## National Survey of Precision Medicine in Cancer Treatment



This survey is about genomic testing for cancer treatment, also known as precision or personalized medicine. You are one of 3,000 oncologists in the United States randomly sampled to take part in this important research. The survey should take about 20 minutes to complete.

The survey is sponsored by the National Cancer Institute, the National Human Genome Research Institute and the American Cancer Society to help better understand current and potential use of genomic tests, including single gene tests and multi-marker tumor panels. The findings from the survey will also be used to identify future research needs and to help inform the development of educational materials for providers and patients.

NCI is being assisted by RTI International in fielding this survey. The survey is voluntary, but it is important to the success of the study that everyone chosen takes part.

The information you provide will be kept private and your name or any other information that could identify you will not be associated directly with

If you would like further information about the survey please contact us at 1-866-590-7469 or email: PrecisionMedicine@rti.org.

If you would like further information about how RTI ensures that this NCI survey is carried out ethically and protects respondent privacy, you can contact our ethics review board directly at opre@rti.org.

We thank you in advance for your time and your valuable contribution to this research.

OMB No: 0925-XXXX Expires: XX/XX/20XX

Collection of this information is authorized by The Public Health Service Act, Section 411 (42 USC 285a). Rights of study participants are protected by The Privacy Act of 1974. Participation is voluntary, and there are no penalties for not participating or withdrawing from the study at any time. Refusal to participate will not affect your benefits in any way. The information collected in this study will be kept private to the extent provided by law. Names and other identifiers will not appear in any report of the study. Information provided will be combined for all study participants and reported as summaries. You are being contacted by email to complete this instrument so that we can understand how genomic testing results are used to inform cancer treatment.

Public reporting burden for this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to: NIH, Project Clearance Branch, 6705 Rockledge Drive, MSC 7974, Bethesda, MD 20892-7974, ATTN: PRA (0925-XXXX). Do not return the completed form to this address.

Please navigate the survey by using the "Back" and "Next" buttons below. Using your browser's back button, may disrupt the survey.

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This survey is about genomic testing for cancer treatment, also known as precision or personalized medicine. It is intended for oncologists who have treated or evaluated patients with cancer, including hematologic malignancies and solid tumors. Have you treated or evaluated any patients with any type of cancer in the past 12 months?

On I have treated or evaluated cancer patients in the past 12 months

O I have **NOT** treated or evaluated cancer patients in the past 12 months

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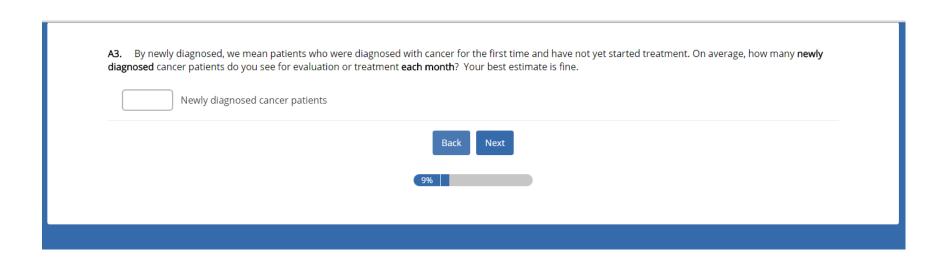
A1. On aver	ge, how many unique patients do you see for evalua	ition or treatment each month? Your best e	estimate is fine.	
Т	otal unique patients per month			
Of those, how	many are cancer patients? Your best estimate is fine			
	nique cancer patients per month			
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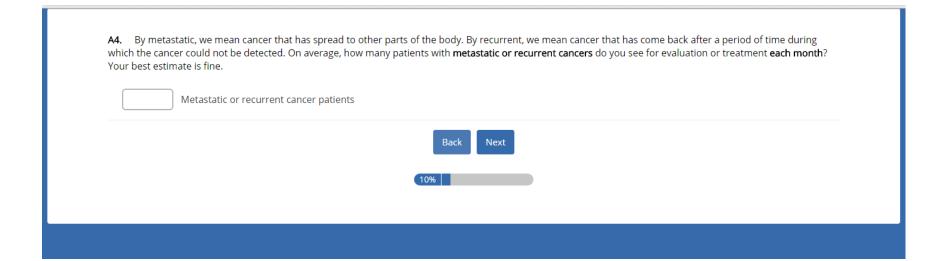
**A2.** On average, how many unique patients with the following cancers do you see for evaluation or treatment each month?

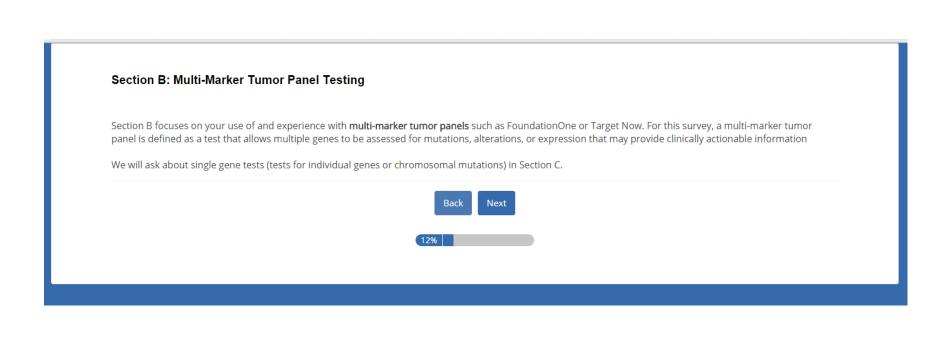
	Mana	1-10 patients per	11-25 patients	26-50 patients	51+ patients per
	None	month	per month	per month	month
Breast cancer	0	0	0	0	0
Colorectal cancer		0	0	0	
Glioma					
Gynecological cancer	0	0	0	0	
Hematological cancer	0	0	0	0	0
Kidney cancer		0	0		
Lung cancer	0	0	0	0	
Melanoma	0	0	0	0	
Stomach (Gastric) cancer	0	0	0	0	0
Other Solid Tumor		0	0	0	

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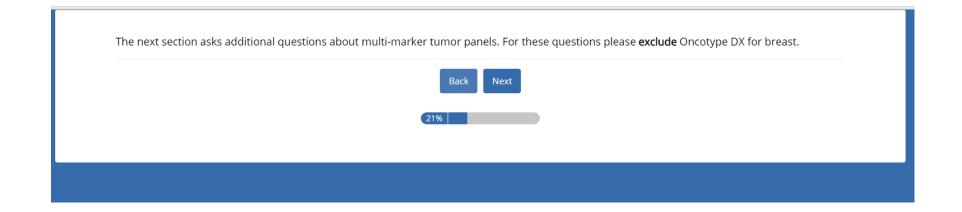


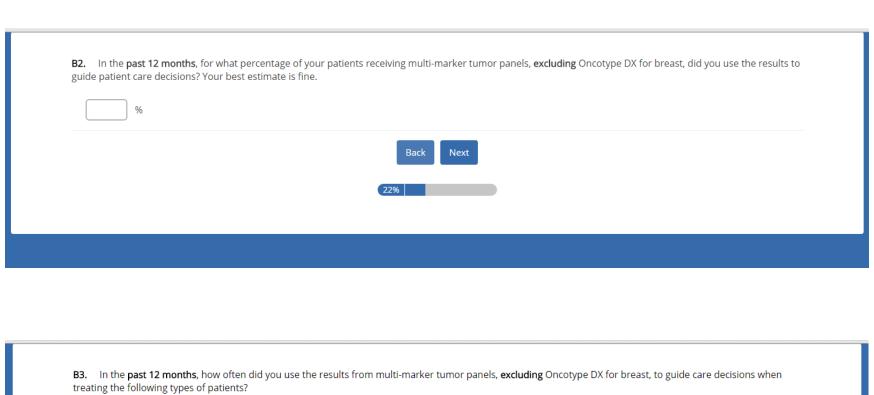
**B1a.** How many of your cancer patients received the following multi-marker tumor panels within the **past 12 months**? Please include tests that were ordered by other physicians and tests performed by pathology.

	Not familiar with this test	Familiar with this test, but not used in the past 12 months	1-10 patients in the past 12 months	11-25 patients in the past 12 months	26+ patients in the past 12 months
BioSpeciFix (Precision Therapeutics)					
DecisionDX (Castle DX)		0	0	0	
FoundationOne (Foundation Medicine)		0		0	
FoundationOne Heme (Foundation Medicine)		0	0	0	
Mammaprint (Agendia)	0	0	0	0	0
OncoPlex (Diagnostics)		0	0	0	
Oncotype DX Breast (Genomic Health)	0	0	0	0	0
Oncotype DX Colon (Genomic Health)	0	0	0	0	

B1b. How many of your cancer patients received the following multi-marker tumor panels within the past 12 months? Please include tests that were ordered by other physicians and tests performed by pathology. Familiar with this test, but not used in the 1-10 patients 11-25 patients 26+ patients in Not familiar past 12 in the past 12 in the past 12 the past 12 months with this test months months months Prosigna (NanoString Technologies) Response DX (Response Genetics) Solid Tumor Mutation Panel (ARUP) Suraseq 7500 (Asuragen) Target Now (Caris Molecular Intelligence) In-house tumor panel B1c. Have your cancer patients received any other multi-marker tumor panels in the past 12 months? Yes No







	Did not see these patients	Never	Rarely	Sometimes	Often	Always or Almost Always
Patients with an initial diagnosis of cancer						
Patients with advanced refractory disease		0		0		
Patients with rare cancers						
Patients with cancers of unknown origins				0		
Patients for whom there is an FDA-approved therapy associated with a companion diagnostic	0	0	0	0	0	0
Patients on specific clinical trials that have a companion molecular test	0	0	0	0	0	0

	Yes	No
To guide the use of FDA-approved drugs	0	0
To help decide whether to use FDA-approved drugs for an off-label use	0	•
To provide diagnostic information	0	0
To provide prognostic information		•
To determine patient eligibility for clinical trials	0	0
Other (Please, specify):		•
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**B5a.** In the **past 12 months**, when you used the results of multi-marker tumor panels for your patients, **excluding** Oncotype DX for breast, how often did you experience the following?

	Never	Rarely	Sometimes	Often	Always or Almost Always
The test results assisted in making a diagnosis					
The test results helped to inform my treatment recommendations	0	0	•	0	0
The test results provided important information on prognosis	0	0	0	0	0
The test results were helpful to patients or their families in understanding their disease and making decisions	0	0	0	0	0

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**B5b.** In the **past 12 months**, when you used the results of multi-marker tumor panels for your patients, **excluding** Oncotype DX for breast, how often did you experience the following?

	Never	Rarely	Sometimes	Often	Always or Almost Always
The test results were conclusive, but <b>not</b> actionable	0	0	0	0	0
The test results were inconclusive/indeterminate	0	0	0	0	
The test results were difficult to interpret					
The recommended drugs based on test results were not covered by insurance	0	0	0	0	0
The test results confirmed eligibility for a clinical trial	0	0	0	0	0

**B6.** In the past 12 months, when you ordered or requested multi-marker tumor panel testing, excluding Oncotype DX for breast, for your patients in the past 12 months, how often did you experience the following?

	Never	Rarely	Sometimes	Often	Always or Almost Always	Don't Know
At least some costs were covered by insurance	0	0	0	0	0	0
Inadequate reimbursement was paid to physician or hospital	0	0	0	0	0	0
Uncertainty as to whether the test was indicated for patient's clinical situation				0		
Long wait to receive tests results that caused a delay in making patient care decisions	0	0	0	0	0	0
Patient reluctance due to concern that hereditary genetic abnormalities might be found						

**B7.** In the **past 12 months**, how important was each of the following factors in your decision to use multi-marker tumor panels to make **treatment decisions** for your cancer patients?

	Not at all important	A little important	Somewhat important	Very Important
Availability of guidelines (e.g., ASCO, NCCN) for the test	0	0	0	0
Your familiarity with guidelines (e.g., ASCO, NCCN) for the test		$\odot$	$\odot$	0
Your formal education or training (e.g., residency/fellowship, CME, lecture or symposia) on the test	0	0	0	0
Past experience with the test				
FDA approval of the test for the patient population being tested	0	0	0	0
Information about the test from test suppliers or company representatives	•	0	0	0

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**B8.** In the past 12 months, how important was each of the following factors in your decision to use multi-marker tumor panels to make treatment decisions for your cancer patients?

Not Applicable	Not at all important	A little important	Somewhat important	Very Important
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	•	0	0
	Applicable	Applicable important  O O O O O O O O O O O O O O O O O O O	Applicable important important  O O O O O O O O O O O O O O O O O O O	Applicable important important important  O O O O O O O O O O O O O O O O O O O



**B9.** In the **past 12 months**, how important was each of the following factors in your decision to use multi-marker tumor panels to make treatment decisions for your cancer patients?

	Not at all important	A little important	Somewhat important	Very Important
Patient or family preferences	0	0	0	0
Test is covered by patient's insurance	0	0	0	0
Treatment is covered by patient's insurance	0	0	0	0
Patient out-of-pocket expenses for testing	0	0	0	0
Patient out of pocket expenses for treatment	0	0	0	0

		I am not familiar with these guidelines	Never	Rarely	Sometimes	Often	Always or Almost always
	American Society of Clinical Oncology (ASCO)	0	0	0	0	0	0
	Blue Cross Blue Shield (BCBS) or the BCBS Technical Evaluation Center	0	0	0	0	0	0
	Evaluation of Genomic Applications in Practice and Prevention (EGAPP)	0	0	0	0	0	0
	National Comprehensive Cancer Network (NCCN)	0	0	0	0		•
Charact	ers used: <b>0</b> out of 300.						
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**B12a.** The next question is about the times during the **past 12 months** when you decided NOT to order a multi-marker tumor panel for a cancer patient. When this occurred, how often was it for the following reasons?



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**B12b.** This question is also about the times during the **past 12 months** when you decided NOT to order a multi-marker tumor panel for a cancer patient. When this occurred, how often was it for the following reasons?

	Never	Rarely	Sometimes	Often	Always or Almost Always
Lack of personnel or resources to interpret test results					
Uncertainty regarding informed consent procedures	0	0	0		0
Difficulty obtaining sufficient tissue for testing	0	0	0	0	0
Insufficient time to order tests or review results	0	0	0		0
Patient's or patient's family preferences	0	0	0	0	0

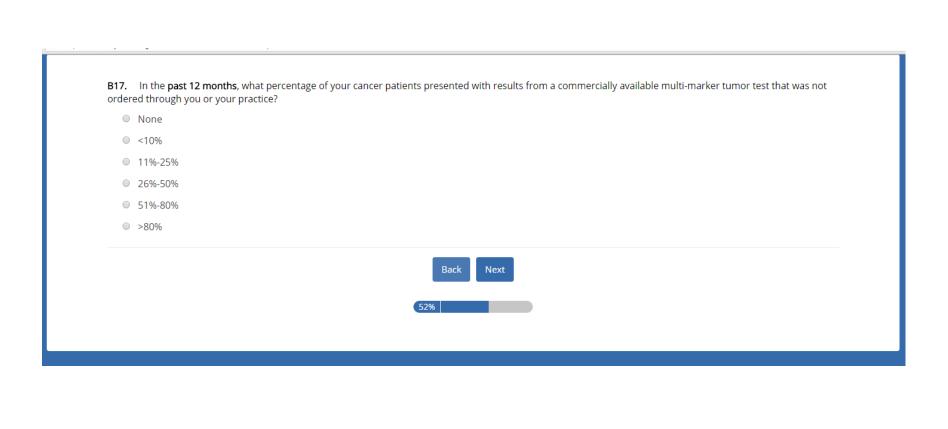
**B13.** In the **past 12 months**, how often, if at all, were the following barriers to involving your cancer patients or their families in the decision-making process for multi-marker tumor panels?

	Never	Rarely	Sometimes	Often	Always or Almost Always
Difficulty getting patient/family to understand the purpose of the test	0	0	0	0	0
Difficulty getting patient/family to understand treatment options			0		
Lack of educational materials to share with patient/family		0	0	0	0
Insufficient time to discuss testing or treatment options with patient/family	0	0	0	0	0
Patient/family resistant to testing	0	0	0	0	0
Lack of patient/family interest in testing	0	0	0	0	0

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B14. In the past 12 months, did you rely on any of the following to learn about using a new multi-marker tumor panel for cancer patients? Yes No Informal networks (e.g., colleagues) National or international experts Testing laboratories or pathologists Test manufacturers or drug company representatives or websites FDA package inserts Scientific meetings or conferences Peer-reviewed medical literature Medical professional societies such as ASCO or NCCN Government (e.g., NIH) websites or materials Foundation or cancer patient advocacy websites or materials Evidence-based, synthesized website (e.g., UpToDate) Other (Please, specify): B15. In the past 12 months, did you refer any of your cancer patients to another location or provider for a multi-marker tumor panel? Yes No

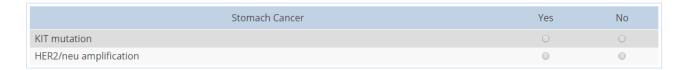


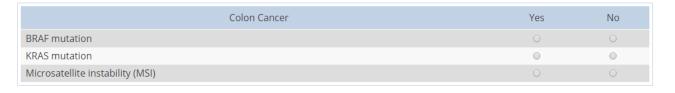


## Section C: Genomic Testing

The previous questions asked about multi-maker tumor panels. This section asks about **both multi-marker tumor panel testing and single gene tests** (tests for individual genes or chromosomal mutations).

C1. In the past 12 months, have you used results from genomic tests (either multi-marker tumor panels or single gene tests) for any of the following individual genes or chromosomal mutations to make treatment decisions for your cancer patients?







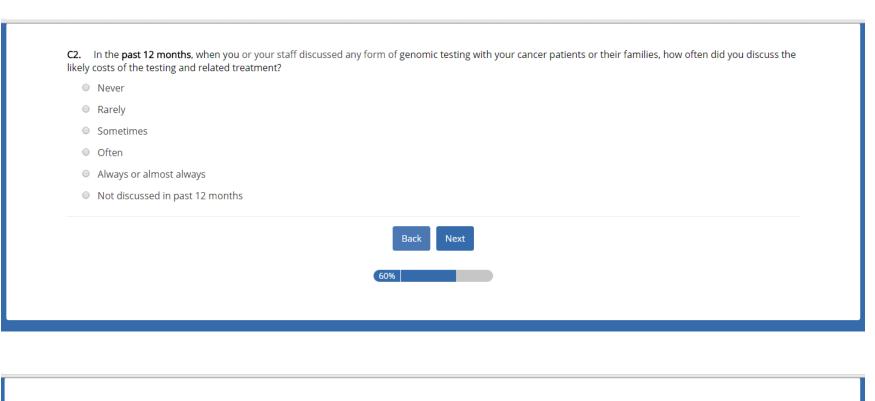
C1. In the past 12 months, have you used results from genomic tests (either multi-marker tumor panels or single gene tests) for any of the following individual genes or chromosomal mutations to make treatment decisions for your cancer patients?

Hematologic Malignancy	Yes	No
BCL2-IGH translocation	0	0
BCR-ABL translocation	0	0
KIT mutation	0	0
FLT3 mutation	0	
IGH rearrangement	0	0
JAK2 mutation	0	
MPL mutation	0	0
PML-RARA translocation	0	
TRG rearrangement	0	0

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C1. In the past 12 months, have you used results from genomic tests (either multi-marker tumor panels or single gene tests) for any of the following individual genes or chromosomal mutations to make treatment decisions for your cancer patients? Glioma Yes No 1p/19q deletion IDH mutation  $\bigcirc$ MGMT mutation Melanoma Yes No r. BRAF mutation Next

C1. In the past 12 months, have you used results from genomic tests (either multi-marker tumor panels or single gene tests) for any of the following individual genes or chromosomal mutations to make treatment decisions for your cancer patients? Lung Cancer Yes No EGFR mutation ERCC1 mutation EML4-ALK translocation KRAS mutation ROS1 mutation Breast Cancer Yes No HER2/neu amplification Other Genes Or Mutations Yes No Other genes or mutations



C3. For each of the following tests, how confident are you in your ability to determine whether the test is clinically appropriate for a patient?

	Not at all confident	A little confident	Moderately confident	Very confident	Extremely confident
Commercially available multi-marker tumor panels (e.g., FoundationOne, Oncotype DX)	0	0	0	0	0
In-house multi-marker tumor panels			0		
Whole genome sequencing	0		0		
Tests for individual genes or chromosomal mutations (e.g., KRAS for colorectal cancer)	0	0	0	0	0
Whole exome sequencing	0	0	0	0	0



each of the following tests, how confident are you in your ability to explain the testing purpose and procedures to a patient?						
	Not at all confident	A little confident	Moderately confident	Very confident	Extremely confident	
Commercially available multi-marker tumor panels (e.g., FoundationOne, Oncotype DX)	0	0	0	0	0	
In-house multi-marker tumor panels		0	0		0	
Whole genome sequencing						
Tests for individual genes or chromosomal mutations (e.g., KRAS for colorectal cancer)	0	0	0	0	0	

Whole exome sequencing

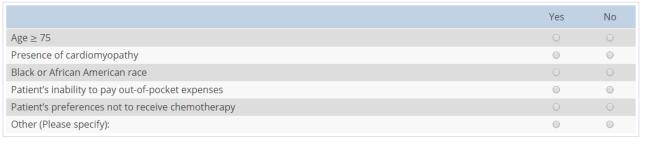
**C5.** For each of the following tests, how confident are you in your ability to use the results of the test to **guide decisions** about patient treatment and management?

	Not at all confident	A little confident	Moderately confident	Very confident	Extremely confident
Commercially available multi-marker tumor panels (e.g., FoundationOne, Oncotype DX)	0	0	0	0	0
In-house multi-marker tumor panels		0		0	
Whole genome sequencing	0	0	0	0	0
Tests for individual genes or chromosomal mutations (e.g., KRAS for colorectal cancer)	0	0	0	0	0
Whole exome sequencing	0	0	0	0	0





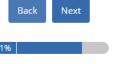
**D2.** A female patient presents with ER+, HER2- breast cancer with a high recurrence score (≥ 26) from the OncotypeDX Breast Cancer Assay. Which of the following factors would be important to you in deciding whether to recommend chemotherapy for this patient?





D3. A female patient presents with ER+, HER2- breast cancer with a low recurrence score (<18) on the OncotypeDX Breast Cancer Assay. Which of the following factors would be important to you in deciding whether to recommend chemotherapy for the patient?

	Yes	No
Age ≤ 45	0	0
No co-morbidities, otherwise healthy patient	0	0
Black or African American race	0	0
Patient ability to pay out-of-pocket cost	0	0
Patient's amenability to chemotherapy		
Other (Please specify):	0	0

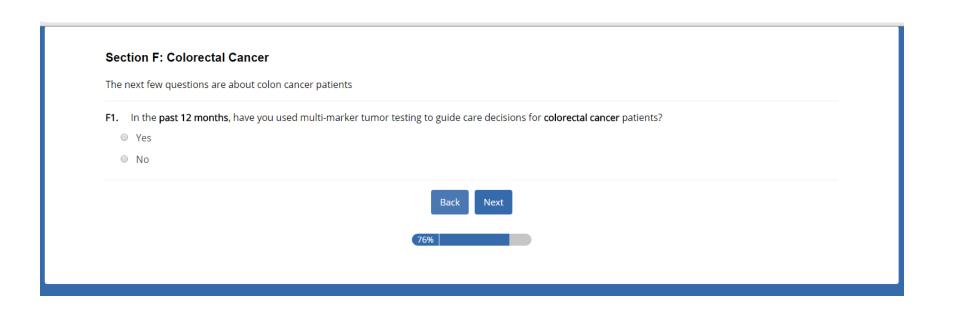




**E2.** A 57 year-old man who presented with increased dyspnea on exertion and is diagnosed with Stage IV non-small cell lung cancer with adenocarcinoma histology. His relevant medical history includes 35 pack-years of smoking; he quit 5 years ago. He has an excellent performance status (ECOG PS 1). For which of the following mutations would you consider requesting or ordering a genomic test, and when would you order the test?

	All such patients are tested at time of diagnosis (reflex testing)	I would test THIS patient at time of diagnosis	I would wait until the time of progression to consider	I would not order the test for THIS patient
EGFR Mutation	0	0	0	0
<i>ALK</i> rearrangement	0	0	0	0
ROS1 rearrangement	0	0	0	0
KRAS Mutation	0	0	0	0
RRM1 Expression	0	0	0	0
ERCC1 Expression	0	0	0	0
BRAF Mutation	0	0	0	0
Next generation Sequencing	0	0	0	0



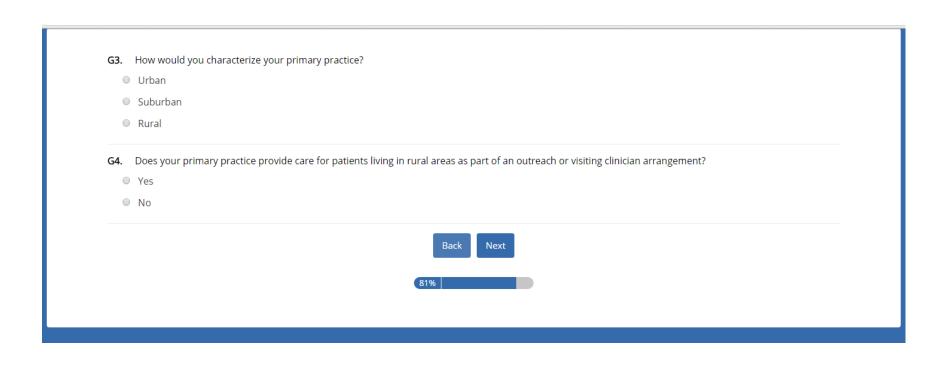


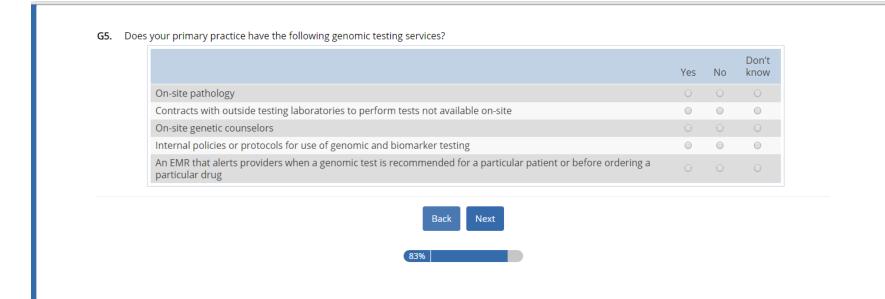
F2. For each of the following clinical scenarios, at what point in time, if at all, would you request a multi-marker tumor test for your colorectal cancer patients?

	All such patients are tested at time of diagnosis (reflex testing)	I would test THIS patient at time of diagnosis	I would wait until the time of progression to consider	I would not order the test for THIS patient
A newly diagnosed 74-year-old man with Stage IV KRAS mutant colon cancer	0	0	0	0
A 35-year-old woman with metastatic colon cancer recently progressed on first line therapy and found to have a BRAF mutation	•	•	0	•
A 65-year-old woman with Stage II disease with high risk features of perforation				
A 45-year-old woman with Lynch Syndrome presenting with Stage III disease receiving adjuvant therapy with FOLFOX	•	0	0	0



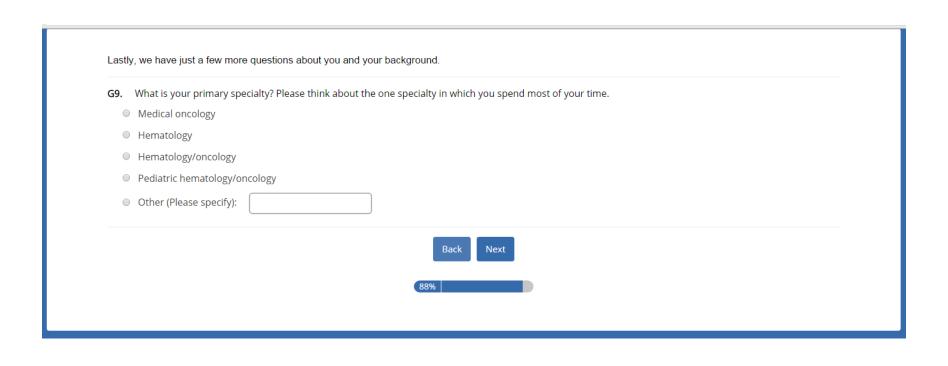
The next set of questions will help us to better understand you and your primary medical practice. By primary medical practice we mean the site where you see most of your cancer patients.		
<b>G1.</b> Is your primary practice a		
<ul> <li>Solo practice</li> </ul>		
<ul> <li>Single specialty group</li> </ul>		
<ul> <li>Multi-specialty group</li> </ul>		
Other (Please specify):		
G2. Including yourself, how man	ny full- and part-time physicians are in your primary practice?	
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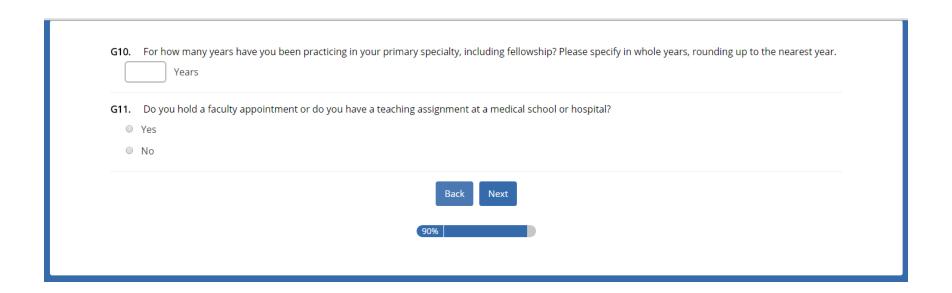


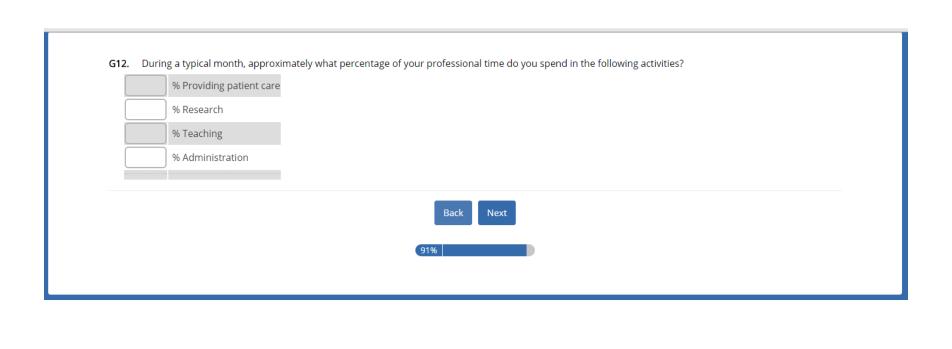


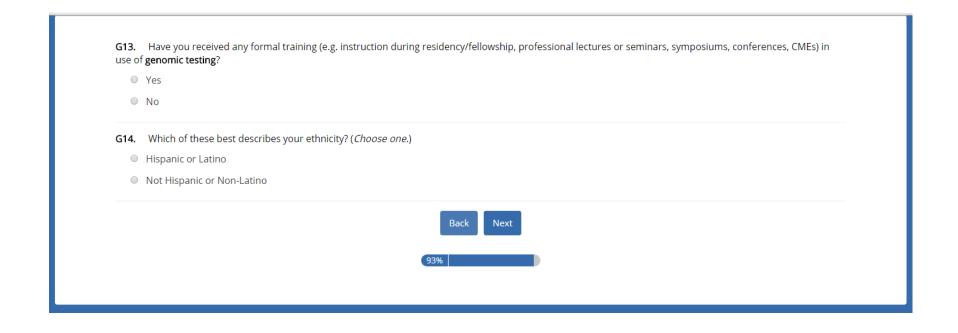
% Medicare
% Medicaid
% Self-pay or uninsured
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	edical center or medical school
	er not affiliated with a medical school
Community l	
Office-based	
Integrated he	ealthcare delivery system
Other (Please	e specify):
admissions privilege	·S.
Yes	
<ul><li>Yes</li><li>No</li></ul>	
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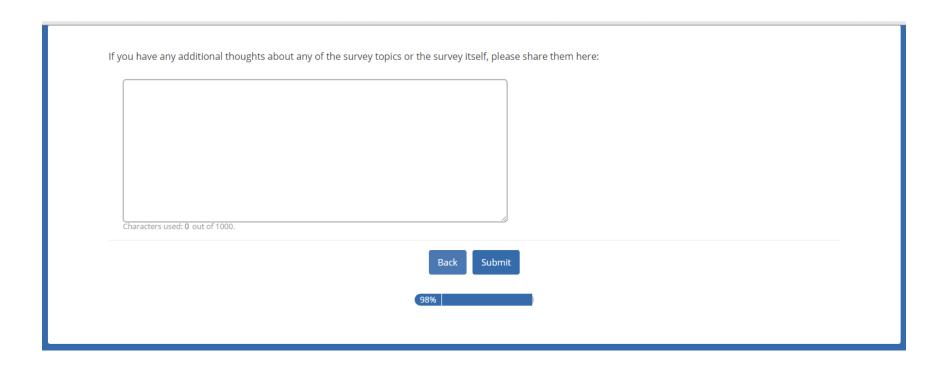












## Thank you Thank you for taking the time to complete this questionnaire. Your contribution is valuable to us. The information you have provided will be kept private and any information that could identify you will not be associated directly with the results. If you have questions about this survey, please email us at <a href="mailto:PrecisionMedicine@rti.org">PrecisionMedicine@rti.org</a> or call us toll-free at 1-866-590-7469.





1 This question is required. Please provide a response to continue.

This survey is about genomic testing for cancer treatment, also known as precision or personalized medicine. It is intended for oncologists who have treated or evaluated patients with cancer, including hematologic malignancies and solid tumors. Have you treated or evaluated any patients with any type of cancer in the past 12 months?

- I have treated or evaluated cancer patients in the past 12 months
- O I have **NOT** treated or evaluated cancer patients in the past 12 months



Thank you for taking time to complete this survey.

Unfortunately, you are not eligible to participate in this study at this time.

If you would like further information about the survey please contact us at 1-866-590-7469 or email: PrecisionMedicine@rti.org.