Provider preferences and practices in testing and reporting HER2 IHC in patients with breast cancer: a survey and interview study among US pathologists and oncologists

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Objective

- The objective of this qualitative analysis was to explore oncologists' and pathologists' perceptions and practices around HER2 testing using a survey and interviews to identify facilitators and barriers to guideline-supported HER2 testing, reporting, and treatment in the community setting.

Conclusions

- Our findings captured variation in community providers' preferences and practices in testing and reporting the HER2 status of patients with mBC to ensure appropriate treatment. While innovative testing tools are viewed favorably, cost and need for additional training are barriers to adoption.

- Addressing the identified barriers to guideline-supported HER2 testing and reporting, including improving documentation practices, standardizing protocols, and leveraging emerging tools such as digital pathology, could enhance the accuracy and consistency of HER2 testing

Plain language summary

Why did we perform this research?
This research was conducted to better understand how HER2 expression levels are tested and reported for patients with metastatic breast cancer who are treated at community hospitals. Identifying patients with low or ultralow HER2 expression is relevant for determining patients' eligibility for HER2-directed therapies. Community hospitals have been under-represented in previous studies.

How did we perform this research?
A web-based survey was developed and deployed to US community-based pathologists and oncologists who test or treat patients with breast cancer within the Guardian Research Network and to IQVIA's healthcare professionals panel to assess preferences and practices for HER2 testing. A self-selected group of respondents participated in virtual interviews.

What were the findings of this research?
While most pathologists (93%) report discrete IHC scoring on pathology reports, 16% reported difficulty assigning patients between IHC0 and IHC 1+ for patients who fell within that range of the spectrum, and 29% do not report percent staining. A range of associated barriers were reported including inadequate standards, increased interpretation time and workflow disruptions. Digital pathology was viewed favorably by most of the oncologists (92%) and by half (50%) of the pathologists. Improved accuracy, higher efficiency, and reduced subjectivity were stated as advantages of digital pathology, but high costs and lack of practice standards were seen as barriers to adoption.

What are the implications of this research?
Addressing the barriers to guideline-supported HER2 testing identified in this study will be crucial for optimizing treatment decisions and outcomes for patients with breast cancer who are treated in community settings.

Introduction

- Historically, Human Epidermal Growth Factor Receptor 2 (HER2) status was reported as either positive or negative. Recently, new therapies have been shown to be effective in treating tumors that exhibit low or very low expression of HER2. Determining exact HER2 status has therefore become essential to identifying appropriate treatment.[1]

- The updated reporting template in the 2023 ASCO-CAP guideline update emphasizes accurate HER2 testing and reporting for HER2-low metastatic breast cancer (mBC).[2]

- This study sought to better understand oncologists' and pathologists' perceptions and practices for HER2 testing in the community setting and characterize facilitators and barriers to accurate HER2 testing and reporting.

Methods

- A structured web-based survey was developed using Qualtrics software and deployed to pathologists and oncologists in US community-based practices within GRN and IQVIA's HCP Panel.

- Interview guides were tailored to pathologists or oncologists and annotated with providers' survey responses prior to the interview to facilitate discussion and minimize duplication in questioning.

- Survey responses were analyzed within Qualtrics software and Microsoft Office Excel to produce descriptive summary statistics. Interviews were analyzed using MAXQDA software, where a thematic analysis approach was utilized to highlight key themes and patterns. Coding was performed independently by 3 researchers, who also discussed and reconciled any discrepancies.

- Surveys and interviews were conducted from February to May 2024.

Figure 1. Geographic distribution of surveyed providers across the United States by provider type*

Pathologists (n=26)   Oncologists (n=25)
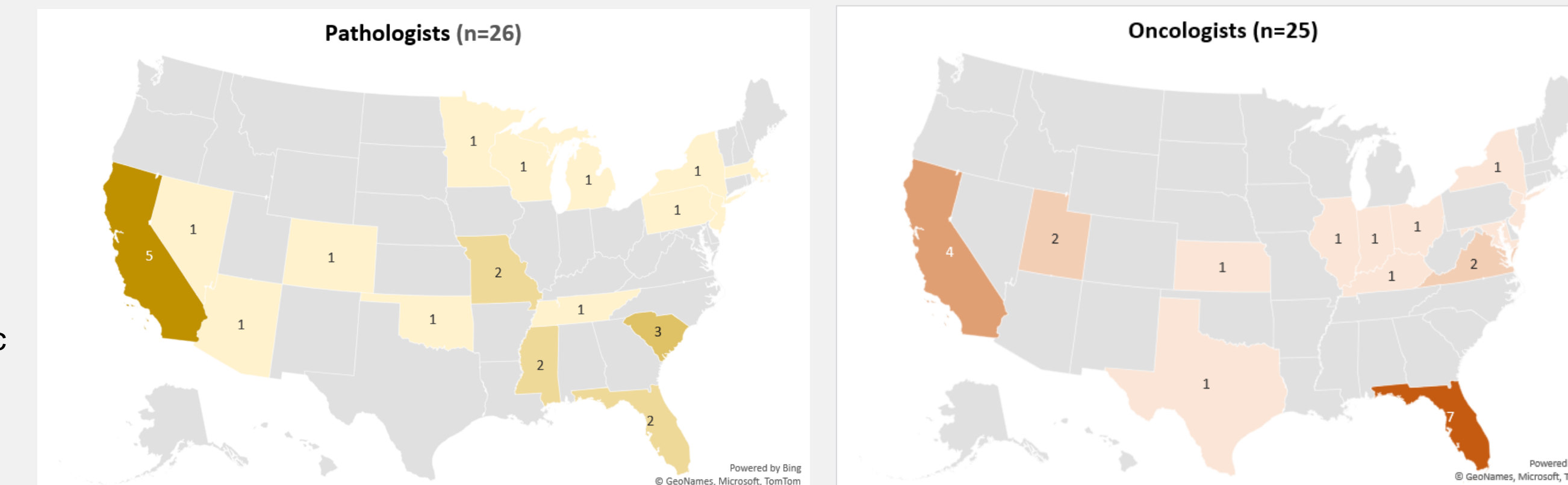
* Of the surveyed providers, 3 were multi-state, 2 were nationwide, and 6 were unknown location or declined to answer

Results

- There were 63 survey responses (from 100+ invitations) and 27 interviews among US community-based pathologists (31 surveys, 14 interviews) and oncologists (32 surveys, 13 interviews)

- Most pathologists (93%) said that they report discrete immunohistochemistry (IHC) scoring on pathology reports, but 16% then said that they don't distinguish IHC 0 from IHC 1+, and 29% don't report % staining.

- Barriers to discrete IHC reporting included background staining, poor interpretation standards, and staining variability.

- Barriers to reporting % staining included increased interpretation time and workflow disruptions.

- Pathologists and oncologists agreed that oncologists' requests drive testing changes

- Oncologists report lack of reimbursement of tests and treatment as barriers to decision-making for HER2-directed therapies.

- Emerging/digital technologies were used by 39% of pathologists.

- Digital pathology was viewed favorably by most of the oncologists (92%) and by half (50%) of the pathologists. Improved accuracy, higher efficiency, and reduced subjectivity were stated as advantages of digital pathology, but high costs and lack of practice standards were seen as barriers to adoption.

Table 1. Pathologist Analytic Practices	Surveys (N=31), n (%)
Location of lab testing	
Outsourced	4 (12.9)
In-house	27 (87.1)
Hybrid	0 (0.0)
Assay Used	
DAKO	8 (25.8)
Ventana	16 (51.6)
DAKO + Ventana	6 (19.4)
2023 ASCO-CAP Guidelines	
High familiarity	19 (61.3)
Limited / somewhat familiarity	11 (35.5)
HER2 IHC Scoring	
Distinguishes between IHC0 and IHC1+	25 (80.6)
Does not distinguish between IHC0 and IHC1+	5 (16.1)
HER2 Percent Staining	
Reports % staining	22 (71.0)
Does not report % staining	9 (29.0)

Table 2. Pathologists' Barriers and Facilitators to Reporting	Surveys (N=31), n (%)
Barriers to reporting discrete IHC scores	
Background/faint staining	3 (9.7)
Standardized interpretation	5 (16.1)
Heterogeneity/staining variability	7 (22.6)
Increase in interpretation time / workflow disruption	1 (3.2)
Reason(s) for retesting	
Random / quality control	5 (16.1)
Known or suspected discrepancy	11 (35.5)
When IHC = 0	4 (12.8)
When IHC is equivocal	16 (51.6)
Collaboration(s)	
Tumor board	27 (87.1)
With other pathologists	6 (19.4)
With oncologists	4 (12.8)
With pathologists & oncologists	13 (41.9)
Limited / none	7 (22.6)

Table 3. Oncologists' Analytic Practices	Surveys (N=32), n (%)
Receives discrete IHC scores	
Yes	31 (96.9)
No	1 (3.1)
Rerun requests	
For more granular details (distinguish IHC0/IHC1+ or request % staining)	8 (25.0)
For metastatic or recurrent cases	5 (15.6)
For discordant results	13 (40.6)
2023 ASCO-CAP Guidelines	
High familiarity / received ASCO training	17 (53.1)
Limited / no specialized training	14 (43.8)
Tumor board	
Yes	23 (71.9)
No	8 (25.0)

Pathologists' Perceptions on HER2 Testing – *Quotes from Interviews (N=14)*

Reporting Percent Staining is Time Intensive
"Percent staining is not quantified because it doesn't add any new information and is more tedious, requiring an increase in interpretation time as a barrier."

Subjective Interpretation May Be A Barrier
"…the difference between zero and one plus can be really difficult and subjective."
"…evaluating immunostain[ing]" because *"in one area that I'm evaluating it could look like more than 10% if I count one high power field…[but] in the different field it could look like less than 10%."*

Adoption of Digital Pathology
"…we have tried digital analysis. It saves time, and it enhances the confidence of the pathologists, but I stopped it because the operation needed third or fourth parties other than the pathologists"

Oncologists' Perceptions on HER2 Testing and Treatment - *Quotes from Interviews (N=13)*
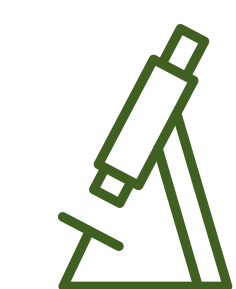
Influence of Percent Staining
"To be honest, I don't focus on those percentages. Usually it's enough for us [to make treatment decisions based on] one plus or two plus."
"….does not make a difference in clinical practice."

Reimbursement Challenges:
"it's hard to convince the insurance sometimes, and you don't want patients to have copays, which can be in thousands of dollars."

Approval of Targeted Therapies Driving Decision-Making
"The approval of HER2-targeted therapy, especially for HER2-low patients, has been a game-changer. It has expanded our treatment options and allowed us to offer more personalized care"

References
1. Iqbal N, Iqbal N. Human Epidermal Growth Factor Receptor 2 (HER2) in Cancers: Overexpression and Therapeutic Implications. Mol Biol Int. 2014;2014:852748. doi:10.1155/2014/852748
2. Wolff AC, Somerfield MR, Dowsett M, et al. Human Epidermal Growth Factor Receptor 2 Testing in Breast Cancer: ASCO–College of American Pathologists Guideline Update. J Clin Oncol. Published online August 1, 2023. doi:10.1200/JCO.22.02864

Abbreviations and Definitions
ASCO-CAP, American Society of Clinical Oncology-College of American Pathologists; HER2, human epidermal growth factor receptor 2; HER2-ultralow, IHC 0 with membrane staining (faint or incomplete membrane staining in >0 and ≤10% of tumor cells); IHC, immunohistochemistry