

Clinicians report frequent and guideline adherent changes to cancer risk management recommendations based on multi-gene panel testing results

Authors

BACKGROUND

- In order to better understand the clinical utility of multi-gene panel testing (MGPT) in the hereditary cancer setting, data are needed to determine:
 - How often MGPT results prompt changes to risk management recommendations.
 - How closely those recommendations align with clinical practice guidelines.
 - The extent to which gene penetrance and intervention type influence guideline adherence.

METHODS

- Clinicians were invited to participate in an IRB-exempt study using an online survey to assess cancer risk management recommendations before and after MGPT.
- Management recommendations pertaining to surveillance, risk-reducing surgery, chemoprevention, clinical trial eligibility, and education/counseling were evaluated.
- Changes in cancer risk management recommendations were compared across test result.
- Positive results were stratified such that genes specifically designated as high-risk (HR) and/or those with surgical recommendations according to National Comprehensive Cancer Network[®] guidelines were categorized as HR and remaining genes were categorized as moderate-risk (MR).

RESULTS

- Paired pre- and post-test responses were received for 2172 patients and post-test-only responses in 168 additional patients with positive MGPT results.
- Test results are shown in Figure 2 and reported changes to new management recommendations are shown in Figure 3.
- Clinicians recommended risk-reducing interventions more often for patients with PVs in HR than MR genes (surgery: OR 6.2, 95% CI 4.0-9.6; $p < 0.001$; chemoprevention: OR 4.1; 95% CI 2.3-7.3; $p < 0.001$, and clinical trials: OR 5.5; 95% CI 2.5-12.3; $p < 0.001$); whereas the rate of new surveillance recommendations did not differ between patients with PVs in HR and MR genes.
- Guideline adherence was high for surveillance (86.3%) and surgical (79.6%) recommendations. As was observed for rate of new surveillance introductions, there was also no difference in adherence rates for breast surveillance guidelines between HR and MR genes.

TAKE-HOME POINTS

- Clinicians report frequent and appropriate changes to cancer risk management recommendations based on positive MGPT results in both HR and MR genes.
- Reported introduction of recommended interventions in patients with inconclusive and negative results is rare and adherence to practice guidelines is high for patients with positive results, suggesting a low probability of harm resulting from MGPT.
- Continued study of MGPT utilization and outcomes is needed to optimize the clinical utility of this technology and inform practice guideline development.

Table 1. Cohort Description

	Study Cohort		Overall MGPT cohort	
	N	%	N	%
Gender				
Male	379	16.2%	12658	13.45%
Female	1961	83.8%	81396	86.50%
Age at Testing				
Mean (SD)	53.0 (14.5)		53.2 (14.1)	
Ethnicity				
African American/Black	187	8.0%	7281	7.7%
Asian	108	4.6%	4787	5.1%
Ashkenazi Jewish	127	5.4%	4066	4.3%
Caucasian	1561	66.7%	57641	61.3%
Hispanic	154	6.6%	6794	7.2%
Other/Unknown	93	4.0%	13249	14.1%
Personal History of Cancer				
Yes	1449	61.9%	n.a.	n.a.
No	877	37.5%	n.a.	n.a.
Not Provided	14	0.6%	n.a.	n.a.
Provider Type				
Genetic Counselor	236	71.7%	n.a.	n.a.
Nurse Practitioner/Physician				
Assistant	40	12.1%	n.a.	n.a.
Registered Nurse	19	5.8%	n.a.	n.a.
Physician	26	7.9%	n.a.	n.a.
Test Result				
Positive	470	20.1%	11618	12.4%
Inconclusive	562	24.0%	25612	27.2%
Negative	1298	55.5%	55958	59.5%

Figure 2. Test Results from Survey Respondents

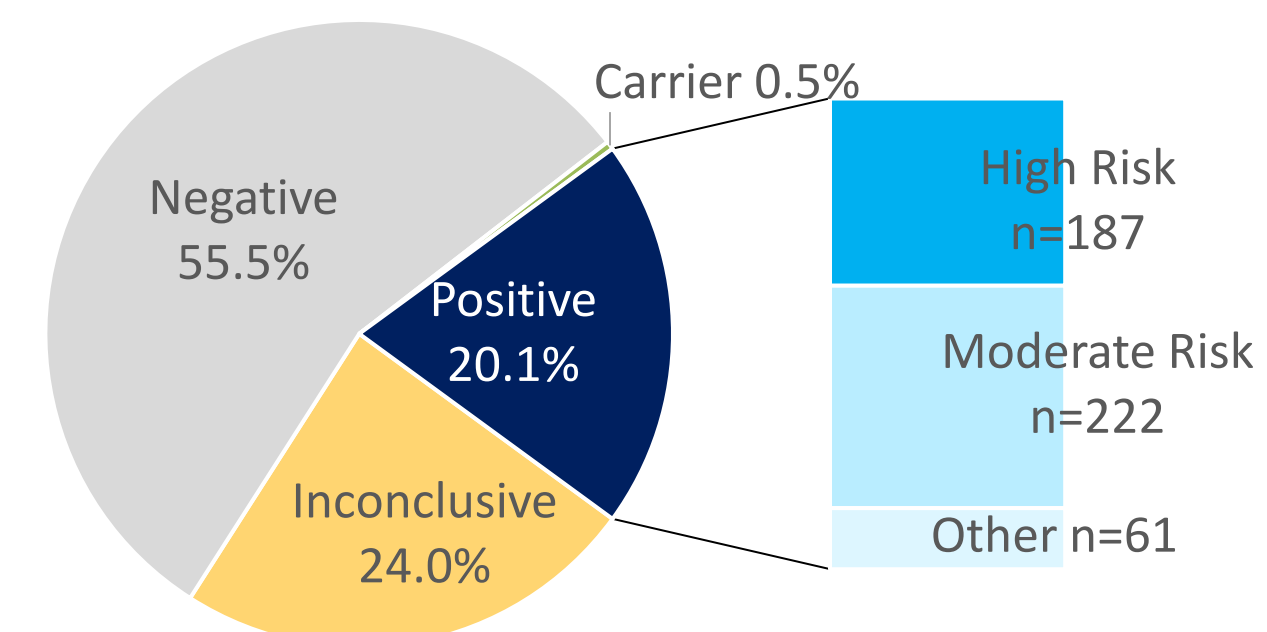


Figure 1. Interventions Included in Assessment

Imaging	Surgical	Drug	Clinical Trial	Education
<ul style="list-style-type: none"> Mammogram Breast MRI Colonoscopy Endoscopy Transvaginal Ultrasound 	<ul style="list-style-type: none"> Mastectomy Hysterectomy Oophorectomy 	<ul style="list-style-type: none"> Chemoprevention Oral Contraceptives Systemic Chemotherapy 	<ul style="list-style-type: none"> Eligibility for treatment or surveillance trial 	<ul style="list-style-type: none"> Lifestyle Changes Symptom Education Referral Familial Testing

Figure 3. Reported Management Changes

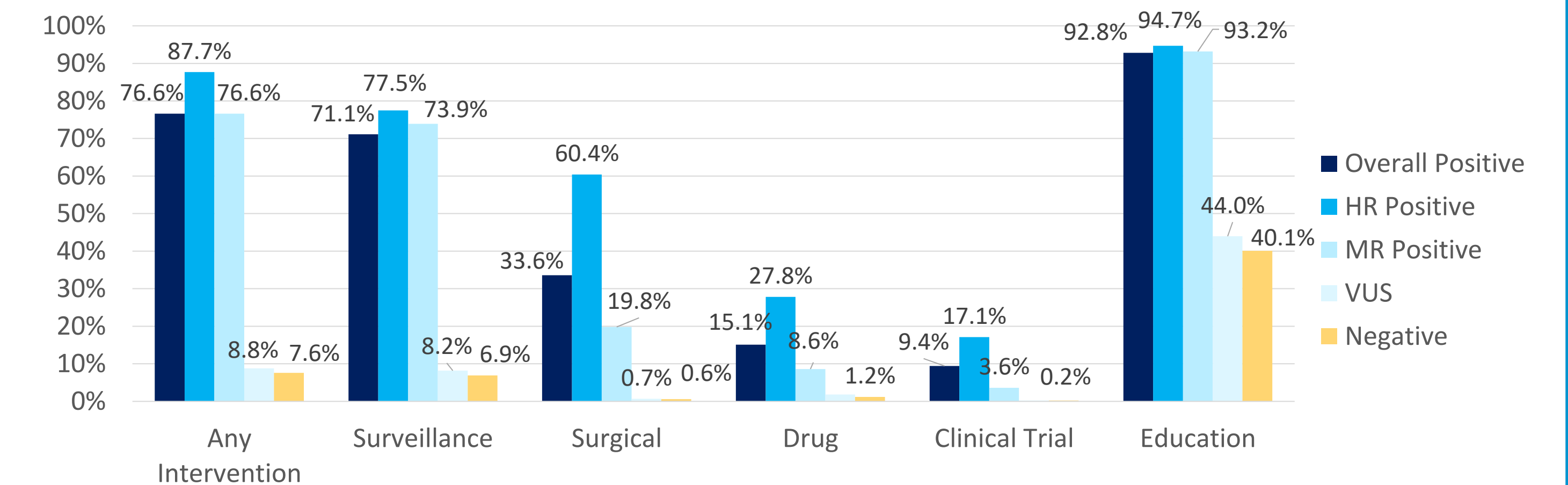


Figure 4. Guideline Adherence

