total hospital days (Gr ≥ 3 AEs): # of hospital days as a result of experiencing Gr ≥ 3 AEs
- Missed work: productivity loss expected for patients in the workforce who otherwise would still be contributing work hours if healthy
- Activity impairment: hours of unpaid labor a patient needs external help with that they usually would accomplish if they were healthy

CONCLUSION

- This decision analytic model demonstrated that treating patients with elacestrant resulted in a meaningful reduction in the number of clinical and healthcare resource utilization events.
- At a societal level, patients were able to reduce the number of hours missed at work and improve their day-to-day activities.
- Reducing healthcare resource utilization and other events may improve clinical outcomes as well as capacity challenges that clinics may face when treating patients with breast cancer.
- This model focused on the number of events avoided due to treating patients with elacestrant. Future studies that evaluate the financial impact on the healthcare system should be explored.

LIMITATIONS & ASSUMPTIONS

Limitations

- The model analyzed a relatively small patient population.
- The model analyzed a scenario where patients using the current treatment mix converted to elacestrant. This is likely to differ from real-world practice in which not all patients may switch to elacestrant.
- Not all OS and PFS data were reported out to 3 years, therefore, a treatment's relative decline that was observed was used to extrapolate the remaining time points which may lead to over- or underestimations in OS & PFS.
- The analysis is based on population-level data from the clinical trial and published literature which may not be fully representative of real-world outcomes. Individual patient outcomes are likely to vary.

Assumptions

- Healthcare resource utilization data obtained from the literature were not always specific to the postmenopausal population in which the data were assumed to be applicable to the eligible population
- The healthcare resource utilization, work productivity loss, and activity impairment inputs for elacestrant were assumed to be the same as endocrine therapy.
- Data for the male population were assumed the same as women when unavailable.

REFERENCES:

1. Arnold M, et al. *Breast*. 2022;66:15-23; **2.** Zhou FH, et al. *Front Cell Dev Biol*. 2023;11:1148792.; **3.** Burstein HJ, et al. *J Clin Oncol.* 39:3959-3977, 2021; **4.** Cardoso F, et al. *Ann Oncol*. 2020;31(12):1623-1649; **5.** Robinson DR, et al. *Nat Genet*. 2013;45(12):1446-51; **6.** Jeselsohn R, et al. *Clin Cancer Res*. 2014 Apr 1;20(7):1757-1767; **7.** Toy W, et al. *Nat Genet*. 2013;45(12):1439-45; **8.** Brett JO, et al. *Breast Cancer Res.* 2021;23(1):85; **9.** Oesterreich S, et al. *Nat Genet*. 2013;45(12):1415-6; **10.** Bidard FC, et al. *J Clin Oncol*. 2022;40(28):3246-3256; **11.** Bardia A, et al. *Cancer Res.* 2023;83(Suppl 5):GS3-01;**12.** Data on File, [RAD1901-308 CSR; 2022]; **13.** Baselga J, et al. *N Engl J Med*. 2012;366(6):520-529; **14.** Sledge GW, et al. *J Clin Oncol*. 2017;25:2876-2884; **15.** Cristofanilli M, et al. *Clin Cancer Res*. 2022;28(16):3433-3442; **16.** Slamon DJ, et al. *N Engl J Med*. 2019;382(6):514-524; **17.** André F, et al. *N Engl J Med*. 2019;380(20):1929-1940; **18.** Schmid P, et al. *JAMA Oncol*. 2019;5(11):1556-1564; **19.** Martín M, et al. *Eur J Cancer*. 2022;168:12-24.; **20.** HCUPnet. Healthcare Cost and Utilization Project (HCUP). 2020. Agency for Healthcare Research and Quality, Rockville, MD. Available from: http://hcupnet.ahrq.gov/ [Internet].; **21.** Gauthier G, et al. *Adv Ther*. 2018;35(4):503-514; **22.** Burne R, et al. *J Med Econ*. 2021;24(1):806-815; **23.** Greenup RA, et al. *Ann Surg*. 2018;267(2):375-381; **24.** SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 registries; **25.** Vera-Llonch M, et al. *BMC Cancer*. 2011;11:1-7; **26.** American Cancer Society. Breast Cancer Facts & Figures 2019–2020; **27.** Law JW, et al. *Curr Oncol.* 2022;29(2):1047-1061; **28.** Santiago Novello RG, et al. *Ann Oncol*. 2023;8(suppl_4):101223-101223.; **29.** Mahtani R, et al. *Value in Health*. 2020;23:S476; **30.** Hess C, et al. *Institute for Women's Policy Research*. 2020:IWPR #C487.; **31 .** Employment status of the civilian noninstitutional population by age, sex, and race [Table 03]. In: Statistics UBoL, editor. Household Data. BLS2022.

ACKNOWLEDGMENTS:

All authors contributed to and approved the presentation. This study was funded by Menarini Group.