Increased Healthcare Costs and Resource Utilization Following Progression in Patients With HR+/HER2- Metastatic Breast Cancer Receiving Chemotherapy

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KEY FINDINGS

This study reports contemporary estimates of healthcare costs and healthcare resource utilization (HCRU) in patients with HR+/HER2- (HER2 IHC 0 and HER2-low) metastatic breast cancer (mBC) treated with chemotherapy following progression on at least two lines of endocrine therapy (ET)-based treatment or with primary endocrine resistance

- Disease progression was associated with a marked increase in healthcare costs, largely driven by other non-BC-treatment medical expenses, which accounted for 61.4% of the incremental post-progression costs
- A substantial increase in inpatient burden was observed with disease progression, with mean monthly length of stay nearly three times higher than in the pre-progression period

CONCLUSION

These findings fill an HCRU and cost evidence gap and underscore the need for therapies that delay progression and reduce the associated economic burden among patients with HR+/HER2- (HER2 IHC 0 and HER2-low) mBC treated with chemotherapy

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Background

- The current treatment paradigm for patients with HR+/HER2- (HER2 IHC 0 and HER2-low) metastatic breast cancer (mBC) following progression on multiple lines of endocrine therapy (ET)-based treatment or in cases of primary endocrine resistance includes systemic chemotherapy[1]
- Prior findings have indicated poor outcomes following initiation of chemotherapy among such patients, many of whom are then initiated on a subsequent therapy[2]
- Limited data are available on the economic burden following chemotherapy initiation in this population, and further research is needed to better understand the impact of progression on this burden

Study objective

Quantify healthcare costs and healthcare resource utilization (HCRU) after chemotherapy initiation and around progression among patients with HR+/HER2- mBC treated with chemotherapy following ET-based treatment in the United States (US)

Methods

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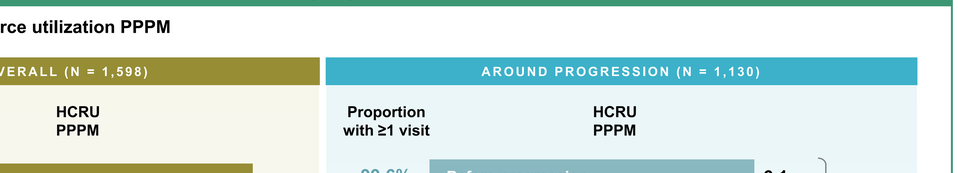
Study design

- Retrospective cohort study in Komodo Research Data (KRD+; 1/2016-1/2025)
- Index line of therapy (LOT) was defined as the initiation of chemotherapy in the mBC setting
- Costs (adjusted to 2025 US Dollar [USD]) and HCRU per patient per month (PPPM) were measured from chemotherapy initiation to end of follow-up among patients initiating chemotherapy between 1/1/2017 (≥12 months of washout) and 7/31/2024 (≥6 months of potential follow-up)
- Among patients with a non-death progression on chemotherapy (defined with medical expert input as hospice admission, subsequent therapy or radiotherapy initiation), costs and HCRU PPPM were compared between the pre-progression and post-progression periods using paired t-tests
- Healthcare costs were stratified as follows:
  - BC treatment-related: Medical and pharmacy claims containing codes for a BC-related antineoplastic therapy
  - Other medical: All medical claims not classified as BC treatment-related
  - Other pharmacy: All pharmacy claims not classified as BC treatment-related
- The prevalence in 2025 of patients with HR+/HER2-low mBC receiving subsequent therapy post ET was estimated based on the current analyses using KRD+ and published literature
- Supplemental materials are available through the QR code on the bottom left corner of this poster and include monthly healthcare cost for commercial and Medicare populations: (1) on and after the index line and (2) stratified by time of death

HR+/HER2- mBC identification algorithm

- A claims-based algorithm was developed based on medical expert guidance (Dr. Tiffany Traina) to identify patients with HR+/HER2- mBC receiving chemotherapy (index date) after ≥2 lines of ET-based treatment or in cases of primary endocrine resistance (**Figure 1**)
- As biomarker data (IHC results) are unavailable in KRD+, HR+/HER2- statuses were inferred from treatments received based on expert's input. As such, HER2 expression profile below the threshold for positivity was not further stratified

Figure 1. Study design



ET: endocrine therapy; HCRU: healthcare resource utilization; mBC: metastatic breast cancer
Note: Real-world non-death proxies of progression were defined with medical expert guidance (Dr. Tiffany Traina) and included hospice admission, initiation of a second line of systemic treatment, or initiation of radiotherapy.

Results

Figure 2. Sample selection flowchart

Newly diagnosed patients with mBC[a]	**N = 34,230**
Patients with HR+/HER2- mBC	**N = 21,745 (63.5%)**
Patients initiating chemotherapy: 1) after ≥2 lines of ET-based treatment, or 2) within 6 months of starting 1L ET + CDK4/6i	**N = 1,656 (7.6%)**
Patients initiating chemotherapy between 1/1/2017 and 7/31/2024	**N= 1,598 (96.5%)**
Patients with a non-death progression event	**N= 1,130 (70.7%)**

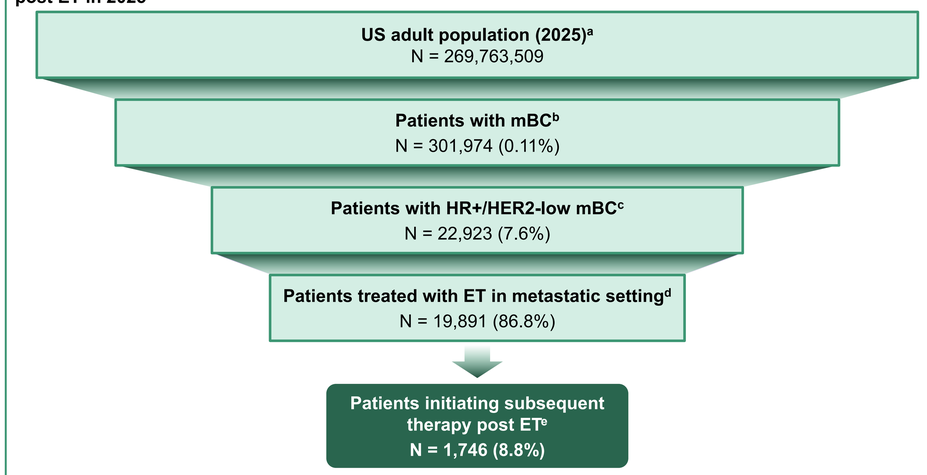
ET: endocrine therapy; mBC: metastatic breast cancer
Note: [a]Diagnosis of incident mBC was based on the presence of ≥2 medical claims with diagnosis codes for primary BC followed by ≥2 claims with diagnosis codes for secondary neoplasms, excluding breast, skin, or lymph nodes. Patients were required to have ≥12 months of continuous health plan enrollment prior to their first mBC diagnosis without diagnoses of other neoplasms and without prior therapy only approved in the mBC setting.

Table 1. Patient characteristics

	Patients with HR+/HER2- mBC N = 1,598
Age (years), mean [median]	**59.3 ± 11.6 [59.0]**
Sex known, N (%)	**1,587 (99.3%)**
Female	1,571 (99.0%)
Male	16 (1.0%)
Race & ethnicity known, N (%)	**1,267 (79.3%)**
White	918 (72.5%)
Black or African American	150 (11.8%)
Hispanic or Latino	112 (8.8%)
Other[a]	87 (6.9%)
Payer type[b], N (%)	
Commercial	1,062 (66.5%)
Medicare	400 (25.0%)
Medicaid	134 (8.4%)
Most common comorbidities[c], N (%)	
Liver disease	478 (29.9%)
Diabetes	350 (21.9%)
Cardiovascular disease	336 (21.0%)
Months of follow-up[d], mean ± SD [median]	**14.6 ± 12.1 [11.0]**
Most common index chemotherapy, N (%)	
Capecitabine-based treatment	968 (60.6%)
Paclitaxel-based treatment	257 (16.1%)
Nab-paclitaxel-based treatment	161 (10.1%)

1L; first-line; mBC: metastatic breast cancer; SD: standard deviation
Notes: [a]Includes Asian or Pacific Islander (48 [3.8%]) and other races (39 [3.1%]). [b]Two patients had unknown payer type. [c]Assessed within ± 3 months of index. [d]Defined as time from initiation of index LOT to the earliest of 1) end of continuous health plan enrollment, 2) end of data, or 3) death.

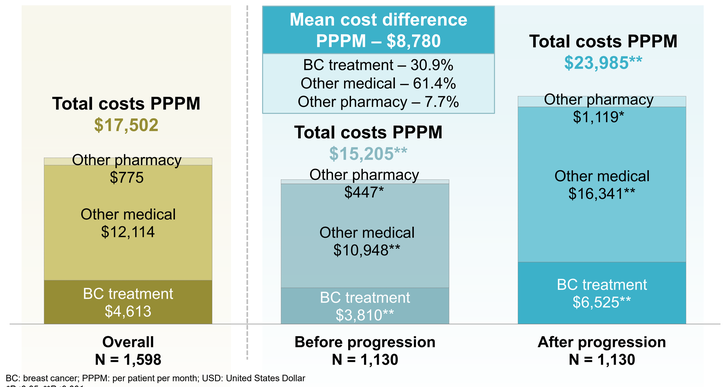
Figure 3. Estimated US prevalence of patients with HR+/HER2-low mBC receiving a subsequent therapy post ET in 2025



ET: endocrine therapy; mBC: metastatic breast cancer
Notes: [a]US adult population was estimated based on the total US population (N = 341,784,857), multiplied by the proportion of adults (78.9%) reported in the 2025 US Census[3]. [b]The number of patients with mBC was estimated based on the 2022 prevalence of BC (1.2%) reported by SEER[4] and multiplied by the proportion of prevalent metastatic patients with BC (9.3%), estimated from the current analyses (2017–2025). [c]The number of patients with HER2-low mBC was estimated based on patients with HR+, HER2- BC (9.3%) as reported in the current analyses (2017–2025) and multiplied by the proportion of HER2-low patients with HR+/HER2- disease (65.4%) reported in literature[5]. [d]The proportion of patients treated with ET after mBC diagnosis was estimated from the current analyses (2017–2025). [e]The proportion of patients who received a subsequent treatment post-ET was defined as chemotherapy initiation following at least two lines of ET-based treatment or with primary endocrine resistance and was estimated from the current analyses (2017–2025).

Healthcare costs

Figure 4. Average healthcare costs PPPM (2025 USD)



BC: breast cancer; PPPM: per patient per month; USD: United States Dollar
*P<0.05; **P<0.001
Notes: In the overall sample, other medical costs were primarily driven by outpatient costs ($6,986 PPPM), followed by inpatient ($4,802 PPPM) and emergency department ($326 PPPM) costs. Of the 1,130 patients with a non-death progression, the increase in other medical costs post-progression was predominantly driven by higher inpatient costs ($7,587 vs. $3,282 PPPM; p<0.001), followed by increases in outpatient ($8,381 vs. $7,328 PPPM; p<0.01) and emergency department ($374 vs. $338 PPPM; p=0.41) costs.

HCRU

Figure 5. Average healthcare resource utilization PPPM

HCRU: healthcare resource utilization; PPPM: per patient per month

References

1. Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Clinical Practice Guidelines in Oncology for Breast Cancer V.4.2025. © National Comprehensive Cancer Network, Inc. 2025. All rights reserved. Accessed Sept 22, 2025. To view the most recent and complete version of the guideline, go online to NCCN.org. NCCN makes no warranties of any kind whatsoever regarding their content, use or application and disclaims any responsibility for their application or use in any way.
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Limitations

- As clinical information (e.g., HR/HER2 statuses, IHC results) is not directly available in claims data, the identification of the study sample, the index LOT, and non-death progression indicators relied on algorithms developed with medical expert.
- This study is subject to common limitations of analyses using insurance claims databases, such as missing data and inaccurate insurance claims.
- Healthcare cost assessments were based on estimated allowed amounts reported in KRD+, which may not reflect comprehensive costs associated with provider services.

Disclosures

- *Presenter*: J. Salcedo is employed by BioNTech and own stocks.
- *All authors*: T. A. Traina has received consulting/advisory fees from BioNTech SE, Genentech/Roche, Pfizer, AstraZeneca, Merck, Daiichi Sankyo, Gilead Sciences, GlaxoSmithKline, Tersera, Stemline Therapeutics, Exact Sciences, Veracyte, Aktis Oncology, and Ellipses Pharma; and research funding from BioNTech SE, Pfizer, AstraZeneca, Astellas Pharma, Genentech/Roche, and Daiichi Sankyo. C. Rossi, M. Levesque-Leroux, C. Vanden Eynde, P. Gagnon-Sanschagrin and A. Guérin are employees of Analysis Group ULC, a consulting company that has provided paid consulting services to BioNTech. S. Guenther and V. Guan are employed by BioNTech and own stocks
- This study was undertaken by Analysis Group ULC and sponsored by BioNTech SE

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