Patient understanding and impact on quality of life of serial minimal residual disease testing in patients with early-stage breast cancer

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San Antonio Breast Cancer Symposium
December 9-12, 2025

Introduction

- Detecting minimal residual disease (MRD) through circulating tumor DNA (ctDNA) is associated with higher probability for later distant recurrence. However, clinical utility data are currently lacking.
- To date, there is limited existing literature on patient understanding and emotional burden of serial MRD testing.
- This prospective study evaluates the impact of MRD surveillance on quality of life among patients with early-stage breast cancer (EBC) through investigating anxiety, depression, fear of recurrence, and patient comprehension.

Methods

- This IRB-approved prospective study (IRB: 202106128) enrolled patients with EBC undergoing ctDNA surveillance at Washington University in St. Louis/Siteman Cancer Center. Informed consent was obtained for all patients.
- All enrolled patients underwent blood collection for Signatera MRD testing (Natera Inc.) and plasma biobanking at up to 8 serial timepoints over 4 years. All blood draws were coordinated with standard of care blood draws.
- Qualitative and quantitative surveys were conducted to assess patient understanding of ctDNA utility, Fear of Recurrence (FCR4, Score 0-20), Hospital Anxiety and Depression Scale (HADS, Score 0-21), and level of comfort with ctDNA testing at baseline blood collection and 12 months after initial MRD testing.

Results

Table 1. Baseline characteristics

Age (Median, n=41)	
	50
Race (%)	
Black	8 (19.5)
White	31 (75.6)
Asian	2 (4.9)
Subtype (%)	
HR+/HER2-	24 (58.5)
TNBC	17 (41.5)
Stage (%)	
1	3 (7.3)
2	26 (63.4)
3	12 (29.3)
Treatment setting	
Neoadjuvant	12 (29.3)
Adjuvant	29 (70.7)
Surveys completed	
Baseline only	41
Longitudinal data	26
ctDNA Results (%)	
All negative	23 (56.1)
1+ positive	16 (39.0)
Serially positive	2 (4.9)

Figure 1. Baseline and 12-month results for patients with longitudinal data

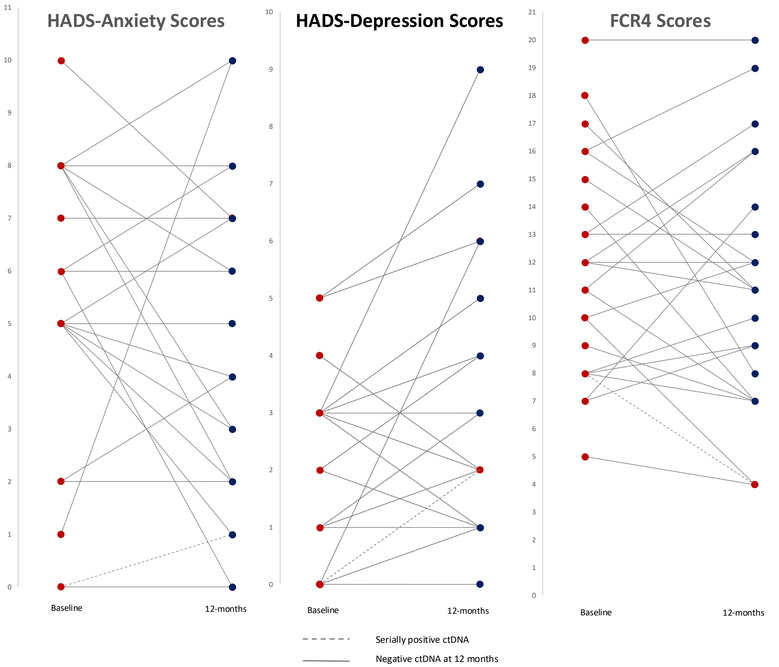


Figure 2. Average anxiety, depression, and FCR4 scores for all patients

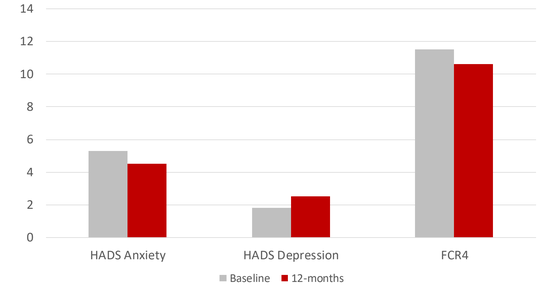
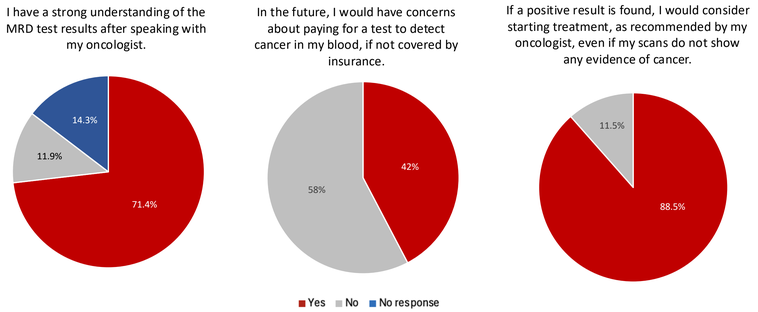


Figure 3. Patient level of comfort and utility of MRD testing



- Among patients with longitudinal testing (n=26), the mean FCR4 score did not significant change from baseline to 12-months for both patients with negative MRD testing (baseline: 11.9, 12 month: 11.6) and those with at least one positive MRD test (baseline: 11.0, 12 months: 9.0).
- The average HADS-anxiety score decreased from 5.15 at baseline (n=40) to 4.54 at 12 months, while the average HADS-depression score increased from 1.89 to 2.52. This was not statistically significant, including the subset of patients with at least one positive MRD test.
- On a scale of 0-5 of evaluating future attitudes toward use of ctDNA testing, the average rating was 4.1, indicating favorable opinion of undergoing MRD testing.

Conclusion:

- **Regardless of MRD results, levels of anxiety or depression and fear of recurrence remained relatively stable from baseline to 1 year indicating that MRD testing was not associated with a significant emotional burden in our study. Our findings demonstrated that the rationale for MRD testing was well-understood and viewed favorably by patients.**
- **Larger, confirmatory studies are needed to further evaluate the impact of MRD surveillance on quality of life for patients with EBC.**

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