

# Physicians' Perception & Impact of Quality Improvement Intervention: AI-enabled HER2-low Metastatic Breast Cancer Patient Notification Program

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## Objectives

- To evaluate changes in treatment patterns for patients with unresectable or metastatic HER2-low BC subsequent to chemotherapy, before and after implementing quality improvement initiative comprised of an EMR system update for HER2 classification and an AI-enabled physician notification program to identify HER2-low mBC patients who were previously classified as HER2-negative
- To evaluate physician perception of familiarity with HER2-low treatment guideline recommendation, value of the notification program, and difficulty in classifying patients into HER2-positive, HER2-low, and HER2-negative categories
- To evaluate treatment outcomes of patients with HER2-low mBC receiving index line of treatment subsequent to chemotherapy

## Conclusions

- The intervention was associated with increased concordance with nationally recognized treatment guidelines for HER2-low mBC patients, suggesting that quality improvement initiatives can positively influence clinical practice
- While AI-enabled notification programs may help raise awareness of treatment guidelines and new indications, further evaluation is needed to benchmark real-world metrics, refine intervention design, and enhance patient outreach
- Given the limited pre-intervention period and the expected natural uptake of new treatments post-approval, no causal relationship between the intervention and treatment patterns can be firmly established

## Plain language summary

- Why did we perform this research?** Physicians faced barriers in identifying HER2-low breast cancer (BC), hindering optimal implementation of treatment guidelines
- How did we perform this research?** A retrospective pre- and post-intervention observation study was conducted to evaluate the impact of an AI-enabled physician notification program identifying patients with HER2-low BC
- What were the findings of this research?**
  - Within 1 year, significantly more patients were using T-DXd and fewer were using chemotherapy. An immediate impact on T-DXd uptake was seen in month 1 post-intervention
  - Trend observed for improvements in population-level health outcomes with increase in uptake of T-DXd
- What are the implications of this research?** Quality improvement initiatives can play an instrumental role in increasing awareness of new indications and assisting physicians with treatment decision making and ultimately improve population-level health outcomes

This study was sponsored by Daiichi Sankyo. In March 2019, AstraZeneca entered into a global development and commercialization collaboration agreement with Daiichi Sankyo for trastuzumab deruxtecan (T-DXd; DS-8201). Poster presented at San Antonio Breast Cancer Symposium 2025 by Antonio Meo. Corresponding author email address: antonio.meo@daiichisankyo.com

## Introduction

- Trastuzumab deruxtecan (T-DXd) was initially approved in August 2022 for treatment of patients with HER2-low (IHC 1+ or IHC 2+/ISH-) unresectable or mBC who have received a prior chemotherapy in the mBC setting<sup>1</sup>
- At the time of this approval, physicians in the US faced clinical and institutional barriers in identifying HER2-low patients for appropriate management
- Florida Cancer Specialists & Research Institute (FCS) implemented a quality initiative to identify patients with HER2-low mBC
  - FCS is a large, independent, privately held medical oncology/hematology community practice with >80 practices, >250 network providers, and >80,000 new patients annually
- A retrospective study was conducted to evaluate the impact of the HER2-low notification program

## Methods

- The FCS informatics department used AI technology to review IHC and FISH test results in EMR data to identify HER2-low mBC patients
- On 10/24/2022, physicians received email notifications identifying the MRNs of patients with HER2-low BC who were potentially eligible for treatment with the newly approved medication, T-DXd
- Two cohorts of adult patients with HER2-low unresectable or mBC were identified in the EMR data (**Figure 1**)
  - Never previously HER2-positive (IHC 3+ or IHC 2+/ISH+) on prior pathology testing or was historically HER2 IHC0 only
  - Never previously treated with anti-HER2 therapy prior to 10/24/2022, but had been treated with 1-2 prior lines of chemotherapy in the recurrent or mBC setting

- Received care from FCS oncologists for ≥3 months following index line of treatment
- Patients participating in another clinical trial or receiving investigational drug during the study period were excluded
- Treatment patterns were assessed descriptively
- rwPFS was assessed using Kaplan-Meier curves for both cohorts
- A sensitivity analysis was performed to assess immediate changes in treatment utilization post intervention by calculating monthly T-DXd use per eligible patients
- A survey was emailed to 94 FCS physicians to evaluate their familiarity with HER2-low treatment guidelines, perceived value of the quality initiative, and feedback for future programs

## Results

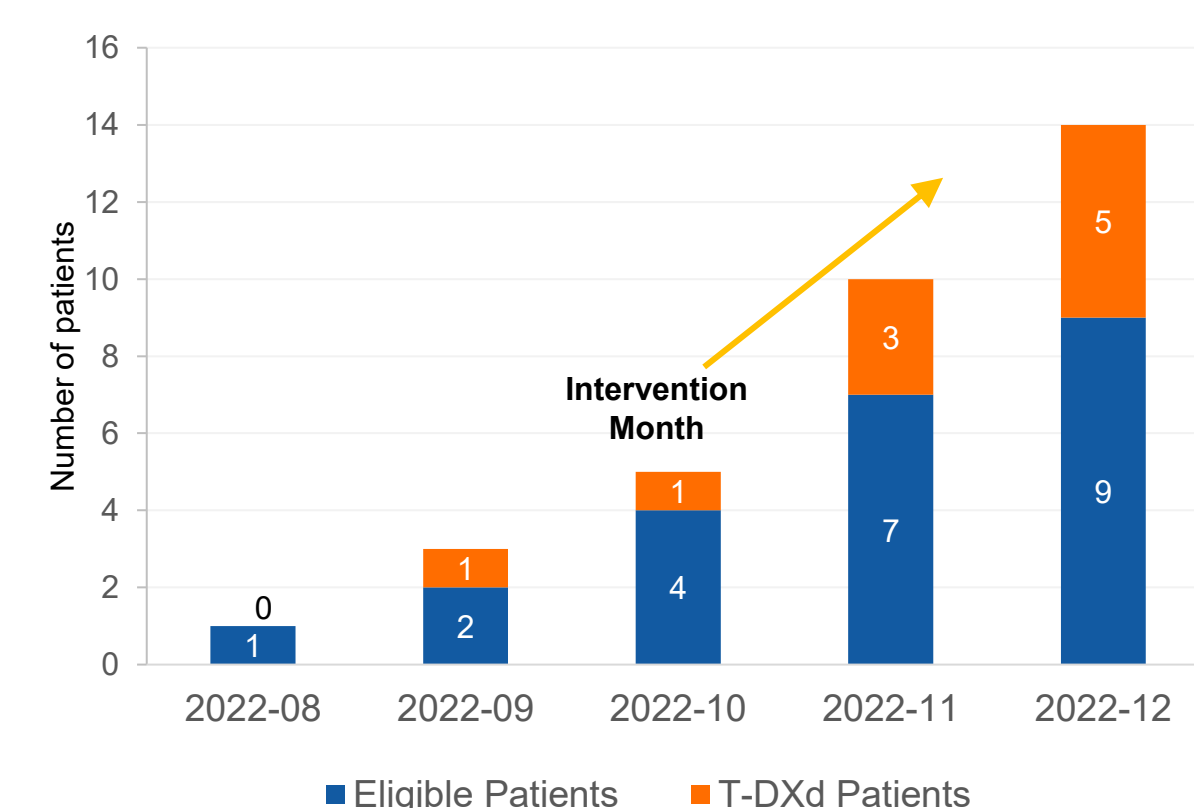
### Study population

- A sample of 387 HER2-low patients was identified using manual chart review
- Of these, Cohort 1 included 77 patients (median age: 63 years) and Cohort 2 included 69 patients (median age: 61 years)
- Treatment patterns and outcomes**
  - Within 1 year, a significant increase in T-DXd utilization (8% vs 44%; p<.05) and decrease in chemotherapy use were observed between cohorts; T-DXd rates were slightly higher among patients in the notification program (**Figure 2**)
  - There was a trend for improvement in population-level rwPFS from Cohort 1 to 2 (**Table 1; Figure 3**)
  - In the sensitivity analysis, 1 in 4 eligible patients utilized T-DXd in the intervention month (Oct 2022) whereas 3 in 7 utilized T-DXd in the following month (Nov 2022) (**Figure 4**)

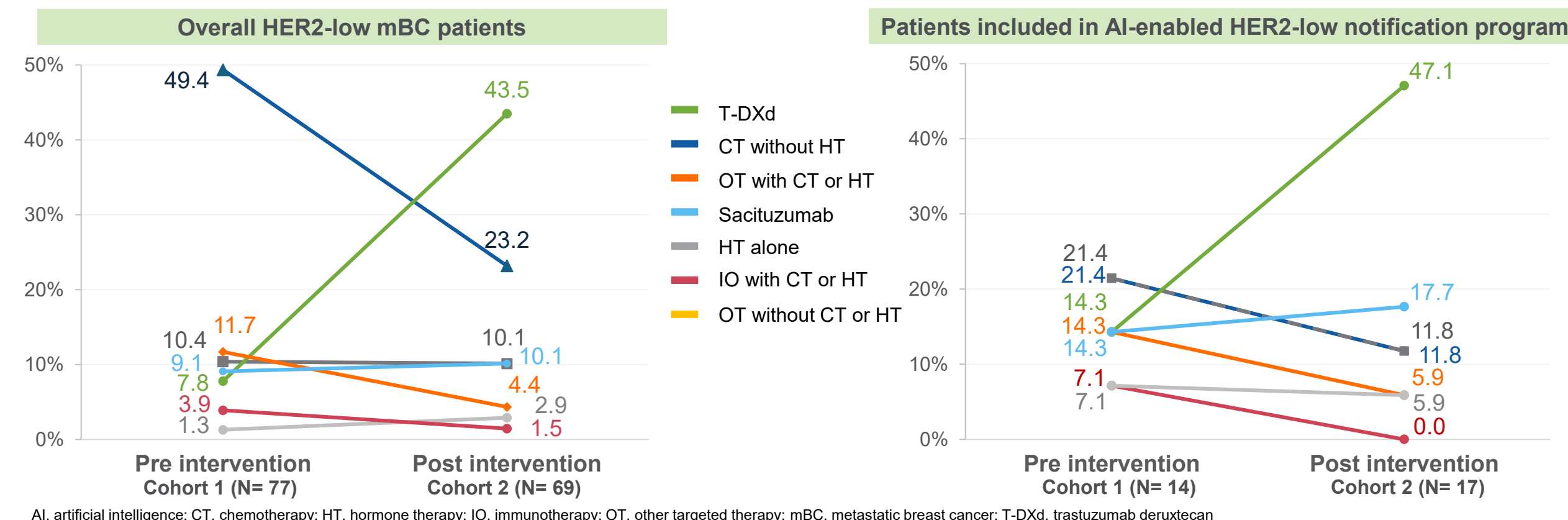
### Physician survey

- Of the 20 physicians surveyed, most (55%) were in practice >15 years and 95% had treated ≥1 patient with T-DXd. Physicians treated a mean of 69 BC patients and 15 mBC patients per month
- All surveyed physicians were very (35%) or somewhat familiar (65%) with current clinical guidelines for treating HER2-low mBC (**Figure 5**)
- The majority (65%) reported these types of notification programs were "very helpful" (**Figure 6**)
- However, physicians recommended embedding such alerts into patient charts (versus email notifications) and tailoring the alerts to specifically target treatment-eligible patients (**Figure 7**)

### Figure 4. Monthly T-DXd uptake



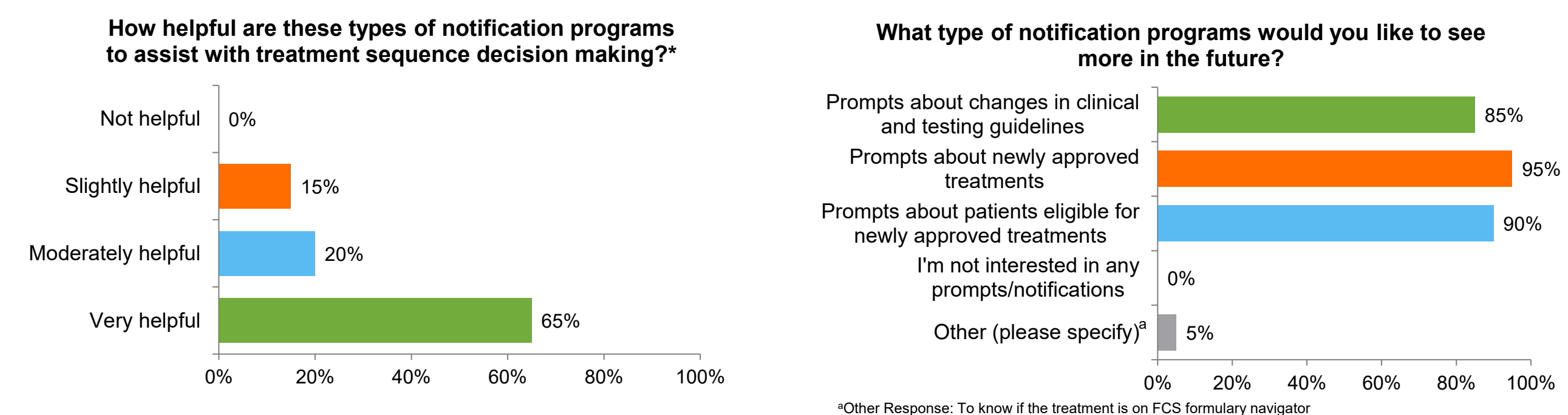
### Figure 2. Subsequent regimen post-chemotherapy



### Table 1. Clinical outcomes: rwPFS

	Overall HER2-low mBC patients	
	Cohort 1 (N=62)	Cohort 2 (N=51)
Events	33	29
rwPFS, months, median (95% CI)	7.7 (6.3–17.5)	12.4 (9.2–14.8)
Probability of remaining on treatment, % (95% CI)		
6 months	64.2 (51.7–79.7)	72.7 (59.7–88.4)
9 months	42.0 (28.0–63.1)	65.7 (51.7–83.6)
12 months	32.7 (19.1–55.9)	54.3 (39.3–75.1)
Follow-up, months, median	12.1	14.5

### Figure 6. Feedback on HER2-low notification program



## Abbreviations

AI, artificial intelligence; BC, breast cancer; EMR, electronic medical record; FCS, Florida Cancer Specialists & Research Institute; FISH, fluorescence in situ hybridization; IHC, immunohistochemistry; mBC, metastatic breast cancer; MRN, medical record number; rwPFS, real-world progression-free survival; T-DXd, trastuzumab deruxtecan; US, United States

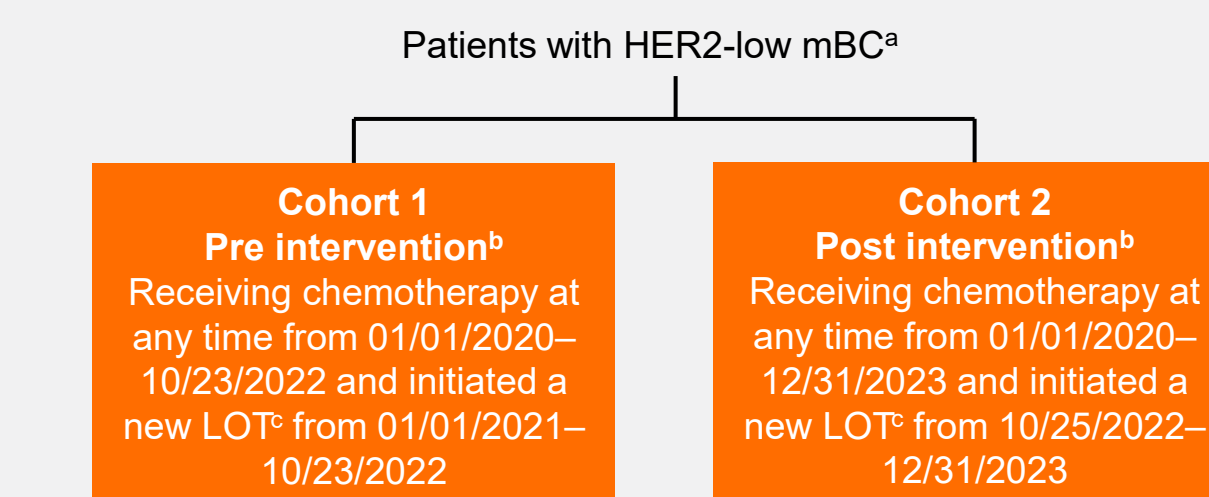
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## Disclosures

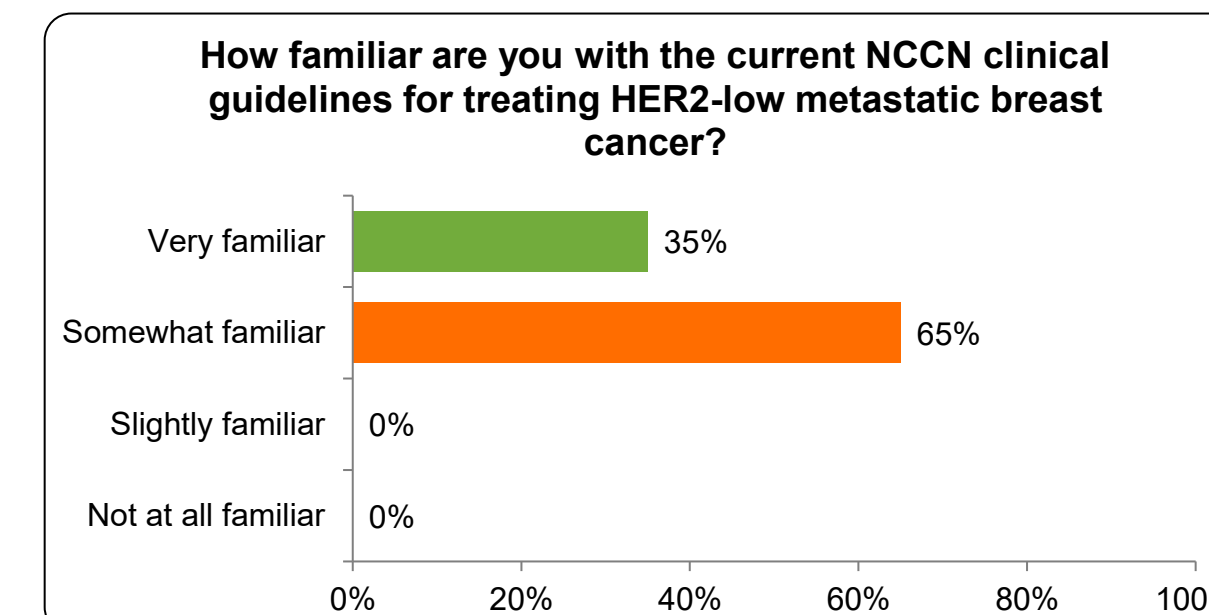
Sandhya Mehta and Antonio Meo are employees of Daiichi Sankyo Inc. Amanda Warner, Ashley Hernandez, Aya Alajrash, Parth Kothiya, Lucio Gordan, and Maen Hussein are employees of Florida Cancer Specialists & Research Institute.

### Figure 1. Study cohorts

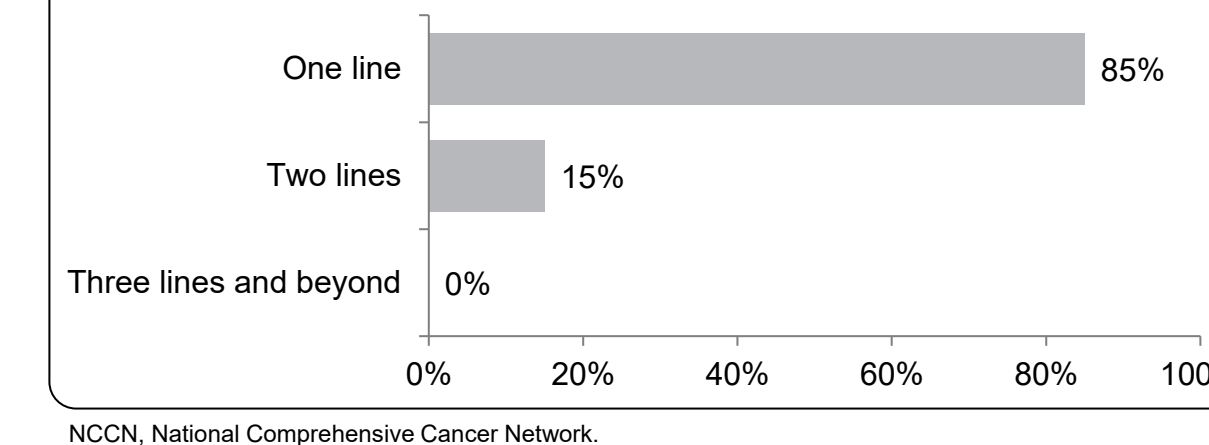


<sup>a</sup>Low HER2 expression (IHC 1+ or IHC 2+/ISH-). <sup>b</sup>AI-enabled notification sent on 10/24/2022. <sup>c</sup>Targeted agents and endocrine therapies on their own did not contribute to the count of prior lines of chemotherapy, although regimens with such agents in combination with chemotherapy would still count as 1 line of chemotherapy.

### Figure 5. Familiarity with NCCN guidelines

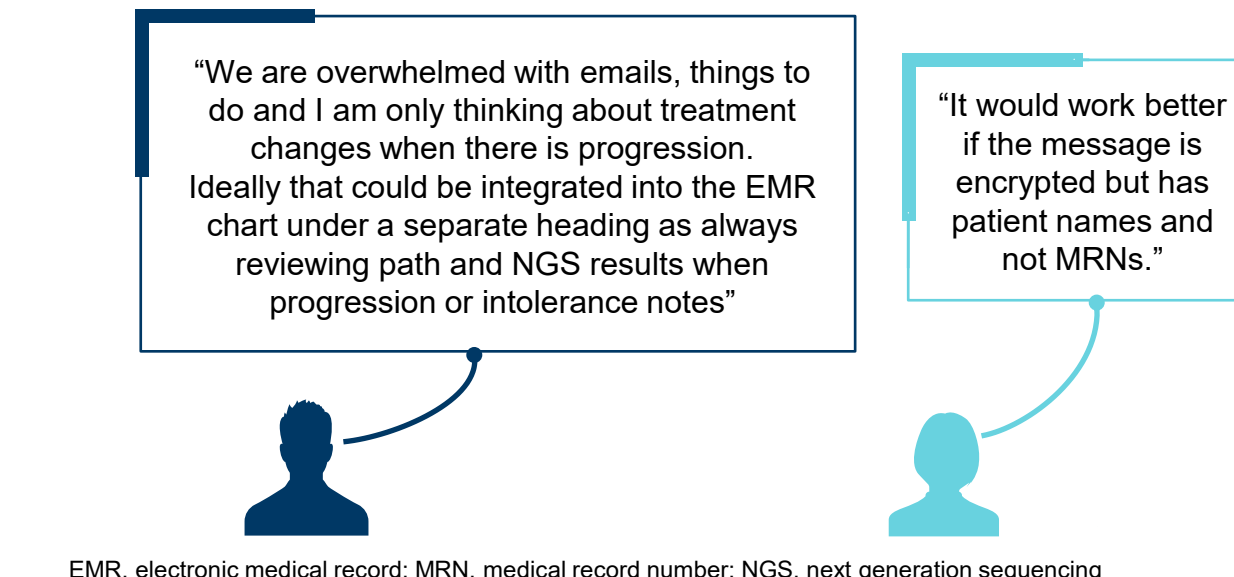


### The current NCCN guidelines recommend the use of trastuzumab deruxtecan (Fam-trastuzumab deruxtecan-nxki) for HER2-low metastatic breast cancer patients after how many lines of therapy?



### Figure 7. Recommended changes for future quality initiative programs

- Messages should include patient names and not encrypted MRNs
- Should be more directed to patients eligible for change due to progression
- Avoid ALERT FATIGUE; Integrate into EMR patient chart under a separate heading along with path results



## References

1. FDA approves fam-trastuzumab deruxtecan-nxki for HER2-low breast cancer. News Release. US Food and Drug Administration. August 5, 2022. Accessed October 2, 2025. <https://www.fda.gov/drugs/resources-information-approved-drugs/fda-approves-fam-trastuzumab-deruxtecan-nxki-her2-low-breast-cancer>