



InCrowd: Insights

Oncology Biomarker Testing Awareness, Drivers, and the Future



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Methodology

METHOD 5-minute survey
30-minute follow-up interviews

FIELDING PERIOD April 15-21, 2021 (quant)
May 11-12, 2021 (qual)

CROWDS n=100 U.S. Oncologists (quant)
n=2 U.S. Oncologists (qual)

SCREENING CRITERIA Those currently treating at least 50 patients and ordering at least 20 biomarker tests per month

OBJECTIVES

In examining biomarker testing, InCrowd sought to:

- Understand how oncologists learn about new biomarker tests and what other resources would be helpful for this awareness
- Explore what drives oncology biomarker testing decision-making, which tests to choose to run
- Examine what kinds of tests are being conducted and what the future of biomarker testing will be

InCrowd's biomarker research explored U.S. oncologist through both qualitative and quantitative methods. This research includes qualitative interviews with two respondents from the quantitative survey, who provided additional insight, context, and color regarding the findings.

TESTING & PRACTICE BREAKDOWN

Treatment Statistics	Average	Median
# Cancer patients treated per month	227	200
# Tests ordered per month	85	50
# Tests ordered per patient per month	0.5	0.3



Key Takeaways

1. Cancer biomarkers are used for three main areas: diagnostic, prognostic, and therapeutic
2. Initial biomarker tests are mostly being ordered upon diagnosis. Many respondents report ordering non-standard biomarker tests upon diagnosis or after 1L treatment failure.
3. On average, only a third of cancer biomarker tests currently ordered in the solid tumor space are liquid tests.
4. Eighty percent of respondents believe that the use of liquid testing will continue to increase over time.
5. Physicians are excited about the growth in use of liquid tests due to the convenience, decreased risk, and increased potential for more targeted and effective treatment decisions.
6. Out-of-pocket cost to patients is the biggest barrier to testing, but respondents report that more clear and compelling data would motivate them to order additional biomarker testing.
7. Respondents report that pharma companies doing the best job around communication of biomarker testing have a strong and transparent approach to marketing, education, and data publishing.

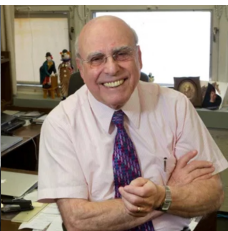


Major Milestones of Oncology Biomarkers



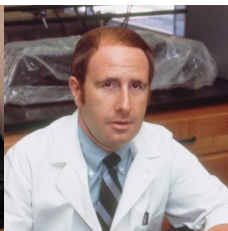
1848

1848 **Henry Bence Jones** discovers a protein detecting multiple—Bence Jones Protein



1965

1965 **Dr. Phil Gold** and **Dr. Samuel O. Freedman** find Carcinoembryonic antigen (CEA)



1970

1970 **Dr. Richard Albin** discovers Prostrate-Specific Antigen (PSA) for prostate cancer

1970 also sees the discovery of oncogenes revealing the molecular basis of cancer



1981

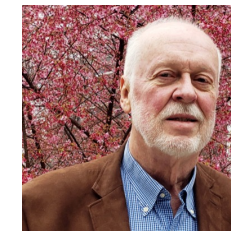
1981 **Robert C. Bast, Jr.** discovers CA125 (cancer antigen) to identify ovarian cancer

CA19-9 is identified in 1981 in the serum of patients with colon and pancreatic cancer



1989

1989 **Dennis Slamon, MD, PHD,** et al. find human epidermal growth receptor (HER2)



1991

1991 **Dr. Curtis Harris**, identifies p53 while exploring the consequences of un-repaired DNA

2018

More than half of the clinical trials conducted in the US in 2018 are using biomarker testing

*References: see slide 25



About Oncology Biomarkers

What are they?

- Molecules that show either typical or atypical processes taking place in the body
- Show signs of an underlying condition
- Produced by cancer tissue or by other cells in the body in response to cancer

Where are they found?

- Tumor tissue
- Blood
- Stool
- Urine
- Other tissues or bodily fluids

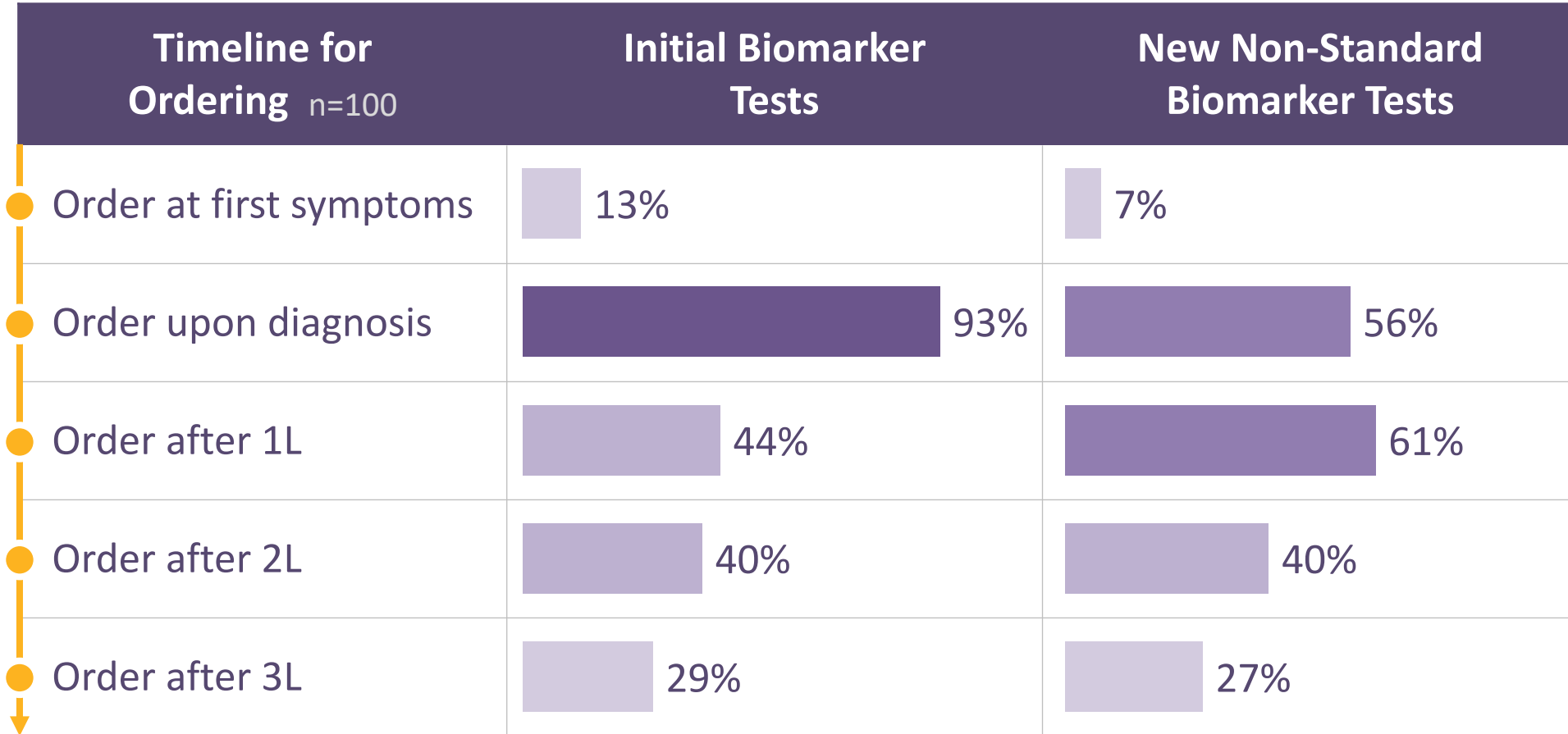
Types

- Proteins
- Gene mutations (changes)
- Gene rearrangements
- Extra copies of genes
- Missing genes
- Other molecules



Timeline for Ordering Biomarker Tests

Most physicians order initial biomarker tests upon diagnosis and order non-standard biomarker tests either also upon diagnosis or after 1L treatment failure.



Preparing Patients for Low Likelihood of Biomarkers

Most oncologists mention that they are upfront with their patients about the low incidence of biomarker presence and reassure them that there are plenty of other effective treatment options.

“

*“I’m upfront and 100% candid when communicating with patients. There are certain topics which have a tendency to create disappointment, and these are the areas of discussion I try to be redundant on to **ensure patient is aware of what they may face.**”*

— Office-Based Oncologist,
TX, age 47

“

*“We explain that there may be a small chance, but we should try to see if there's a targetable marker. We also **discuss our plan if there is a negative result.**”*

— Office-Based Oncologist,
AZ, age 36

“

*“I tell them I am looking for a weakness in the cancer, but most of the time we don't find it, and if we do we will take advantage of it, but we **still have plenty of alternatives if no markers found.**”*

— Office-Based Oncologist,
AZ, age 52

“

*“I let them know that the **chances are low that they will have a targetable mutation so they don't get their hopes up unreasonably high.** However, it is impossible (and not advisable) for them **NOT to get their hopes up.**”*

— Community Oncologist,
MD, age 38

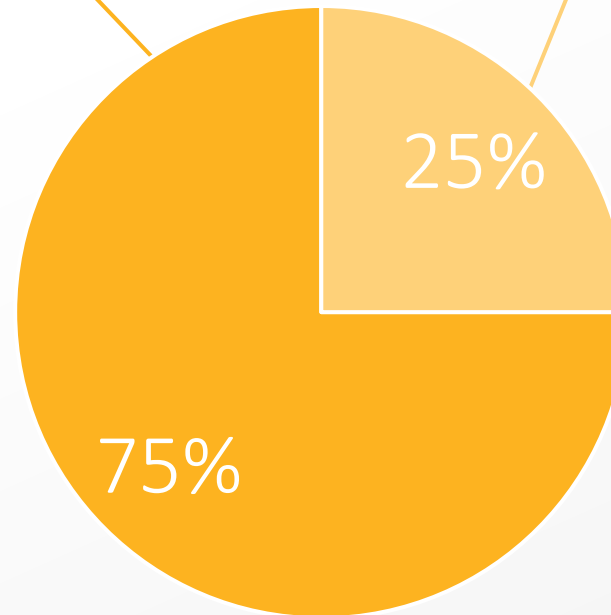


Testing Results Review

Three-quarters of oncologists use preferred off-site labs for biomarker test analysis.

Lab Used for Reviewing Biomarker Results n=100

I use a **preferred off-site lab** to review results



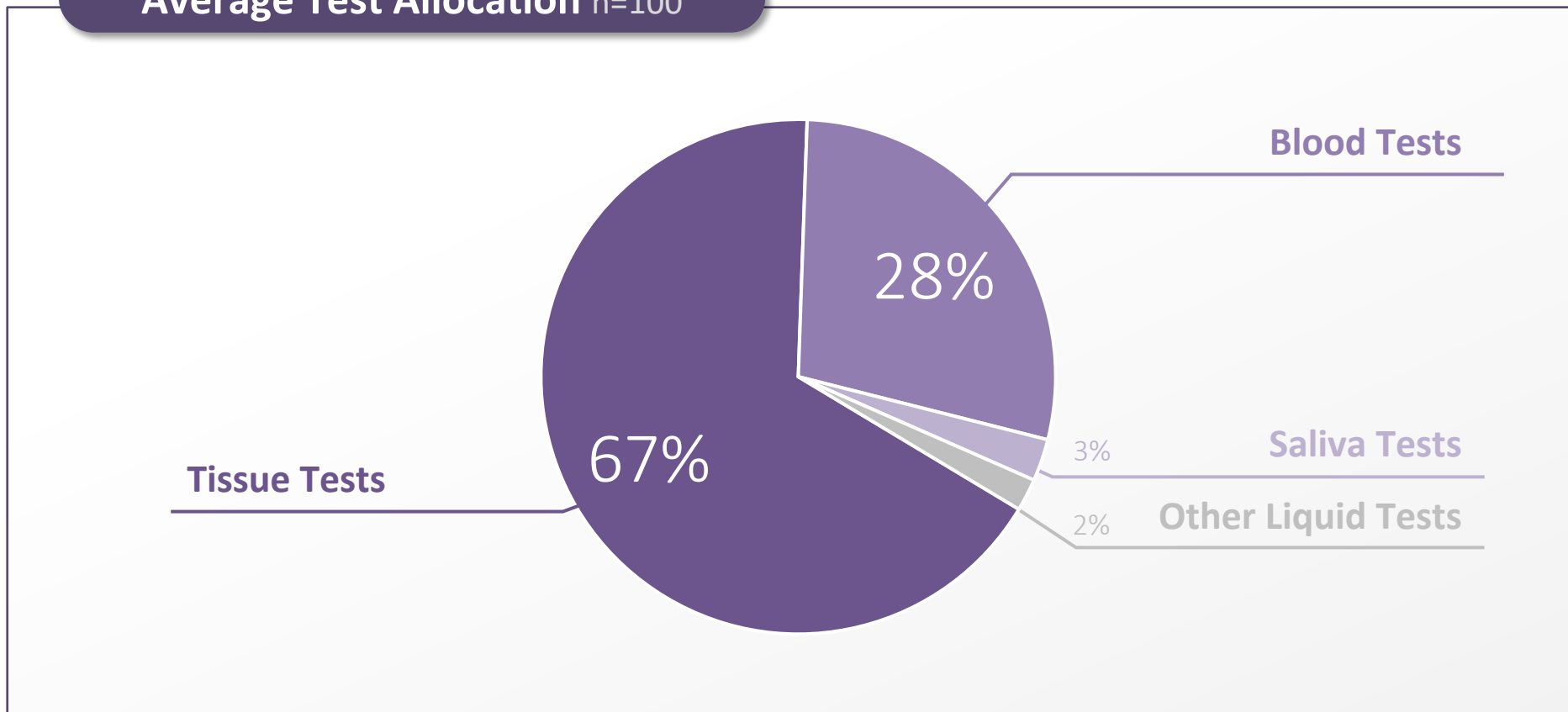
I use an **on-site lab at my hospital** to review results



Allocation of Biomarker Tests

On average, two-thirds of solid tumor biomarker tests ordered by oncologists are tissue tests, and a third are liquid tests.

Average Test Allocation n=100

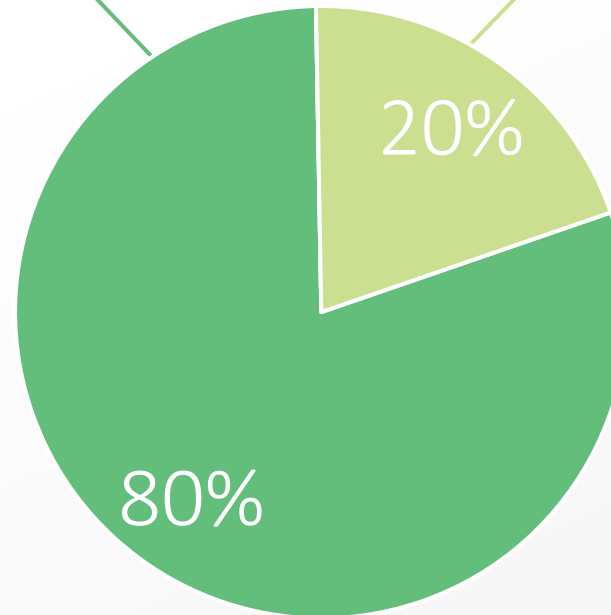


Predictions on Liquid Testing Use

Four-in-five oncologists believe that use of liquid biomarker testing in the solid tumor space will continue to increase over time.

Changes in Liquid Biomarker Use Over Time n=100

Liquid biomarker testing in the solid tumor space **will increase**



Liquid biomarker testing in the solid tumor space **will stay the same**



Expectations for Increased Use of Liquid Biomarker Testing

(Unaided)

Almost two-thirds of those who believe liquid testing will increase over time are excited about this shift due to increased convenience and decreased risk.

Enthusiasm for Increased Use of Liquid Testing

- 61%** Ease of obtaining sample/less invasive
- 19%** Better rates of detection
- 16%** Broader reach of testing and treatments
- 16%** Rapid turnaround time

Anticipated Benefits of Increased Use of Liquid Testing

- 26%** Avoids biopsies and associated complications
- 25%** Personalized and targeted decision making
- 21%** Easier, faster, and more convenient
- 16%** More treatment options

Suggestions for Pharma to Help Increase Liquid Testing

- 40%** Improving cost and access
- 34%** More R&D for biomarkers and targeted drugs
- 13%** More data to correlate with tissue testing
- 10%** Improving education for patients and providers



Expectations for Increased Use of Liquid Biomarker Testing

(Unaided)

Most oncologists mention that they are upfront with their patients about the low incidence of biomarker presence and reassure them that there are plenty of other effective treatment options.

Enthusiasm for Increased Use of Liquid Testing

“

“Easy way to look for actionable mutations.”

— Office-Based Oncologist,
IA, age 55

“

“The technology is so much better. Amazing to see what [this company] is doing. Also help with detecting cells/DNA and knowing who may or may not need chemo.”

— Community Oncologist,
IL, age 44

Anticipated Benefits of Increased Use of Liquid Testing

“

“Patients will get results faster and with less invasive procedures.”

— Office-Based Oncologist,
FL, age 56

“

“It will allow us to do more frequent testing without risk to the patient, and costs will likely be lower.”

— Academic Oncologist,
MN, age 38

Suggestions for Pharma to Help Increase Liquid Testing

“

“Promote more awareness of liquid biopsy and clinical relevance of these tests.”

— Academic Oncologist,
PA, age 55

“

“Make it less expensive for patients and ensure the test is highly accurate. Increase confidence around this testing. Develop more targeted therapies.”

— Community Oncologist,
MD, age 38

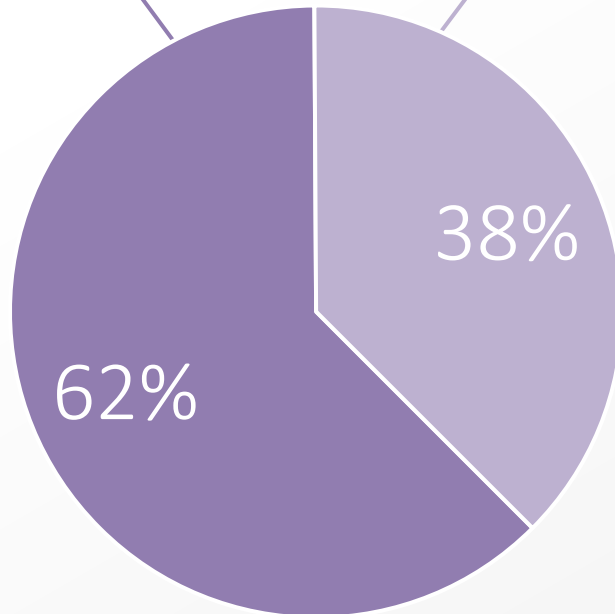


Allocation of Broad vs. Targeted Tests

Oncologists report that an average of 62% of the biomarker tests they order are broad reaching. Almost three quarters say insurance coverage is a barrier to targeted testing.

Average Test Allocation n=100

Broad Reaching



Targeted Tests

Barriers to Targeted Testing

71% Insurance coverage/
Payer reimbursement

58% Cost

38% Invasiveness

33% Timeliness



Mediums for Learning About New Biomarkers

Around three-quarters of oncologists learn about new biomarker tests from journal articles or conference presentations.

Medium	% Selecting <small>n=100</small>
Peer reviewed journal articles	82%
Conference presentations	72%
Colleague conversations	39%
Internet research	30%
Email summaries from professional societies	27%
Pharmaceutical sales reps	24%
Clinical decision support (CDS) tools	16%
Direct mail from pharmaceutical companies	13%
Social media	11%
Subscriptions	9%



Motivations for Ordering More Testing (Unaided)

Forty-two percent of respondents write in that clear and compelling evidence would motivate them to order additional biomarker testing.



Actions Taken by Competitors with Strong Communication (1/2) (Unaided)

Oncologists write that the pharma companies doing the best job around communication of biomarker testing have a strong and transparent approach to marketing, education, and publishing.

27%

Marketing and educating
on data and availability

25%

Publishing and
presenting data

23%

Being clear and direct
(e.g., regarding applicability,
logistics, and guidelines)

12%

Personal outreach
(e.g., emails, drug reps)



Actions Taken by Competitors with Strong Communication (2/2)

Oncologists share how pharma companies successful at communicating on biomarkers ensure both open lines of communication as well as clear, direct treatment guidelines and data presentations.

“

*“They **update us regularly regarding new options and costs**, which allows us to incorporate these tests rapidly into practice for appropriate patients.”*

— Office-Based Oncologist,
AZ, age 43

“

*“They actively communicate with us with a point of contact person and portal for providers, which **keep the channels of communication open.**”*

— Oncologist at Academic
Hospital, GA, age 33

“

*“They provide evidence-based data why the tests are required that we can use to **provide justification to the insurance companies.**”*

— Oncologist at Academic
Hospital, CA, age 55

“

*“They **provide clear guidelines for biomarker results**, which makes the effort, cost, and time spent to obtain them worth it from efficacy of treatment perspective.”*

— Office-Based Oncologist,
TX, age 47



About InCrowd

Real-Time Market Research

InCrowd pioneered real-time, mobile MicroSurveys that bring agile, primary market research to life science firms. InCrowd has access to a 2 million member “Crowd” of healthcare professionals worldwide, reached in 20 languages. Serving more than 500 brands, InCrowd expedites market insights and supports brand health.

Robust Product Suite

InCrowd’s MicroSurvey platform supports all of InCrowd’s iterative, micro research offerings. These include the platform’s real-time access to healthcare professionals, MicroTracker, for greater transparency and time-to-respond to clients’ busy markets, and InCrowd Interview, to facilitate more efficient gathering of qualitative insights.



80

Top Global Pharma
Companies



2 million

Healthcare
Providers



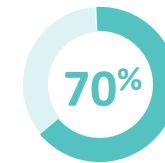
500+

Unique Brands



200+

Surveys per Month



70%

Of InCrowd
Members Complete
on a Mobile Device



13

Unique Question
Types





Appendix

Enthusiasm for Increased Use of Liquid Testing

Almost two-thirds of those that believe liquid testing will increase over time are excited about this shift due to increased convenience and decreased risk

Q6A

Since you expect your use of liquid biomarker testing in the solid tumor space to increase over time, what excites you about the future of liquid biomarker testing?

Responses Unaided Open-End	% Selecting n=80
Ease of obtaining sample / avoids invasive biopsy	61%
Better rates of detection / increased sensitivity / less heterogeneity	19%
Broader reach of testing and treatments	16%
Rapid turnaround time	16%
More patients able to receive more tolerable treatments	9%
Ability to monitor both during treatment and afterwards for relapse	8%
Can test when tissue is inadequate or inaccessible	6%
Increases chances for survival	3%



Anticipated Benefits of Increased Use of Liquid Testing

A quarter write that they believe increased liquid testing will help patients by allowing them to avoid biopsies and make informed personalized treatment decisions

Q6B

Since you expect your use of liquid biomarker testing in the solid tumor space to increase over time, how will the increased use of liquid biomarker testing help your patients?

Responses Unaided Open-End	% Selecting n=80
Avoids biopsies, repeat biopsies, and associated complications	26%
Personalized and targeted decision making	25%
Easier, faster, and more convenient	21%
More treatment options	16%
Better assessment of condition and prognosis	11%
Closer tracking over time with frequent testing	10%
Early diagnosis and treatment	6%
Clinical trial patient identification & involvement	4%
Continued efforts in the discovery of new biomarkers	4%
Decreased overall costs	3%



Suggestions for Pharma to Help Increase Liquid Testing

Over a third cite that they believe pharma can help to increase the amount of liquid testing done by improving cost and access and investing more into R&D for biomarker testing

Q6C

Since you expect your use of liquid biomarker testing in the solid tumor space to increase over time, what would you like to see the pharmaceutical industry do to help increase liquid testing?

Responses Unaided Open-End	% Selecting n=80
Improving cost and access (e.g., implementing support programs, ensuring insurance coverage)	40%
More R&D for biomarkers and targeted drugs	34%
Standardize results (e.g., more data to correlate with tissue testing, head to head comparisons)	13%
Improving education for patients and providers	10%
Improve turnaround time	8%
Combining tests into one panel	4%
More companies providing companion diagnostics	3%



Barriers to Targeted Testing

Out-of-pocket cost to patients is the biggest barrier to testing, with the majority reporting that both insurance coverage (71%) and costs (58%) are a barrier to them performing targeted testing

Q8

What are the barriers to performing targeted testing? Please select all that apply.

Barriers	% Selecting <small>n=100</small>
Insurance coverage/ Payer reimbursement	71%
Cost	58%
Invasiveness	38%
Timeliness	33%
Availability	28%
Patients don't want to be tested again	18%
Patient willingness	14%



Motivations for Ordering More Testing

42% write in that clear and compelling evidence would motivate them to order additional biomarker testing

Q10

What would motivate you to order additional biomarker testing outside of the standard?

Responses Unaided Open-End	% Selecting n=100
Evidence / data	42%
Availability of therepeutic options	20%
Easy access, coverage, or reduced cost	15%
Availability of clinical trials	10%
Family history or abnormal presentation	5%
Colleage or expert recommendation	5%
Scarcity of treatment options	5%
Inclusion in guidelines	3%
Lack of invasivity	2%
Fast turnaround time	2%



Actions Taken by Competitors with Strong Communication (1/2)

Oncologists write that the pharma companies doing the best job around communication of biomarker testing have a strong and transparent approach to marketing, education, and publishing

Q11

When you think about the pharmaceutical company that does the best job at communicating details about the biomarker tests required to prescribe their product, what are they doing?

Responses Unaided Open-End	% Selecting n=100
Marketing and educating on data and availability	27%
Publishing and presenting data	25%
Being clear and direct (e.g., regarding applicability, logistics, and guidelines)	23%
Personal outreach (e.g., emails, drug reps)	12%
Presence at conferences, advisory boards, and symposia	8%
Using companion diagnostics	7%
Helping with access and prior authorization	7%



References

Slide 4.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2872496/#:~:text=CA125%20is%20one%20of%20the,Papsidero%20%5B2%2C%203%5D>

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http://www.personalizedmedicinecoalition.org/Userfiles/PMC-Corporate/file/The_Evolution_of_Biomarker_Use_in_Clinical_Trials_for_Cancer_Treatments.pdf

<https://tcr.amegroups.com/article/view/4536/html>

Slide 5.

<https://www.mycancer.com/resources/what-are-biomarkers/>





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