PCR251

Is There Value in Knowing? Perspectives of Cancer Screening Outcomes among the US General Population

International Society for Pharmacoeconomics and Outcomes Research (ISPOR) 2025
May 13–16, 2025, Montreal, QC, Canada

Sarah Mulnick[1], Melissa Ross[1], Ashley Samuelson[1], Karen C Chung[2*], Anuraag Kansal[2]
[1]Thermo Fisher Scientific, Waltham, MA, USA; [2]GRAIL, Inc., Menlo Park, CA, USA
Affiliation at time of study

INTRODUCTION

- Cancer remains the second-leading cause of mortality in the US despite progress in proactive detection and treatment.[1,2] Early cancer detection can markedly enhance patient outcomes and decrease mortality rates.
- While the most common cancers in the US have accessible screening tests (e.g., mammograms, colonoscopy),[2] most cancers do not have specific screening available.
- Multi-cancer early detection (MCED) tests identify a common oncologic signal, such as cancer-associated methylation patterns in plasma cell-free DNA.[3] Several MCED tests are in development and one such test is available in the US by prescription.[4,5]
- Beyond direct clinical and economic advantages, MCED may confer additional benefits, including emotional, social, cognitive, and behavioral improvements.[6,7]
- Previous research[8] has determined that patients would prefer adding an MCED test to their current screenings, and found that a reduction in late stage cancer diagnoses may reduce mortality,[9] but there have been limited studies on the value as perceived by patients for the full spectrum of MCED test results.

OBJECTIVE

- To explore the US general population's perceptions of the hypothetical impacts and value of an MCED screening resulting in a) No Cancer Signal Detected (NCSD) or b) Cancer Signal Detected (CSD), leading to a stage IV cancer diagnosis, using two independent data sources:
  - An online survey on perceptions of a NCSD result.
  - A qualitative concept elicitation interview study on perceptions of a CSD result leading to a stage IV cancer diagnosis.

RESULTS

- Characteristics of the NCSD survey and CSD interview study participants are detailed in **Table 1.**

Table 1. Participant Characteristics

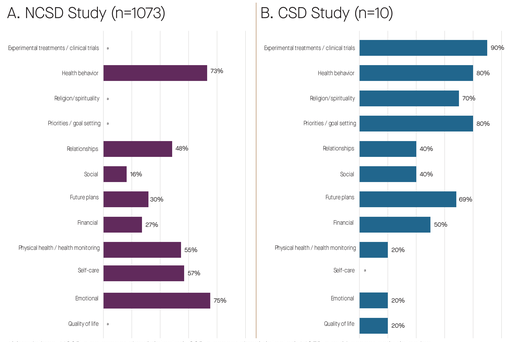
Characteristics, n (SD) unless otherwise specified	NCSD Study (N=1073)	CSD Study (N=10)
Mean age, years (SD)	58.19 (10.89)	55.90 (11.84)
Female at birth	566 (52.75%)	7 (70.00%)
Racial and ethnic background[a]		
White, non-Hispanic	715 (66.64%)	6 (60.00%)
Black or African American, non-Hispanic	129 (12.02%)	2 (20.00%)
Hispanic or Latino	130 (12.12%)	1 (10.00%)
Other races[b]	99 (9.23%)	1 (10.00%)
Highest level of education		
High school/high school equivalent (e.g., GED) or less	145 (13.51%)	1 (10.00%)
Some college/university or college/university (e.g., BA, BS)	697 (64.96%)	7 (70.00%)
Post-graduate degree (e.g., MS, MD, PhD, PharmD)	231 (21.53%)	2 (20.00%)
Annual household income		
Less than $59,999	423 (39.42%)	0 (0.00%)
$60,000 to $119,999	349 (32.53%)	7 (70.00%)
$120,000 or more	289 (26.93%)	3 (30.00%)
Prefer not to answer	12 (1.12%)	0 (0.00%)
Smoking status, currently or previously	537 (50.05%)	5 (50.00%)
Body mass index, mean (SD)	28.41 (6.63)	32.76 (10.89)
Family history of cancer diagnosis (1st degree relative)	637 (59.37%)	0 (0.00%)
Family history of cancer diagnosis before age 50 years	247 (23.02%)	0 (0.00%)
Cancer worry scale, mean (SD)	10.82 (3.86)	12.70 (4.52)
High worry (score ≥12)	382 (35.60%)	6 (60.00%)
Low worry (score <12)	691 (64.40%)	4 (40.00%)

Abbreviations: SD = standard deviation; Min = minimum; Max = maximum; Q1 = first quartile; Q3 = third quartile; GED = General Educational Development; BA = Bachelor of Arts; BS = Bachelor of Science; MD = Doctor of Medicine; PhD = Doctor of Philosophy; PharmD = Doctor of Pharmacy.

[a] Indicates question is not exclusive.

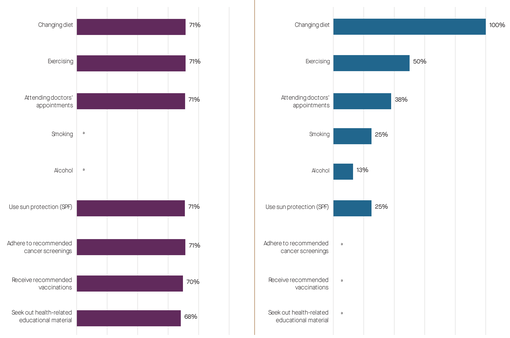
[b] "Other Races" includes NCSD participants who self-identified as: Asian (n=61, 5.68%), Native Hawaiian/other Pacific Islander (n=2, 0.19%), American Indian/Alaska Native (n=10, 0.93%), multiple races (n=17, 1.58%), or preferred not to answer (n=20, 1.86%); and 1 CSD participant who identified as Asian (n=1, 10.0%).

Figure 1. Anticipated Impacts of MCED Result Scenarios



Abbreviations: NCSD = no cancer signal detected; CSD = cancer signal detected; MCED = multi-cancer early detection.
[a]Indicates concept was not identified during NCSD/CSD MCED study.

Figure 2. Anticipated Health Behavior Changes After MCED Result Scenarios



Abbreviations: NCSD = no cancer signal detected; CSD = cancer signal detected; MCED = multi-cancer early detection.
[a]Indicates concept was not identified during NCSD/CSD MCED study.
[b]Of those who would increase or maintain health behavior impacts from NCSD MCED result.
[c]Of those who anticipated positive health behavior impacts from CSD MCED result.

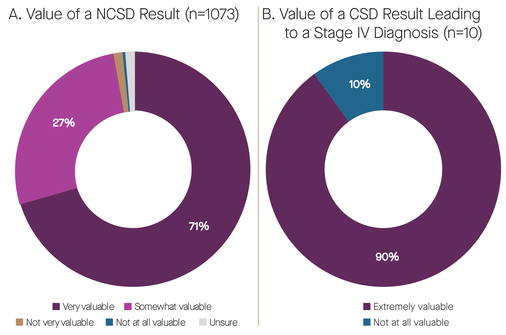
NCSD Survey Results

- More positive and fewer negative impacts were endorsed by NCSD survey respondents. Positive impacts were expected to: emotional/psychological (75%), self-care (57%), health monitoring (55%), and changing priorities/future planning (39%; **Figure 1a**). Most anticipated maintaining or improving health behaviors (healthy eating [71%], exercising [71%], and adhering to cancer screenings [71%]; **Figure 2a**).
- Most (79%) were moderately to extremely willing to retake an MCED test a year later.
- Nearly all NCSD survey participants (98%) viewed a NCSD MCED result as valuable (somewhat: 27%, very 71%; **Figure 3a**).

CSD Interview Results

- While all interview participants (10/10) anticipated negative impacts from CSD MCED result leading to a stage IV cancer diagnosis, some positive impacts were also expected (**Figure 1b**), including participating in experimental treatments/trials (9/10), changing behaviors (8/10; including diet [8/8], exercise [4/8], doctors' appointments [3/8]; **Figure 2b**), changing priorities/goals (8/10), and religion/spirituality (7/10).
- Nearly all CSD interview participants (90%) viewed a CSD MCED result leading to a stage IV diagnosis as extremely valuable (**Figure 3b**).

Figure 3. Value of MCED Result Scenarios



Abbreviations: NCSD = no cancer signal detected; CSD = cancer signal detected; MCED = multi-cancer early detection.
Values less than 2% are not reported on graph.Asked as: NCSD: "How valuable do you think the scenario that we have just discussed (taking a cancer screening test during a routine medical appointment leading to a stage IV cancer diagnosis) would be for you? Please use a scale of 1 to 5, where 1 = not at all valuable and 5 = extremely valuable." CSD: "Do you think a negative (or no cancer signal detected) test result such as the one described is valuable?" Options: Unsure; not at all valuable; not very valuable; somewhat valuable; very valuable.

CONCLUSIONS

- It is important to understand the potential impacts of the spectrum of possible MCED test results. This study demonstrated that from the perspective of the US general population, CSD MCED test results leading to an advanced cancer diagnosis and NCSD MCED test results are expected to offer value beyond clinical benefits.
- While negative impacts were anticipated with a CSD MCED test leading to a stage IV cancer diagnosis, interview participants still anticipated some positive impacts to various areas of their life.
- Not unexpectedly, NCSD MCED test results were associated with more anticipated positive impacts. In addition, NCSD MCED test results may enhance adherence to and potentially increase engagement in preventive healthcare behaviors.
- Future evaluations of the value of MCED tests should consider these additional benefits.

LIMITATIONS

- The results presented here are from two studies, with different populations and objectives.
- Additionally, participants were asked to consider a hypothetical scenario in which they received a NCSD or CSD MCED screening result leading to a stage IV cancer diagnosis. Consequently, responses may be influenced by hypothetical bias.
- Participants in the sample were fairly well educated and may not be representative of all US adults aged 40–80 years.
- The results presented reflect perceptions from the general population; however, there may be subgroups that value different aspects of MCED tests differently.

METHODS

Participants for NCSD Survey and CSD Interviews:

- **Key Inclusion Criteria:** Residents of the US aged 40–80 years and able to read and understand English. Soft quotas ensured a sample representative of the US by age group, gender, race, ethnicity, and region of residency.[10]
- **Key Exclusion Criteria:** Currently receiving treatment for cancer, diagnosed with cancer in the past 5 years; for the CSD interview study, undergoing a cancer diagnostic test.

Study Design:

- A cross-sectional online survey ascertained attitudes towards a NCSD MCED result among 1,073 participants.
- Qualitative concept elicitation interviews among 10 individuals discussed the value and impact of a CSD MCED result leading to a stage IV diagnosis.
- All participants reported sociodemographic and basic clinical information.
- Survey data were analyzed descriptively and content analysis was conducted on interview transcripts. Findings between the two studies were compared descriptively.

Study Materials and Participant-Facing Definitions:

- A hypothetical MCED test was described to all participants as follows:
  - Recommended by their doctor.
  - Can detect many types of cancer with one blood draw.
  - No preparation is required.
  - Two tubes of blood would be taken at their doctor's office or lab.
  - No impacts or restrictions on daily activities.
  - Risks include slight discomfort, bruising/redness, and temporary lightheadedness or dizziness.
  - Results would be shared within days; false negatives and false positives were defined and expected <1% of the time.
  - Participants were asked not to consider the cost of the test.

NCSD Scenario:

- For online survey participants, a NCSD result was defined as no cancer signal detected, or that the MCED test did not find evidence of cancer.

Stage IV Diagnosis Scenario:

- Interview participants were asked to imagine receiving a CSD result, leading to follow-up diagnostic testing (e.g., bloodwork, scans, biopsy), which would confirm the presence of cancer and that it had spread from its original location, leading to a stage IV diagnosis.

References

1. National Cancer Institute (NCI). What Is Cancer? . Updated October 11, 2021. Accessed November 13, 2023. https://www.cancer.gov/about-cancer/understanding/what-is-cancer.
2. American Cancer Society. Lifetime Risk of Developing or Dying From Cancer. Updated January 30, 2025. Accessed April 7, 2025. https://www.cancer.org/cancer/risk-prevention/understanding-cancer-risk/lifetime-probability-of-developing-or-dying-from-cancer.html.
3. Stover DG, et al. *J Clin Oncol.* 2018;36(6):543-553.
4. American Cancer Society. Multi-Cancer Early Detection Tests. Updated June 30, 2022. Accessed April 7, 2025. https://www.cancer.org/cancer/screening/multi-cancer-early-detection-tests.html.
5. Hoffman RM, et al. *Cancer.* 2025;131(7):e35823.
6. Coleman K, et al. *Redefining Primary Care for the 21st Century. White Paper. (Prepared by Abt Associates, in partnership with the MacColl Center for Health Care Innovation and Baillit Health Purchasing, Cambridge, MA under Contract No.290-2010-00004-I/ 290-32009-T) AHRQ Publication No. 16(17)-0022-EF.* 2016.
7. Wurcel V, et al. *Public Health Genomics.* 2019;22(1-2):8-15.
8. Gelhorn H, et al. *Patient.* 2023;16(1):43-56.
9. Clarke CA, et al. *Cancer Epidemiol Biomarkers Prev.* 2020;29(5):895-902.
10. US Census Bureau. National Population by Characteristics: 2020-2023. Accessed March 1, 2024. https://www.census.gov/data/tables/time-series/demo/popest/2020s-national-detail.html.

Disclosures & Acknowledgements

Study funded by GRAIL, Inc. **SM**, **MR**, and **AS** are employees of PPD™ Evidera™ Patient-Centered Research, Thermo Fisher Scientific, which was contracted to conduct this study. **KC** was an employee of GRAIL, Inc. when this study was conducted. **AK** is an employee of GRAIL, Inc.

Editorial and graphic design support were provided by Michael Grossi and Richard Leason of Thermo Fisher Scientific.