TABLE OF CONTENTS

Patient Evaluation and Recommendation……..Page 2
Testing and Follow-up……………………..Page 3
Genetic Counseling Referral Criteria………….Page 4-5
Patient Education……………………………..Page 6
Suggested Readings………………………….Page 7
Development Credits………………………….Page 8
PATIENT EVALUATION

Patient referred to Clinic

Provider to assess need for Genetics referral, see Appendix A for Referral Criteria

Does patient meet primary referral criteria?

Yes

Refer patient to Genetics\(^1\)

No

Does patient meet additional referral criteria?

Yes

No

Genetic Counselor (GC) to assess:
- Patient’s relevant personal and family history
- Cancer risk/hereditary cancer risk
- Testing guidelines

RECOMMENDATION

Testing indicated\(^2\)?

Yes

Clinic to manage care as clinically indicated

No

Does patient agree to testing?

Yes

See Page 3 for testing and follow-up

No\(^3\)

Clinic to manage care as clinically indicated

\(^1\)Provider to document in patient’s electronic health record if patient declines the recommendation for genetic counseling

\(^2\)Genetic Counselor to document recommendation within the patient’s electronic health record (whether testing is recommended or not)

\(^3\)Genetic Counselor to document in patient’s electronic health record if patient declines the recommendation for genetic testing

Provider may document that the patient does not meet criteria for Genetics referral within the patient’s electronic medical record

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Page 2 of 8
Genetic Counseling

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<table>
<thead>
<tr>
<th>TESTING</th>
<th>RESULT</th>
<th>FOLLOW-UP</th>
</tr>
</thead>
</table>
|         | Mutation positive | • GC discusses results and interpretation with patient and documents in the patient’s electronic medical record  
• Utilize prevention and management guidelines  
• Consider referral to specialist to discuss family planning implications, as needed  
• Encourage patient to discuss result with family members (for potential testing)\(^2\) |
|         | Mutation negative | • GC discusses results and interpretation with patient and documents in the patient’s electronic medical record  
• Service Center to manage care as clinically indicated  
• Refer to guidelines for follow up in High Risk GI Cancer Clinic |
|         | Variant of uncertain significance (VUS) | • GC discusses results and interpretation with patient and documents in the patient’s electronic medical record  
• GC contacts patient if amended results received per future VUS reclassification\(^3\) |

\(^1\)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

\(^3\)Follow-up on NCCN guidelines for VUS reclassification

1In 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
**Genetic Counseling**

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**APPENDIX A: Genetics Referral Criteria**

<table>
<thead>
<tr>
<th>Primary Referral Criteria</th>
<th>Additional Referral Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breast</strong></td>
<td></td>
</tr>
<tr>
<td>● Patient with a personal history of breast cancer or first breast cancer primary (in patient with two breast primaries) diagnosed at less than or equal to 50 years of age</td>
<td>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 (i.e., strong family history of early onset pancreatic cancer, prostate cancer, or melanoma).</td>
</tr>
<tr>
<td>● Patient with a personal history of TRIPLE NEGATIVE breast cancer diagnosed at less than or equal to 60 years of age</td>
<td></td>
</tr>
<tr>
<td>● Patient with a personal history of breast cancer diagnosed at any age, and one or more of the following:</td>
<td></td>
</tr>
<tr>
<td>○ Personal or family history of ovarian cancer</td>
<td></td>
</tr>
<tr>
<td>○ Family history of breast cancer diagnosed at less than or equal to 50 years of age</td>
<td></td>
</tr>
<tr>
<td>○ Family history of male breast cancer</td>
<td></td>
</tr>
<tr>
<td>○ Family history of greater than or equal to 2 relatives diagnosed with breast cancer at any age</td>
<td></td>
</tr>
<tr>
<td>○ Family history of thyroid cancer, endometrial cancer, and/or dermatologic manifestations of Cowden syndrome</td>
<td></td>
</tr>
<tr>
<td>○ Family history of sarcoma, adrenocortical cancer, brain tumors, leukemia or lymphoma</td>
<td></td>
</tr>
<tr>
<td>○ Ashkenazi Jewish ancestry</td>
<td></td>
</tr>
<tr>
<td>● Any male patient with a personal history of breast cancer</td>
<td></td>
</tr>
<tr>
<td>● Any member of a family with a known mutation</td>
<td></td>
</tr>
<tr>
<td><strong>Gynecologic</strong></td>
<td></td>
</tr>
<tr>
<td>Patients with any of the following:</td>
<td></td>
</tr>
<tr>
<td>● High grade non-mucinous epithelial ovarian cancer, including primary peritoneal cancer and fallopian tube cancer</td>
<td></td>
</tr>
<tr>
<td>● Endometrial cancer, and one or more of the following:</td>
<td></td>
</tr>
<tr>
<td>○ Personal history of colorectal cancer, regardless of age</td>
<td></td>
</tr>
<tr>
<td>○ First-degree relative with colorectal or endometrial cancer at any age</td>
<td></td>
</tr>
<tr>
<td>● Any family history of colorectal or endometrial cancer diagnosed at less than 50 years of age</td>
<td></td>
</tr>
<tr>
<td>○ MSI/IHC suggestive of Lynch syndrome</td>
<td></td>
</tr>
<tr>
<td>● Family history of a known mutation for a cancer predisposition syndrome</td>
<td></td>
</tr>
<tr>
<td>Patients with any of the following:</td>
<td></td>
</tr>
<tr>
<td>● Do not meet Primary Referral Criteria, but have a significant family history of cancer</td>
<td></td>
</tr>
<tr>
<td>● Patient diagnosed with endometrial cancer at less than 50 years of age may be considered for referral at the clinician’s discretion particularly if known endometrial cancer risk factors (e.g., obesity) are absent</td>
<td></td>
</tr>
<tr>
<td>● Endometrial cancer plus personal or family history of follicular thyroid cancer, breast cancer, and/or dermatologic manifestations of Cowden syndrome.</td>
<td></td>
</tr>
</tbody>
</table>

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1Family history should be all on the same side of the family (i.e., either maternal or paternal) and includes first, second, and third-degree relatives.

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### APPENDIX A: Genetics Referral Criteria - continued

<table>
<thead>
<tr>
<th>Patients with any of the following:</th>
<th>Patients with any of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior tumor studies suggestive of Lynch syndrome (MSI-H and/or loss of staining for any mismatch repair protein by IHC)</td>
<td>Do not meet Primary Referral Criteria, but have a significant personal and/or family history, such as:</td>
</tr>
<tr>
<td>Colorectal/Intestinal Cancer</td>
<td>Colorectal cancer diagnosed at less than 60 years of age and first- or second-degree relative with any Lynch syndrome-related cancer, regardless of age.</td>
</tr>
<tr>
<td></td>
<td>Multiple (greater than 5) adenomas on a single colonoscopy, at less than 50 years of age.</td>
</tr>
<tr>
<td></td>
<td>Unusual polyp burden (young age at diagnosis, histology, number).</td>
</tr>
<tr>
<td></td>
<td>Incidental pathogenic mutation in low to mid penetrance genes on germline panel.</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>Gastric Cancer</td>
</tr>
<tr>
<td>Colorectal cancer diagnosed at less than 50 years of age</td>
<td>Diffuse gastric adenocarcinoma (linitis plastica) diagnosed at less than 40 years of age, or diffuse gastric cancer, regardless of age, and a first- or second-degree relative with gastric cancer or lobular breast cancer.</td>
</tr>
<tr>
<td>Colorectal cancer diagnosed at any age and first- or second-degree relative with any Lynch syndrome-related cancer, diagnosed at less than 50 years of age</td>
<td>Pancreatic Cancer</td>
</tr>
<tr>
<td>Colorectal cancer, regardless of age and one or more of the following in his/her personal history:</td>
<td>Pancreatic adenocarcinoma, regardless of age, and Ashkenazi Jewish ancestry.</td>
</tr>
<tr>
<td>Synchronous or metachronous colorectal cancer</td>
<td>Pancreatic carcinoma and personal or family history of melanoma diagnosed at less than 40 years of age.</td>
</tr>
<tr>
<td>Endometrial cancer</td>
<td>Incidental pathogenic mutation in low to mid penetrance genes on germline panel.</td>
</tr>
<tr>
<td>Sebaceous neoplasms</td>
<td>Genetic Counseling</td>
</tr>
<tr>
<td>Gastric, pancreas, ureter and renal pelvis, biliary tract, brain, or small intestinal cancers.</td>
<td>Lynch syndrome-related cancers include: colorectal, endometrial, ovarian, gastric, pancreas, ureter and renal pelvis, biliary tract, brain, prostate, small intestinal cancers and sebaceous gland adenomas and keratoacanthomas (per revised Bethesda guidelines, Umar et al, JNCI 2004).</td>
</tr>
<tr>
<td>Personal history of more than 10 adenomas including multiple colonoscopies</td>
<td>APPENDIX A: Genetics Referral Criteria - continued</td>
</tr>
<tr>
<td>Hamartomatous polyps, any number, occurring at any age</td>
<td>Department of Clinical Effectiveness V1</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>Approved by the Executive Committee of the Medical Staff on 11/28/2017.</td>
</tr>
</tbody>
</table>

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1. Lynch syndrome-related cancers include: colorectal, endometrial, ovarian, gastric, pancreas, ureter and renal pelvis, biliary tract, brain, prostate, small intestinal cancers and sebaceous gland adenomas and keratoacanthomas (per revised Bethesda guidelines, Umar et al, JNCI 2004).
APPENDIX B: Patient Education Material

Hereditary Breast and Ovarian Cancer Syndrome

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

Cancer Genetics Overview

Genetic Counseling

Genetic Discrimination Laws

Family History
Gathering Information About Cancer

Familial Adenomatous Polyposis (FAP)
SUGGESTED READINGS

National Society of Genetic Counselors. URL: http://www.nsgc.org [accessed: March 27, 2017]
This practice consensus statement is based on majority opinion of the Genetic Counseling Workgroup at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

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- Y. Nancy You, MD

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**Clinical Cancer Genetics**
- Bhanu Pappu, PHD, MHA

Development Credits

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