I-SURV: Impact of Circulating Tumor DNA (ctDNA) Surveillance on Quality of Life in Early-stage Breast Cancer

Cheng Cheng[1], Shahin Seyeddi Sanchez[1], Elena Brierley-Green[1], Dhru Vaghashia[1], Maurice Berkowitz[1], Rena Callahan[1], Brian DiCarlo[1], Aashini Master[1], Juliet Penn[1], Mina S. Sedrak[1], Arielle Medford[2], Caterina Gianni[3], Brenno Pastò[3], Carolina Reduzzi[3], Shaili Tapiavala[4], Emily Podany[4], Andrew A. Davis[4], Massimo Cristofanilli[3], Aditya Bardia[1], Marla Lipsyc-Sharf[1]

[1]University of California Los Angeles, Los Angeles, CA, [2]Massachusetts General Hospital, Boston, MA , [3]Weill Cornell Medicine, New York, NY, [4]Washington University in St. Louis, St. Louis, MO.

BACKGROUND

- Detection of adjuvant ctDNA in early-stage breast cancer (eBC) is strongly associated with recurrence.
- Prior data[1,2] identified patterns of ctDNA testing and impact on clinical care in the real-world setting.
- In this population, it is unknown whether adjuvant ctDNA testing has impact on patient anxiety, depression, fear of recurrence, and overall quality of life.
- I-SURV, a prospective observational survey study, evaluates the effect of adjuvant ctDNA surveillance on quality-of-life measures in patients with EBC.

METHODS

- Patients with eBC undergoing adjuvant ctDNA testing in a single academic institution were identified and offered study participation. The study was approved by the UCLA IRB (#24-5588), and all participants provided informed consent with either wet-ink or electronic signature.
- All tests were ordered as part of clinical care based on patient/oncologist shared decision-making.
- Participants were analyzed into two cohorts defined as follows:
  Cohort 1: Enrollment before receipt of results for first-ever ctDNA test (pre/post-result survey)
  Cohort 2: Received ctDNA results from >=1 ctDNA test before enrollment (post-result survey only)
- Survey items included: HADS[3] (Hospital Anxiety and depression scale) [Score: 0-21], FCR-4[4] (Fear of Cancer Recurrence) [Score: 0-20], FACT-B[5] (quality of life measures) [Score: 0-148], and ctDNA utility[6]. All surveys were conducted in English.

RESULTS

Table 1. Baseline characteristics.

Total# Responders (N = 73)	Cohort 1: Pre/Post ctDNA test (N = 56)	Cohort 2: Post ctDNA test (N = 17)
Age at diagnosis (y; median [IQR])	57 [49-63]	55 [46-59]
Time from surgery to first survey (mo)	26 [6.1-46.4]	12 [5.4-28.6]
Stage, n (%)		
1	26 (46.4)	8 (47.1)
2	23 (41.1)	8 (47.1)
3	7 (12.5)	-
Subtype, n (%)		
HR+/HER2-	41 (73.2)	8 (47.1)
HER2+	11 (19.6)	4 (23.5)
TNBC	4 (7.1)	5 (29.4)
Histology, n (%)		
Ductal	44 (78.6)	15 (88.2)
Lobular	5 (8.9)	2 (11.8)
Mixed	7 (12.5)	-
Grade, n (%)		
1	12 (21.4)	1 (5.9)
2	28 (50.0)	8 (47.1)
3	15 (26.8)	8 (47.1)
Surveys Completed, n (%)		
Baseline survey only	35 (62.5)	10 (58.8)
Pre/Post-result survey	21 (37.5)	N/A
>1 post-result survey	7 (12.5)	7 (41.2)
ctDNA Results, n(%)		
All negative results	56 (98.2)	17 (100)
≥1 positive result	1 (1.8)	-

Total enrollment: 92; survey completion rate: 79%

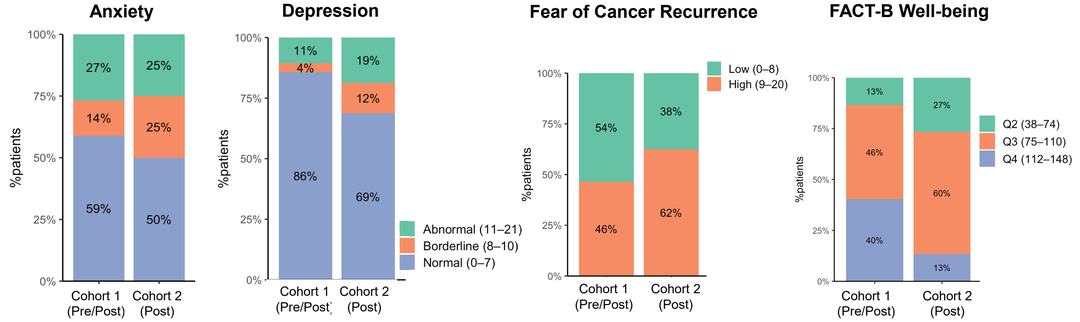


Figure 2. Baseline survey scores. The median survey scores for HADS-anxiety, HADS-depression, FACT-B, and FCR4 are, in cohort 1 (Pre/Post ctDNA test) (n=56): 6.5 [4,11], 3 [1,6], 105 [89,121], 8 [4,12] and in cohort 2 (Post-ctDNA test) (n=17): 7.5 [2,14.5], 5 [2,8.5], 91 [75.3,99], 12 [2,14.5] in cohort 2. Data: median [IQR].

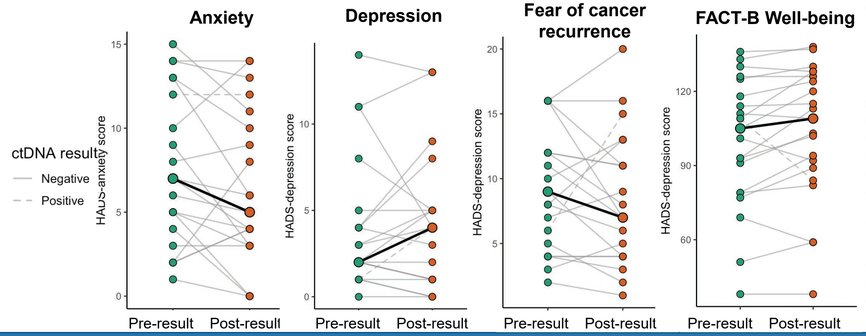


Figure 3. Similar trends in QoL measures upon receiving ctDNA results (n=21). Anxiety scores were similar to mildly improved (ΔHADS-A: -1[- 3 to 0]). Depression and fear of recurrence scores were similar (Δ HADS-D: 0 [-1 to +2]; ΔFCR-4: -1 [-3 to +2]). There was a trend towards improved well-being (Δ FACT-B: +5 [0 to +12]). The one ctDNA+ patient (dashed line) had a 9 pt FCR-4 increase and 25 pt FACT-B decrease. Δ Data: median [IQR].

References
1. Lipsyc-Sharf M et al. *J Clin Oncol.* 42, 549-549 (2024). **2.** Lipsyc-Sharf M et al. *J Clin Oncol.* 43, 560-560 (2025). **3.** Vodermaier A et al. *Support Care Cancer.* 19(12), 1899-1908 (2011). **4.** Humphris, GM et al. *Health Qual Life Outcomes.* 16, 30 (2018). **5.** Lemieux J et al. *J Natl Cancer Inst.* 103(3), 178-231 (2011). **6.** Kasi PM et al. *J Clin Oncol* 42, 54-54 (2024).

RESULTS, CONTINUED

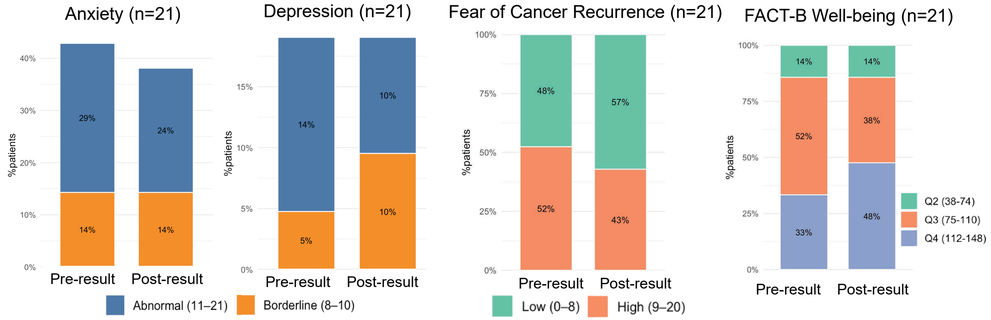


Figure 4. Changes in QoL measure groups from before to after receiving ctDNA testing result. Among those receiving ctDNA-negative results, 25% (5/20) moved from a high- to low-fear category (FCR-4) and 3/20 (15%) patients moved into the top quartile in well-being scores (FACT-B). For the one ctDNA+ patient, FCR-4 score increased from low to high-fear category.

Figure 5. Patient-assessed measures of ctDNA utility. Most responders valued the information obtained via ctDNA surveillance and would like to continue testing, including the one patient receiving a ctDNA+ result.



CONCLUSIONS

- Overall, measures of patient QoL were similar before and after receiving ctDNA testing results.
- Patients who received negative ctDNA results had trend towards improved anxiety and well-being scores. Only 1 patient had ctDNA+ result: this patient had increased fear of recurrence and decreased well-being.
- **Most responders valued the information obtained via ctDNA surveillance and would like to continue testing including the patient with ctDNA+ result.**
- **Limitations of the study include small sample size, self-selection bias in testing and participation, and a homogenous population (English literacy, single-institution).**
- **This is first of multiple planned analyses of the I-SURV study. Many additional patients will be needed to study differences in QoL measures by ctDNA testing result.** These data will guide the design of larger, multicenter studies powered to investigate the impact of ctDNA surveillance on QoL among patients with EBC.

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