Genetic Counseling

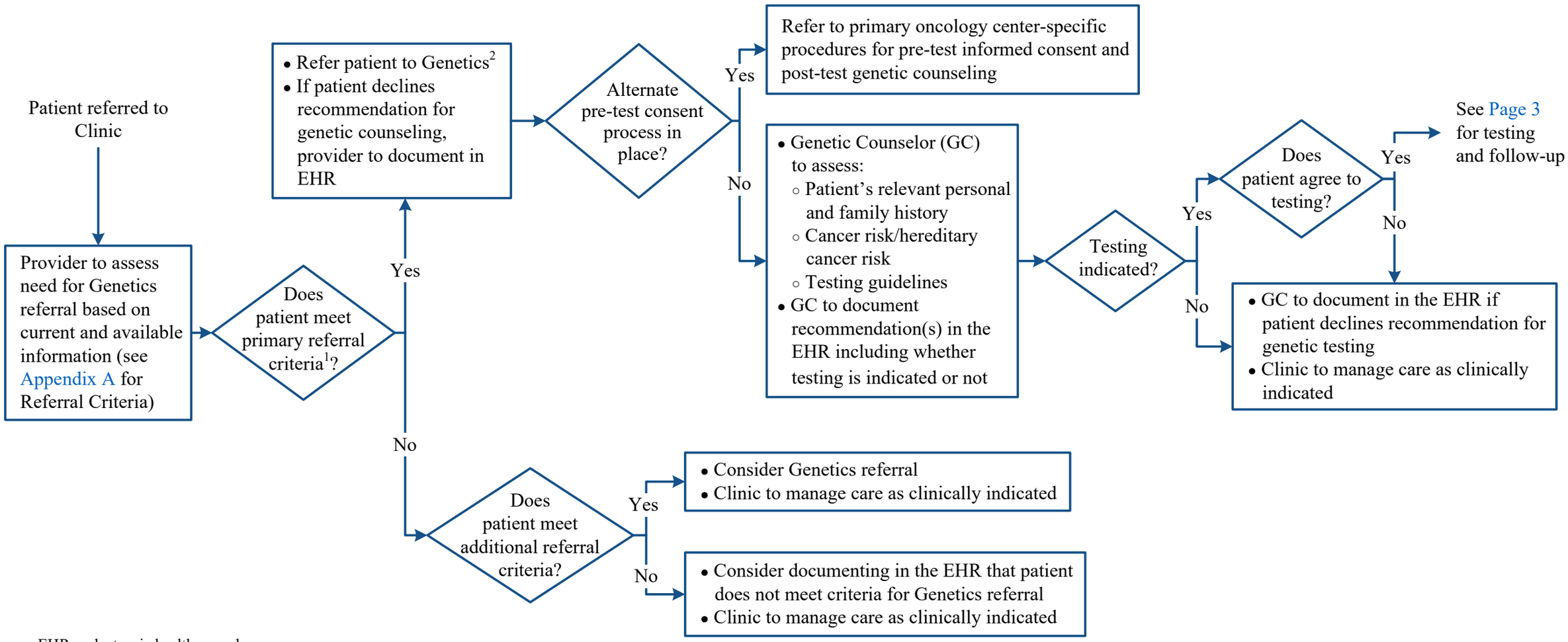
Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care.*

TABLE OF CONTENTS

Genetic Counseling

PATIENT EVALUATION

RECOMMENDATION



EHR = electronic health record

[1] For cancer types without established referral criteria, Genetics referral may be made at the discretion of the provider

[2] For an appointment or further information, call 877-632-6789 and indicate the appropriate disease center, (*e.g.*, Breast Medical Oncology, Gynecology Oncology, Gastrointestinal Center)

Department of Clinical Effectiveness V4
Approved by the Executive Committee of the Medical Staff on 07/18/2023

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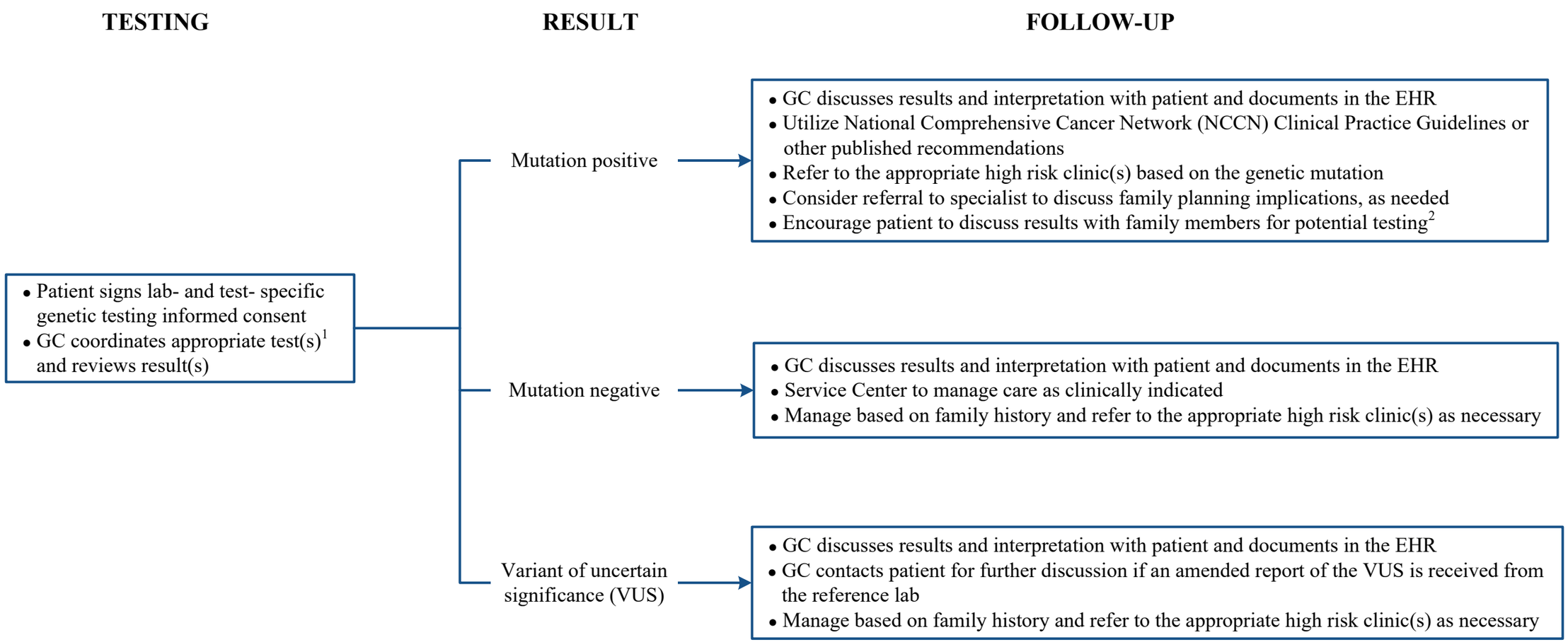

[1] In most cases peripheral blood is the preferred sample. In select cases (*e.g.*, allogeneic stem cell transplant or hematologic malignancy), a different source of DNA such as cultured fibroblasts from a skin punch biopsy is required.
[2] Refer to Appendix B for Patient Education Material

APPENDIX A: Genetics Counseling Referral Criteria

	Primary Referral Criteria	Additional Referral Criteria
Breast	• Patient with a personal history of breast cancer diagnosed at ≤ 50 years of age • Patient with two or more primary breast cancers diagnosed at any age • Patient with a personal history of TRIPLE NEGATIVE breast cancer diagnosed at any age • Any male patient with a personal history of breast cancer at any age • Metastatic breast cancer patient considering targeted therapy based on genetic test results (*e.g.*, PARP inhibitors) • Patient with high risk, HER2-negative breast cancer considering adjuvant treatment with olaparib (as defined by the phase III OlympiA trial[1]) • Patient with a personal history of breast cancer diagnosed at any age, and one or more of the following: ◦ Personal history of ovarian cancer or pancreatic cancer ◦ Personal history of lobular breast cancer with family history of diffuse gastric cancer ◦ Ashkenazi Jewish ancestry ◦ Family history of - breast cancer diagnosed at age ≤ 50 years - male breast cancer - ovarian cancer - pancreatic cancer - metastatic or high/very high risk group prostate cancer - ≥ 2 relatives diagnosed with breast cancer and/or prostate cancer (any grade) at any age[2] - cancers, and/or dermatologic manifestations suggestive of Cowden syndrome (*e.g.*, follicular thyroid cancer, endometrial cancer)[2] - cancers suggestive of Li-Fraumeni syndrome (*e.g.*, sarcoma, adrenocortical cancer, brain tumors)[2] ◦ A total of 3 or more breast cancer diagnoses in the patient and/or close blood relatives (three total breast cancer in one family, *e.g.,* two in patient plus one affected relative, one in patient plus two affected relatives, *etc*.) • Any member of a family with a known mutation in any of the following genes: *ATM, BARD1, BRCA1, BRCA2, CDH1, CHEK2, RAD51C, RAD51D, PALB2, PTEN, STK11,* or *TP53* • Patient with BRCA1/2 pathogenic or likely pathogenic variant detected on tumor profiling on any tumor type in absence of germline pathogenic/likely pathogenic variant analysis • An affected or unaffected patient with a first- or second-degree relative meeting any of the above criteria (except for unaffected patients whose relatives only meet criteria for treatment-decision making purposes)	• Patients that do not meet Primary Referral Criteria, but have a personal history of breast cancer and there is a strong clinical suspicion for hereditary cancer • Ashkenazi Jewish individuals not meeting above criteria

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[1] Criteria for OlympiA phase III trial:
- Triple-negative breast cancer treated with either adjuvant chemotherapy with axillary node-positive disease or an invasive primary tumor ≥ 2 cm on pathology analysis **or** neoadjuvant chemotherapy with residual invasive breast cancer in the breast or resected lymph nodes
- Hormone receptor-positive disease treated with either adjuvant chemotherapy with ≥ 4 positive pathologically confirmed lymph nodes **or** neoadjuvant chemotherapy that did not have a complete pathologic response, with a CPS + EG score ≥ 3. **Note**: The CPS + EG scoring system is based on a combination of clinical and pathologic stage, estrogen receptor status, and histologic grade

[2] Family history should be all on the same side of the family, (*e.g.*, either maternal **or** paternal) and includes first, second, and third-degree relatives

APPENDIX A: Genetics Counseling Referral Criteria - continued

	Primary Referral Criteria	Additional Referral Criteria
Gastrointestinal	Patients with any of the following: • Tumor studies suggestive of hereditary nonpolyposis colorectal cancer (HNPCC)/ Lynch syndrome (MSI-H and/or loss of staining for any mismatch repair protein by IHC), regardless of tumor type ◦ If loss of MLH1/PMS2, no evidence of MLH1 methylation and/or no somatic BRAF mutation (in primary colorectal tumors) • Colorectal adenocarcinoma diagnosed at age < 50 years • Colorectal adenocarcinoma diagnosed at any age **and** first- or second-degree relative with any HNPCC-related cancers[1], diagnosed at age < 50 years • Colorectal adenocarcinoma, regardless of age **and** one or more of the following in his/her personal history: ◦ Synchronous or metachronous colorectal cancer ◦ HNPCC-related cancers[1] • Multiple (> 10) adenomas on a single colonoscopy or > 20 lifetime cumulative adenomas • Hamartomatous polyps, any number, occurring at any age • Diffuse gastric adenocarcinoma (linitis plastica) diagnosed at age < 50 years • Diffuse gastric adenocarcinoma (linitis plastica) regardless of age **and** a first- or second-degree relative with gastric cancer or lobular breast cancer • Pancreatic adenocarcinoma • Other GI cancers diagnosed at age ≤ 40 years • Family history of a known mutation for a cancer predisposition syndrome • Somatic test results concerning for a germline mutation	Patients with any of the following: • Colorectal adenocarcinoma diagnosed at any age **and** first- or second-degree relative with any HNPCC-related cancer[1], regardless of age • Multiple (> 5) adenomas on a single colonoscopy at age < 50 years • Unusual polyp burden (young age at diagnosis, histology, number)

MSI-H = microsatellite instability-high
IHC = immunohistochemistry

[1] HNPPC-related cancers include: colorectal, endometrial, ovarian, gastric, pancreas, ureter and renal pelvis, biliary tract, brain, small intestinal cancers and sebaceous gland adenomas and keratoacanthomas (per revised Bethesda guidelines, Umar *et al*, JNCI 2004)

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APPENDIX A: Genetics Counseling Referral Criteria - continued

	Primary Referral Criteria	Additional Referral Criteria
Gynecologic	Patients with any of the following: • High grade non-mucinous epithelial ovarian cancer[1] • Endometrial cancer, **and** one or more of the following: ◦ Personal history of colorectal cancer, regardless of age ◦ First-degree relative with colorectal or endometrial cancer at any age ◦ Any family history of colorectal or endometrial cancer diagnosed at age < 50 years ◦ MSI/IHC suggestive of Lynch syndrome • Family history of a known mutation for a cancer predisposition syndrome	Patients with any of the following: • Rare gynecologic tumor potentially consistent with a hereditary predisposition (*e.g.,* small cell ovarian cancer hypercalcemic type, Sertoli-Leydig tumor, SCTAT) • Do not meet Primary Referral criteria, but have a significant family history of cancer • Diagnosed with endometrial cancer at age < 50 years • Endometrial cancer plus personal or family history of follicular thyroid cancer, breast cancer, and/or dermatologic manifestations of Cowden syndrome

SCTAT = sex cord stromal tumor with annular tubules

[1] Peritoneal and fallopian tube cancers should be considered as part of the spectrum of the Hereditary Breast and Ovarian Cancer Syndrome

APPENDIX B: Patient Education Material

Hereditary Breast and Ovarian Cancer Syndrome
https://www.mdanderson.org/patient-education/Genetics/Hereditary-Breast-and-Ovarian-Cancer-Syndrome_docx_pe.pdf

Lynch Syndrome: Hereditary Nonpolyposis Colorectal Cancer Syndrome (HNPCC)
https://www.mdanderson.org/patient-education/Genetics/Lynch-Syndrome-Hereditary-Nonpolyposis-Colorectal-Cancer-Syndrome.pdf

Genetic Counseling
https://www.mdanderson.org/patient-education/Genetics/Genetic-Counseling_docx_pe.pdf

Genetic Discrimination Laws
https://www.mdanderson.org/patient-education/Genetics/Genetic-Discrimination-Laws_docx_pe.pdf

Family History: Gathering Information About Cancer
https://www.mdanderson.org/patient-education/Genetics/Family-History-Gathering-Information-About-Cancer_docx_pe.pdf

Familial Adenomatous Polyposis (FAP)
https://www.mdanderson.org/patient-education/Genetics/Familial-Adenomatous-Polyposis-(FAP).pdf

SUGGESTED READINGS

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