Identifying Appropriate Patients in Your Practice for Hereditary Cancers with Genetic Testing

Objectives

OB/GYN/PCP &HCRA

At the conclusion of this presentation, participants should understand the following concepts related to hereditary cancer risk assessment and patient management:

- How utilizing Cancer Family History can help you optimally manage all of your patients

- Stratify patients by risk categories to determine appropriate management and screening recommendations

- Build a Hereditary Cancer Risk Assessment (HCRA) protocol for your practice

Provider Credentials

Kristi Marsella, WHNP
Women's Specialty Health Centers
Director of Women's Preventive Health
Noblesville, IN

Testing since 2008
Disclaimer: Speaker for Myriad Genetics

Use of Cancer Family History

OB/GYN/PCP &HCRA

TAKE

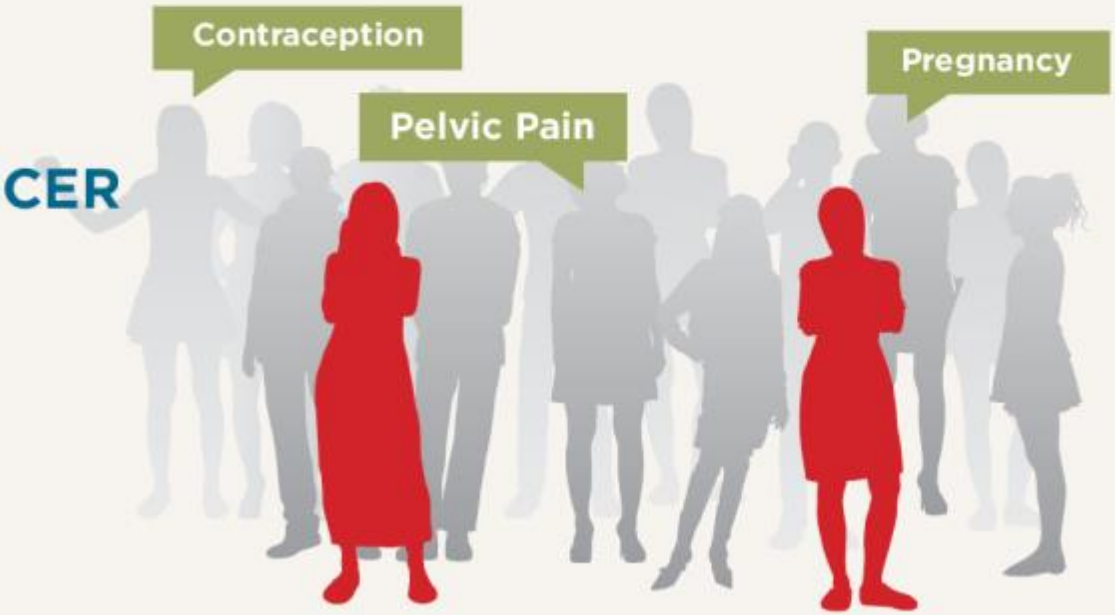
CURRENTLY MOST PROVIDERS TAKE CANCER FAMILY HISTORY FOR:

- Well-woman visits
- Hereditary cancer prevention only

UTILIZE

ACTIVELY UTILIZING CANCER FAMILY HISTORY FOR:

- All visits
- Optimal management for all patients



CASE 02: **FEMALE AGE 36**

Patient Information
- 36-year-old
- G2 P2
- Childbearing complete

Visit Type
- Contraception consult

Visit Notes
- Patient desires permanent sterilization

Recommended Management
- Common recommendations may include:
  - Tubal occlusion (Essure®)
  - Tubal ligation
  - Vasectomy (for partner)

FAMILY HISTORY		
Relative	**Cancer Site**	**Age Dx**
Mother	Breast	65
Maternal Aunt	Ovarian	55

Hereditary cancer risk assessment impacts medical decisions

MYRIAD

CASE 02: **FEMALE AGE 36**

Family history

Breast Ca
lifetime risk:
>20%

Management

- *Early and frequent MRI / mammograms*

Expected Single Syndrome Result

HBOC

Management

- *Earlier and frequent MRI / mammograms*
- *Other increased cancer risks*
- *BSO*

Hereditary cancer risk assessment impacts medical decisions

MYRIAD

CASE 02: **FEMALE AGE 36**

Actual Result

MLH1
(Lynch)

⊕ RESULT: ***Positive***

Management Now*

PROCEDURE	AGE TO BEGIN
COLORECTAL	
Colonoscopy[1]	20 to 25 years, or individualized to a younger age based on the earliest diagnosis in family
ENDOMETRIAL AND OVARIAN	
Consider hysterectomy and bilateral salpingo-oophorectomy[1]	After completion of childbearing

Assessment that is too narrow can create a false sense of security and patient mismanagement

*In addition to personal and/or family history based management considerations

MYRIAD

CASE 03: **FEMALE AGE 44**

Patient Information

- 44-year-old
- G2 P2
- Childbearing complete

Visit Type

- Abnormal Uterine Bleeding

Recommended Management

- Common recommendations may include:
  - Oral contraceptives
  - Mirena® IUD
  - Hysteroscopic removal of fibroids or polyp
  - Ablation

Relative	Cancer Site	Age Dx
Father	Colorectal	62
Brother	Colorectal	52
Paternal Aunt	Gastric	52

Hereditary cancer risk assessment impacts medical decisions

MYRIAD

CASE 03: **FEMALE AGE 44**

Patient Information

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- Childbearing complete

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FAMILY HISTORY		
Relative	**Cancer Site**	**Age Dx**
Father	Colorectal	62
Brother	Colorectal	52
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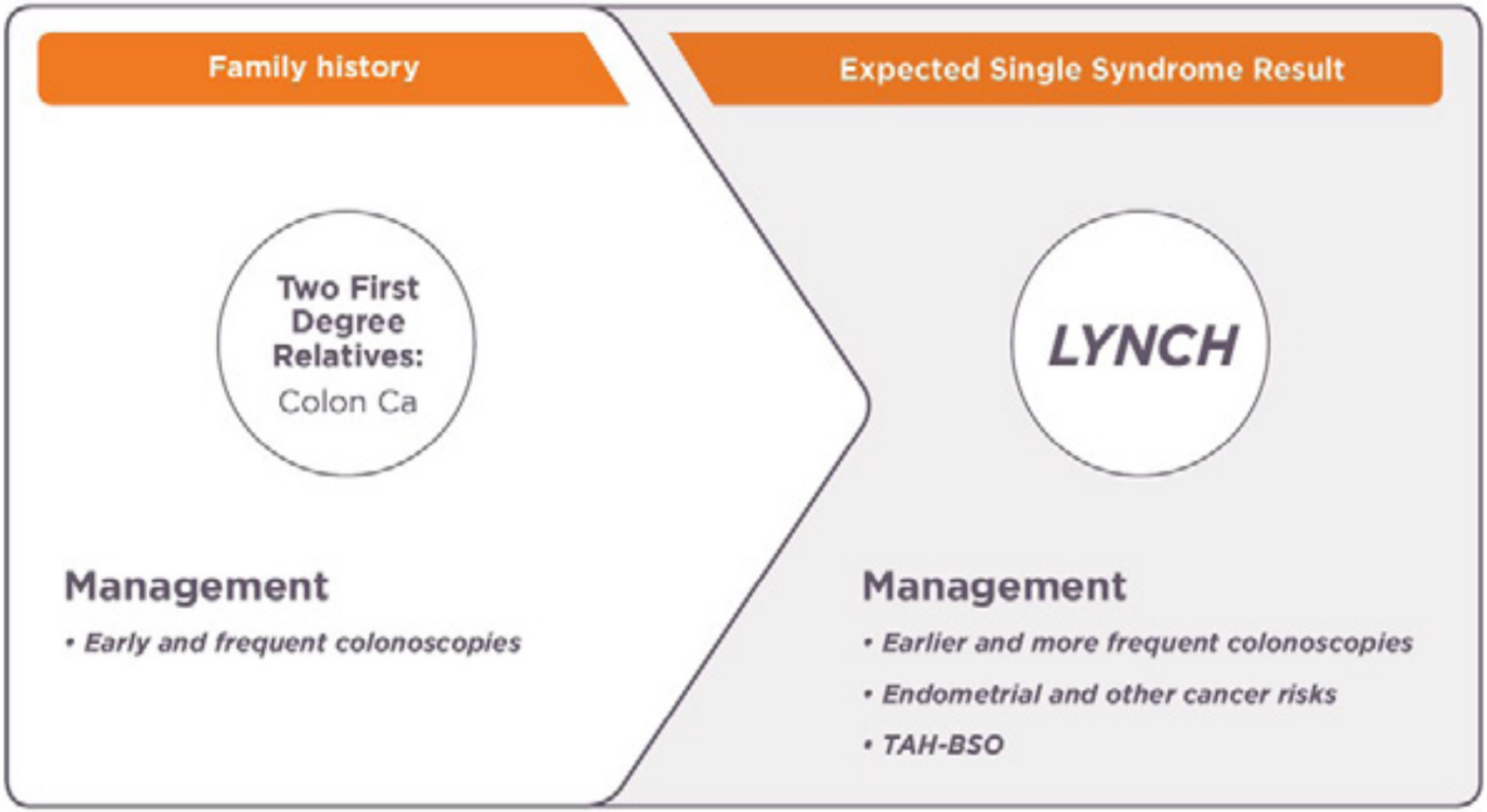
Hereditary cancer risk assessment impacts medical decisions

MYRIAD

CASE 03: **FEMALE AGE 44**



Hereditary cancer risk assessment impacts medical decisions

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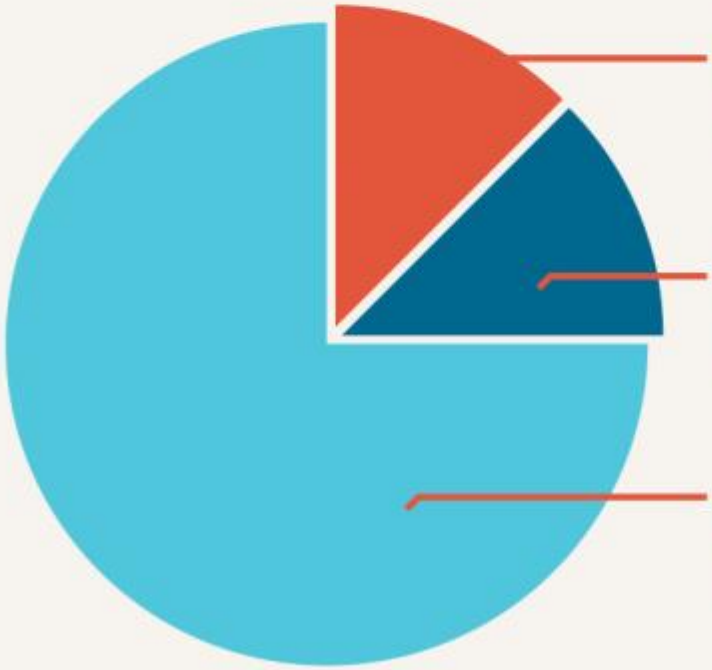
Risk Stratification

OB/GYN/PCP &HCRA

- **Cancer Family History alone can help you optimize management**
- **Now consider if your patient is positive for a syndrome:**



Hereditary:
Highest Risk

Family Clusters:
Moderate Risk

Sporadic:
General Population Risk

Genetic testing is the only way to stratify risk between these two groups and find those at highest risk for cancer

CASE 03: **FEMALE AGE 44**

Actual Result

BRCA1

RESULT: ***Positive***

Management Now*

PROCEDURE	AGE TO BEGIN
FEMALE BREAST	
Mammography and Breast MRI[1]	25 years, or individualized to a younger age based on the earliest diagnosis in family
OVARIAN	
Bilateral salpingo-oophorectomy [1]	35 to 40 years, after completion of childbearing, or individualized to a younger age based on the earliest diagnosis in the family

Assessment that is too narrow can create a false sense of security and patient mismanagement

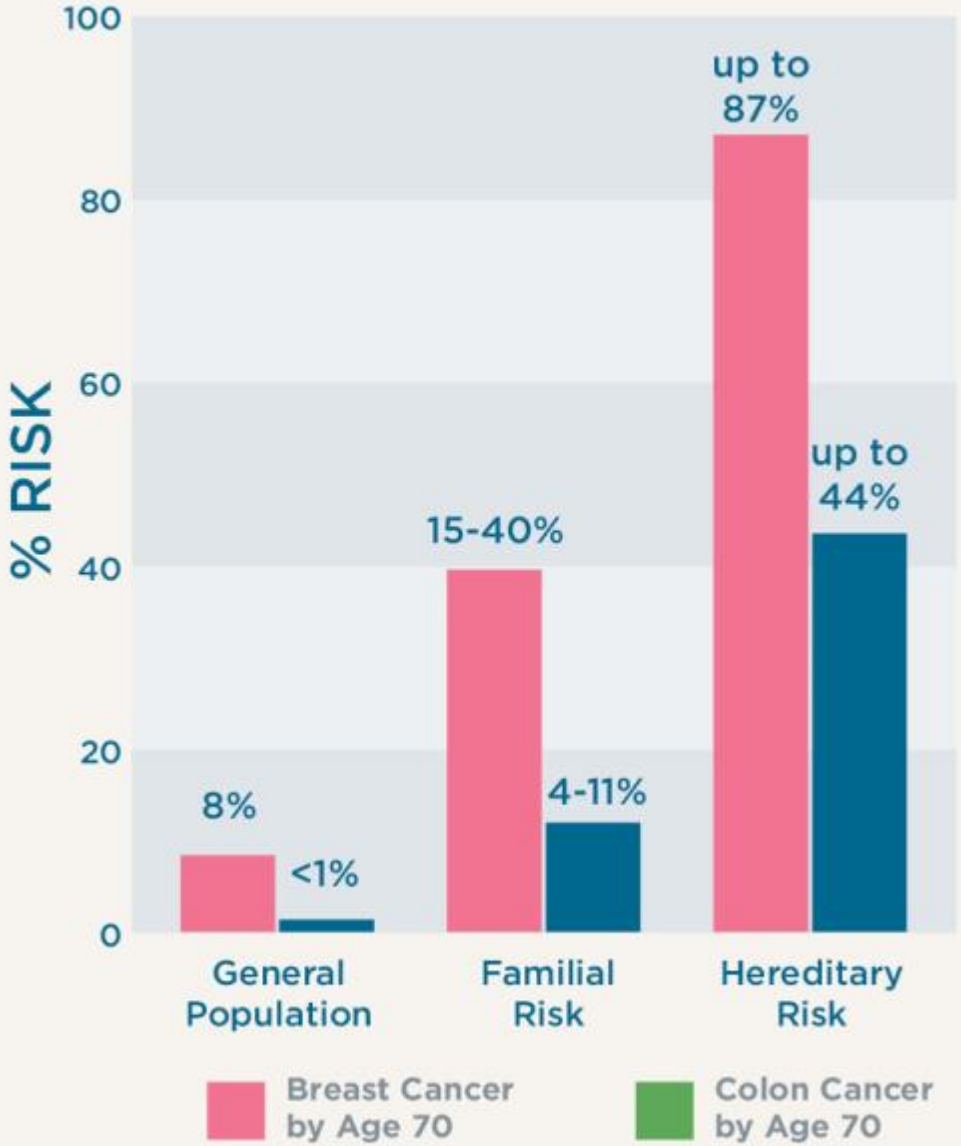
*In addition to personal and/or family history based management considerations

MYRIAD

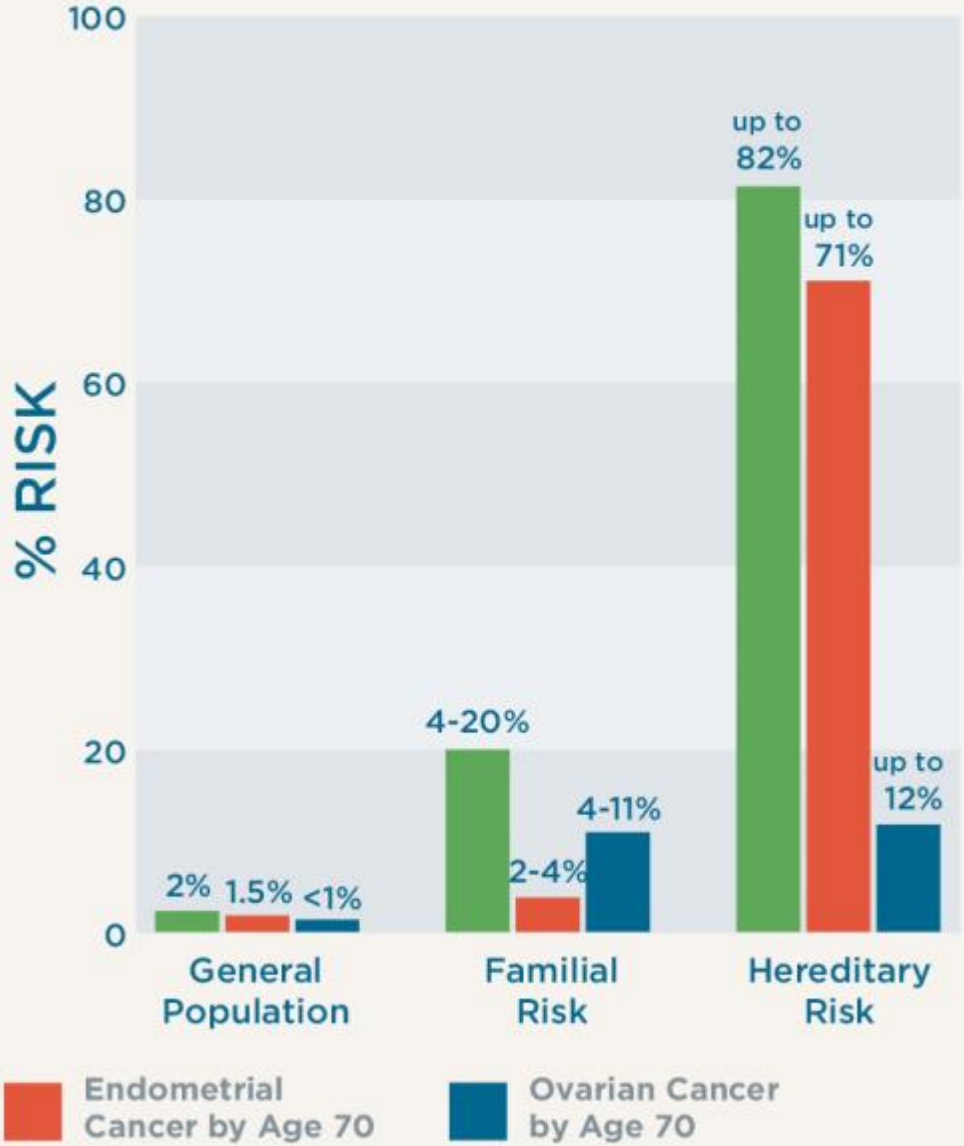
Hereditary Cancer Syndromes

OB/GYN/PCP &HCRA

Hereditary Breast & Ovarian Cancer (HBOC)



Lynch Syndrome



Breast Cancer by Age 70 | Colon Cancer by Age 70 | Endometrial Cancer by Age 70 | Ovarian Cancer by Age 70

HBOC REFERENCES: 1. Domchek SM, et al. Br Ca Res Treat. 2010 Jan;119(2):409-14. 2. Ford D, et al. Lancet. 1994;343:692-5. 3. Struewing JP, et al. NEJM. 1997;336:1401-8. 4. Antoniou A, et al. AJHG. 2003;72:1117-30. 5. The Breast Cancer Linkage Consortium.JNCI. 1999;15:1310-6. 6. Easton DF, et al. AJHG. 1995;56:265- 71. 7. King MC, et al. Science. Oct 24 2003:643-6. 8. Narod SA, Offit K. JCO. 2005 Mar 10;23(8):1656-63. 9. DevCan: Probability of Developing or Dying of Cancer Software, Version 6.0. Statistical Research and Applications Branch, National Cancer Institute, 2005. http:// srab.cancer. gov/devcan. Assessed Jan 2010. 10. Metcalfe KA, et al. Br J Cancer. 2009 Jan 27;100(2):421-5.Epub 2008 Dec 16. 11. Kauff ND, et al. JNCI. 2005;97(18):1382-4. 12. Pharoah Paul PD and Ponder BA. Best Practice & Research Clinical Obstetrics and Gynecology. Vol 16. No.4. 449- 68. 2002. 13. Sutcliffe, et al. Int J Cancer. 2000 Jul 1;(87)1:110-7. 14. Whittemore AS, et al. AJHG. 1997;60:496-504. 15. Ford D, et al. AJHG. 1998;62:676-89.
LYNCH REFERENCES: 1. Vasen HFA, et al. Gastroenterology. 1996;110-1020-7. 2. Aarnio M, et al. Int J Cancer. 1999;81:214-8. 3. Vasen HF, et al. J Clin Oncol. 2001 Oct 15;19(20):4074-80. 4. Hampel H, et al. Gastroenterology. 2005 Aug; 129(2):415-21. 5. Hendriks YM, et al. Gastroenterology. 2004;127:17-25. 6. Stoffel E, et al. Gastroenterology. 2009;137(5):1621-7. 7. Surveillance Epidemiology End Result (SEER), National Cancer Institute 2007. http://SEER.cancer.gov/faststats. 8. Jasperson KW, et al. Gastroenterology. 2010;138:2044-58. 9. Taylor DP, et al. Gastroenterology. 2010;138:877-885. 10. Grady, WM, et al. Gastroenterology. 2003;124:1574-94. 11. Burt RW. Gastroenterology 2000; 119:837-853. 12. Butterworth AS, et al. European Journal of Cancer. 2006;42:216-217. 13. Pharoah Paul PD and Ponder BA. Best Practice & Research Clinical Obstetrics and Gynaecology. Vol 16. No.4. 449- 68. 2002.

Do you see how CFHx impacts all patients

OB/GYN/PCP &HCRA

Today's Schedule

10:00 – Annual

10:15 – OB Visit

10:30 – Contraception

10:45 – Problem Visit
Pelvic Pain

11:00 – Problem Visit
Irreg. Heavy Bleeding

11:15 – OB Visit

11:30 – Annual

11:45 – Contraception

Active use of CFHx helps to ensure you are making optimal recommendations

- **ACOG[1], USPSTF[2] and NCCN[3] guidelines exist for Hereditary Cancer Risk Assessment**
- **Optimal medical recommendations for all patient visit types:**
  - Well-woman visit
  - Problem visit
  - OB visit
- **May increase patient safety and quality of care**

1. American College of Obstetricians and Gynecologists; ACOG Committee on Practice Bulletins—Gynecology; ACOG Committee on Genetics; Society of Gynecologic Oncologists. ACOG Practice Bulletin No. 103: Hereditary breast and ovarian cancer syndrome. Obstet Gynecol. 2009;113(4):957-66. 2. U.S. Preventive Services Task Force. Genetic Risk Assessment and BRCA Mutation Testing for Breast and Ovarian Cancer Susceptibility: Recommendation Statement. Annals of Internal Medicine. 2005 Sep;143(5):355-361. 3. http://www.nccn.org/clinical

Do you believe you need to utilize CFHx for every visit type to make optimal management recommendations?

Consider:

According to guidelines, patients at increased risk require more intervention visits which may include increased surveillance, chemoprevention and risk-reducing surgeries.

Solution

OB/GYN/PCP &HCRA

Hereditary Cancer Risk Assessment standard of care for every patient:

Education

- Clinical background
- Test result interpretation
- Pre and post test counseling

+

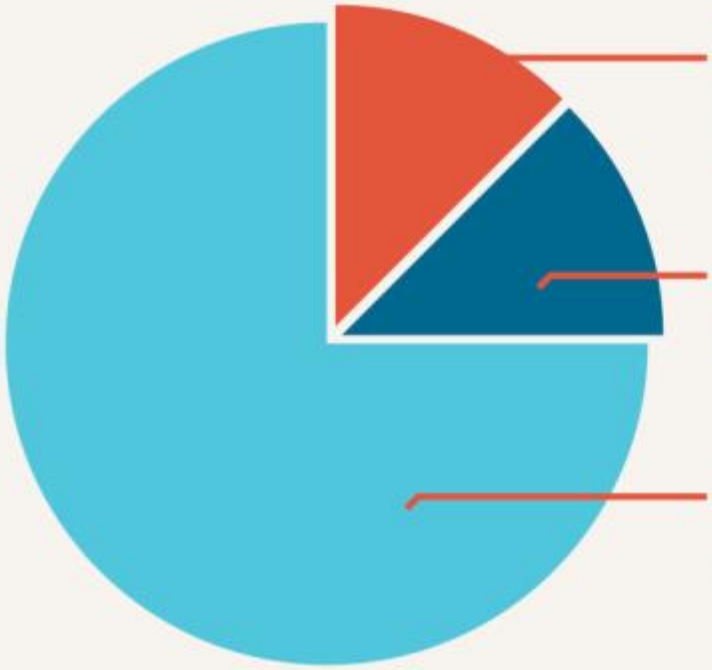
Process

- Standard protocol to efficiently assess every patient for hereditary cancer risk
- Establish management plans

Hereditary & Familial Cancer: Establishing a Protocol

A protocol should be used to efficiently stratify your patient's risk for a hereditary cancer

Steps: SCREEN, EVALUATE, DIAGNOSE, MANAGE



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Highest Risk

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General Population Risk

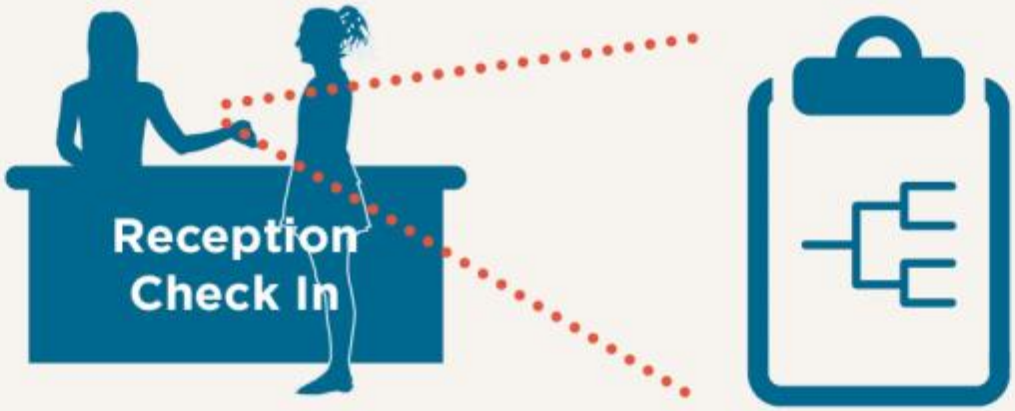
Genetic testing is the only way to stratify risk between these two groups and find those at highest risk for cancer

References:1. National Comprehensive Cancer Network Genetic/Familial High Risk Assessment: Breast and Ovarian version 1.2012. 2012(1):MS-2. 2. ACOG Practice Bulletin No. 103. Obstet Gynecol. 2009 Apr;113(4):957-66. 3. Foulkes WD. Inherited susceptibility to common cancers. N Engl J Med. 2008 Nov 13;359(20):2143-53. 4. Pharoah PD, et al. Polygenic susceptibility to breast cancer and implications for prevention. Nat Genet. 2002 May;31(1):33-6. Epub 2002 Mar 4.


SCREEN
EVALUATE
DIAGNOSE
MANAGE
SCREEN

SCREEN

OB/GYN/PCP &HCRA



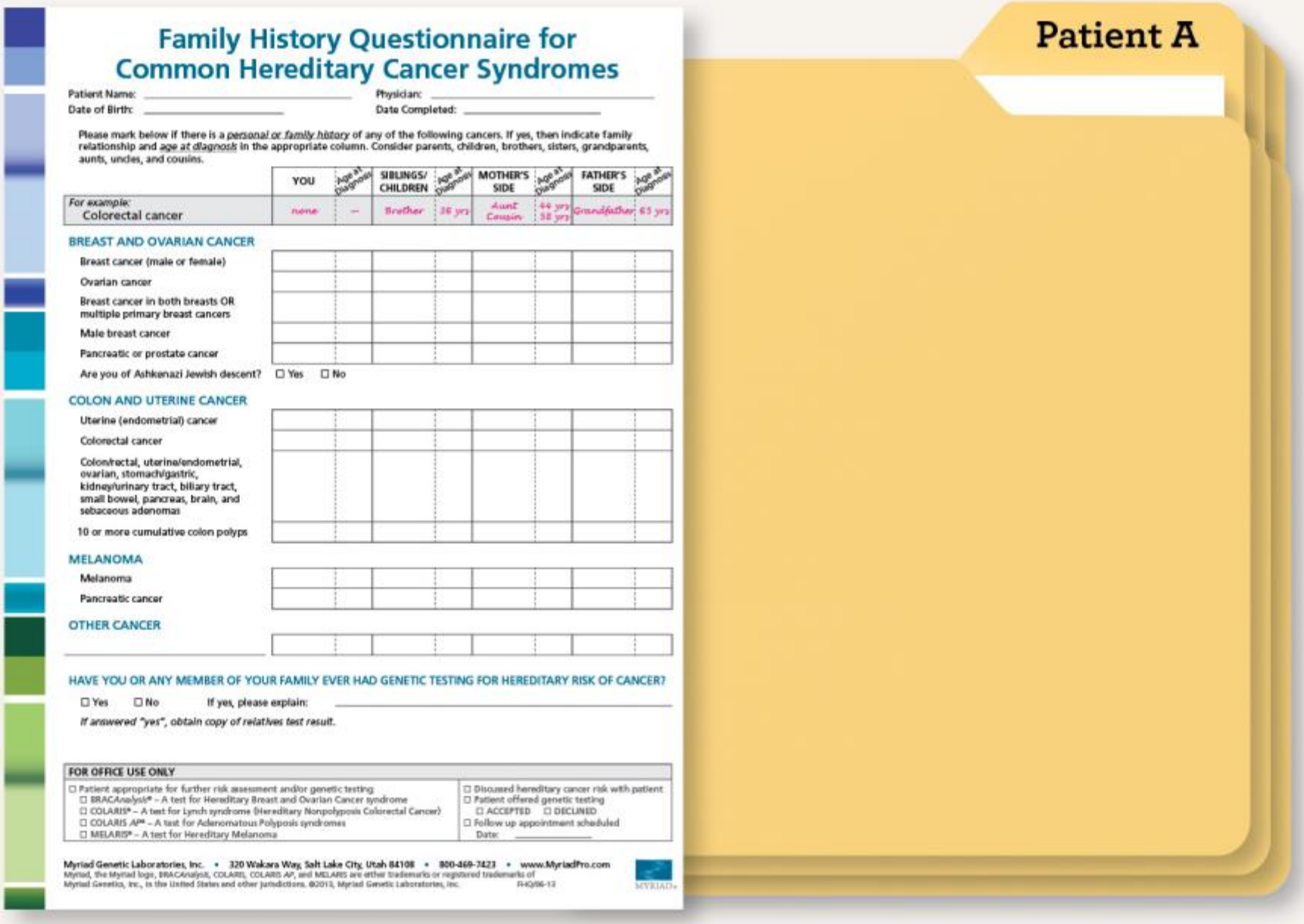
WRITTEN FHQ

- **Use written cancer FHQ with all patients every visit**
- **Remind patients to be complete and accurate when filling out FHQ, including paternal side**

ACOG recommends that all women receive a family history evaluation as screening for inherited risk, this should be updated regularly.

ACOG Committee Opinion 478, March 2011

Use a Family History Questionnaire on all patients



Family History Questionnaire for Common Hereditary Cancer Syndromes

Patient Name: _____ Physician: _____

Date of Birth: _____ Date Completed: _____

Please mark below if there is a *personal or family history* of any of the following cancers. If yes, then indicate family relationship and *age at diagnosis* in the appropriate column. Consider parents, children, brothers, sisters, grandparents, aunts, uncles, and cousins.

	YOU	Age at Diagnosis	SIBLINGS/ CHILDREN	Age at Diagnosis	MOTHER'S SIDE	Age at Diagnosis	FATHER'S SIDE	Age at Diagnosis
For example: Colorectal cancer	none	–	Brother	36 yrs	Aunt Cousin	64 yrs 58 yrs	Grandfather	65 yrs
BREAST AND OVARIAN CANCER								
Breast cancer (male or female)								
Ovarian cancer								
Breast cancer in both breasts OR multiple primary breast cancers								
Male breast cancer								
Pancreatic or prostate cancer								
Are you of Ashkenazi Jewish descent? ☐ Yes ☐ No								
COLON AND UTERINE CANCER								
Uterine (endometrial) cancer								
Colorectal cancer								
Colon/rectal, uterine/endometrial, ovarian, stomach/gastric, kidney/urinary tract, biliary tract, small bowel, pancreas, brain, and sebaceous adenomas								
10 or more cumulative colon polyps								
MELANOMA								
Melanoma								
Pancreatic cancer								
OTHER CANCER								

HAVE YOU OR ANY MEMBER OF YOUR FAMILY EVER HAD GENETIC TESTING FOR HEREDITARY RISK OF CANCER?

☐ Yes ☐ No If yes, please explain: _____

If answered "yes", obtain copy of relatives test result.

FOR OFFICE USE ONLY

☐ Patient appropriate for further risk assessment and/or genetic testing
- ☐ BRACAnalysis® – A test for Hereditary Breast and Ovarian Cancer syndrome
- ☐ COLARIS® – A test for Lynch syndrome (Hereditary Nonpolyposis Colorectal Cancer)
- ☐ COLARIS AP™ – A test for Adenomatous Polyposis syndromes
- ☐ MELARIS® – A test for Hereditary Melanoma

☐ Discussed hereditary cancer risk with patient
☐ Patient offered genetic testing
- ☐ ACCEPTED ☐ DECLINED

☐ Follow up appointment scheduled
Date: _____

Myriad Genetic Laboratories, Inc. • 320 Wakara Way, Salt Lake City, Utah 84108 • 800-469-7423 • www.MyriadPro.com

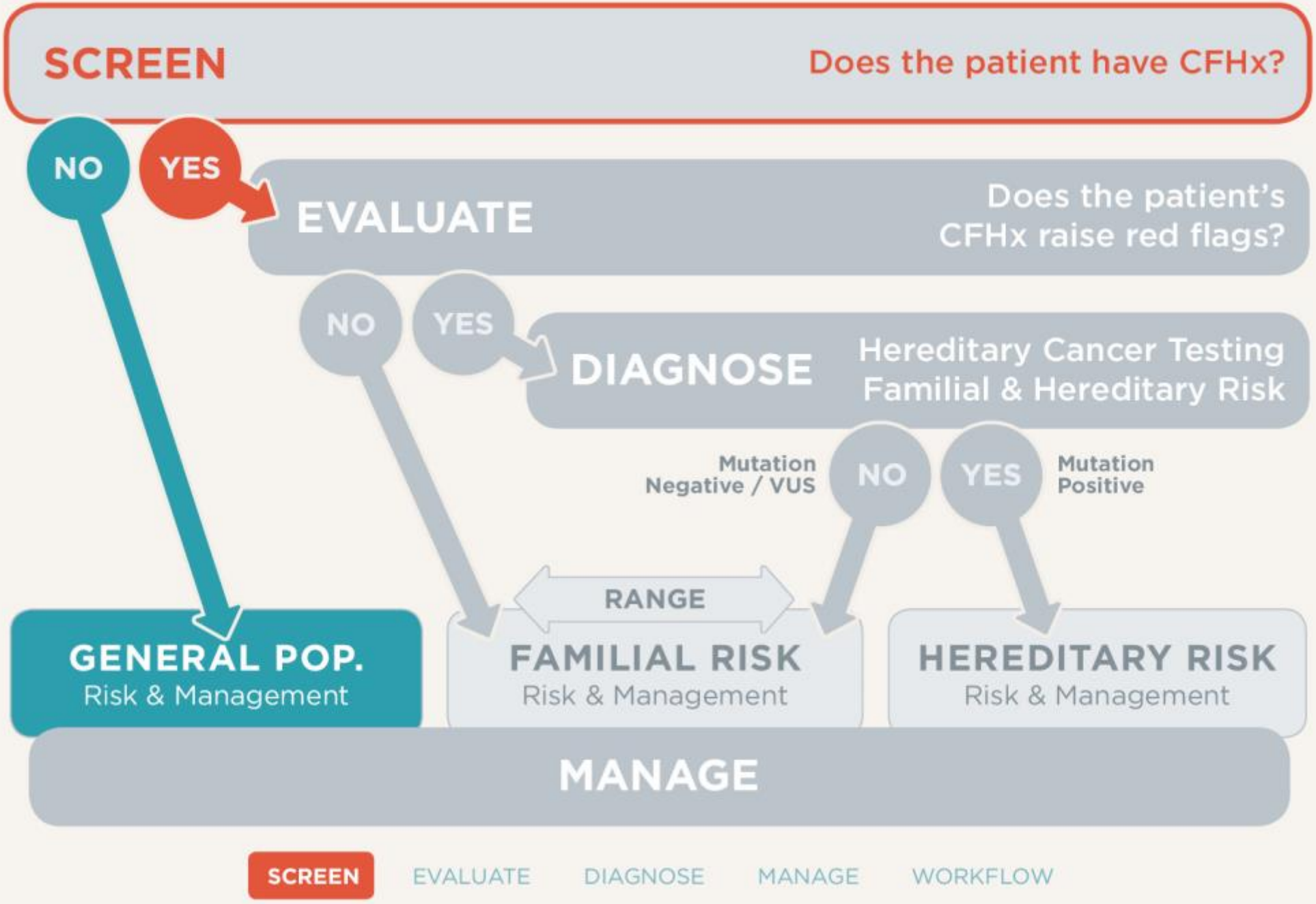
 FHQ06-13

Patient A

SCREEN EVALUATE DIAGNOSE MANAGE WORKFLOW

Screen

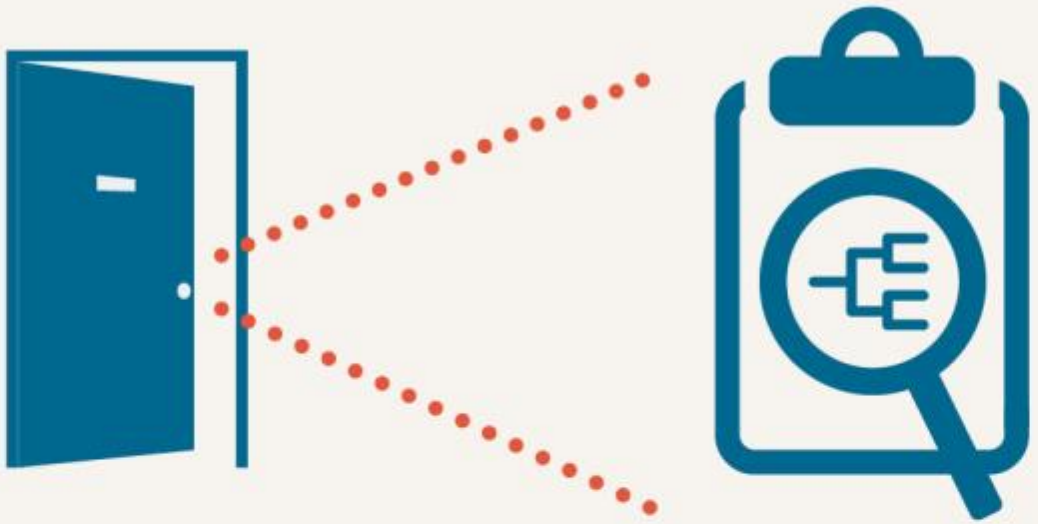
OB/GYN/PCP &HCRA




SCREEN
EVALUATE
DIAGNOSE
MANAGE
EVALUATE

EVALUATE

OB/GYN/PCP &HCRA



APPLY CRITERIA

- **Review all FHQs and document**
- **Use consistent testing criteria and evaluation methods**

Red Flags

Identify Your Patients at Risk

Hereditary Breast and Ovarian Cancer (HBOC) Syndrome

An individual with, or a family history^ of, any of the following:

- Ovarian cancer
- Breast cancer diagnosed before age 50
- Two primary breast cancers
- Male breast cancer
- Triple negative breast cancer
- Ashkenazi Jewish with an HBOC-associated cancer†‡
- Three or more HBOC-associated cancers at any age†‡
- A previously identified HBOC syndrome mutation in the family

‡HBOC-associated cancers include breast (including DCIS), ovarian, pancreatic, and aggressive prostate cancer (Gleason score of ≥7) †In the same individual or on the same side of the family. ^Close blood relatives includes first-, second-, or third-degree in the maternal or paternal lineage.

Lynch Syndrome

An individual with any of the following:

- Colorectal or endometrial cancer before age 50
- Two or more Lynch syndrome cancers§ at any age
- A Lynch syndrome cancer§ with one or more relative(s) with a Lynch syndrome cancer¶

An individual with any of the following family histories:

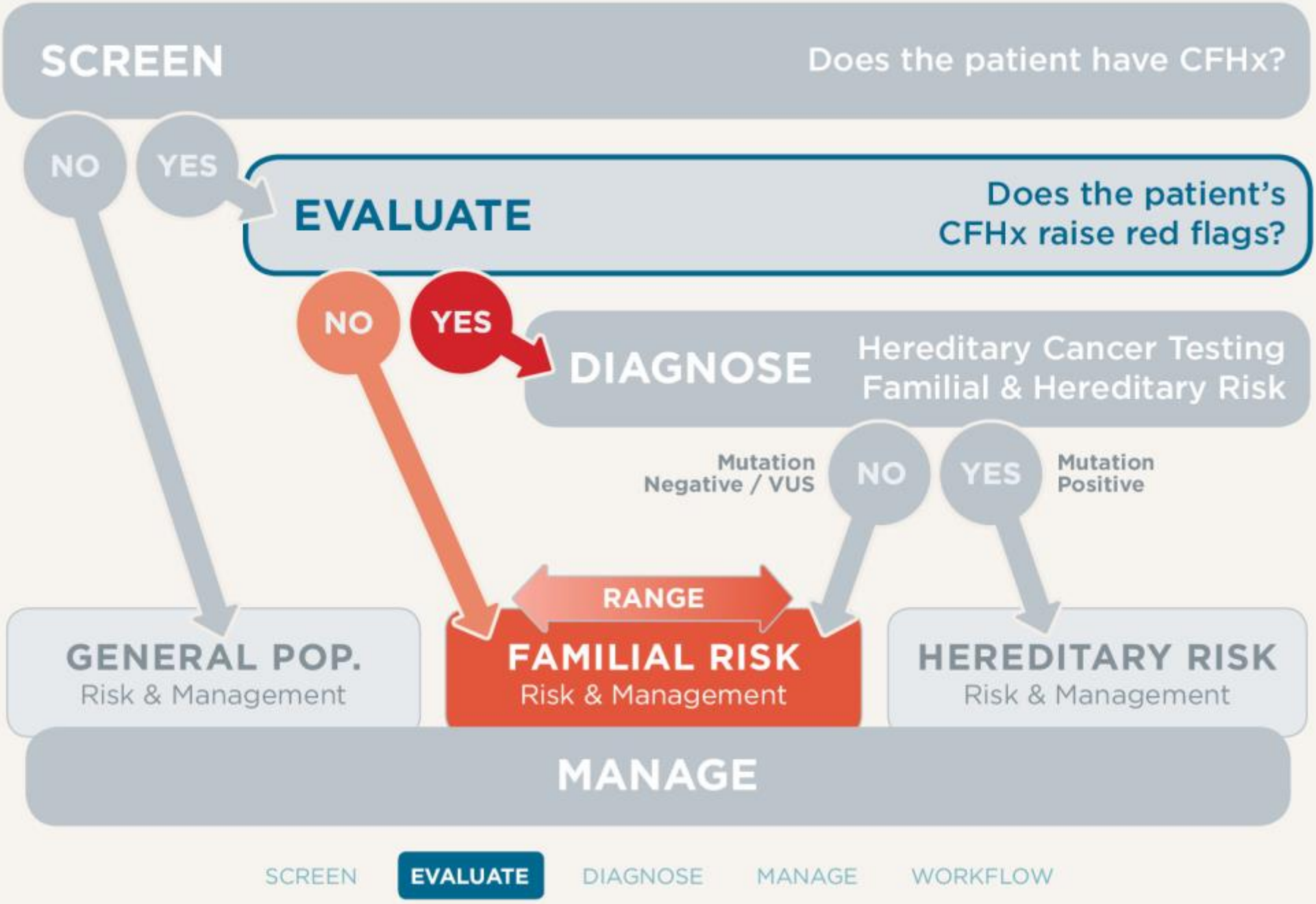
- A first- or second-degree relative with colorectal or endometrial cancer before age 50
- Two or more relatives with a Lynch syndrome cancer§, one before age 50¶
- Three or more relatives with a Lynch syndrome cancer§ at any age¶
- A previously identified Lynch syndrome or MAP syndrome mutation in the family

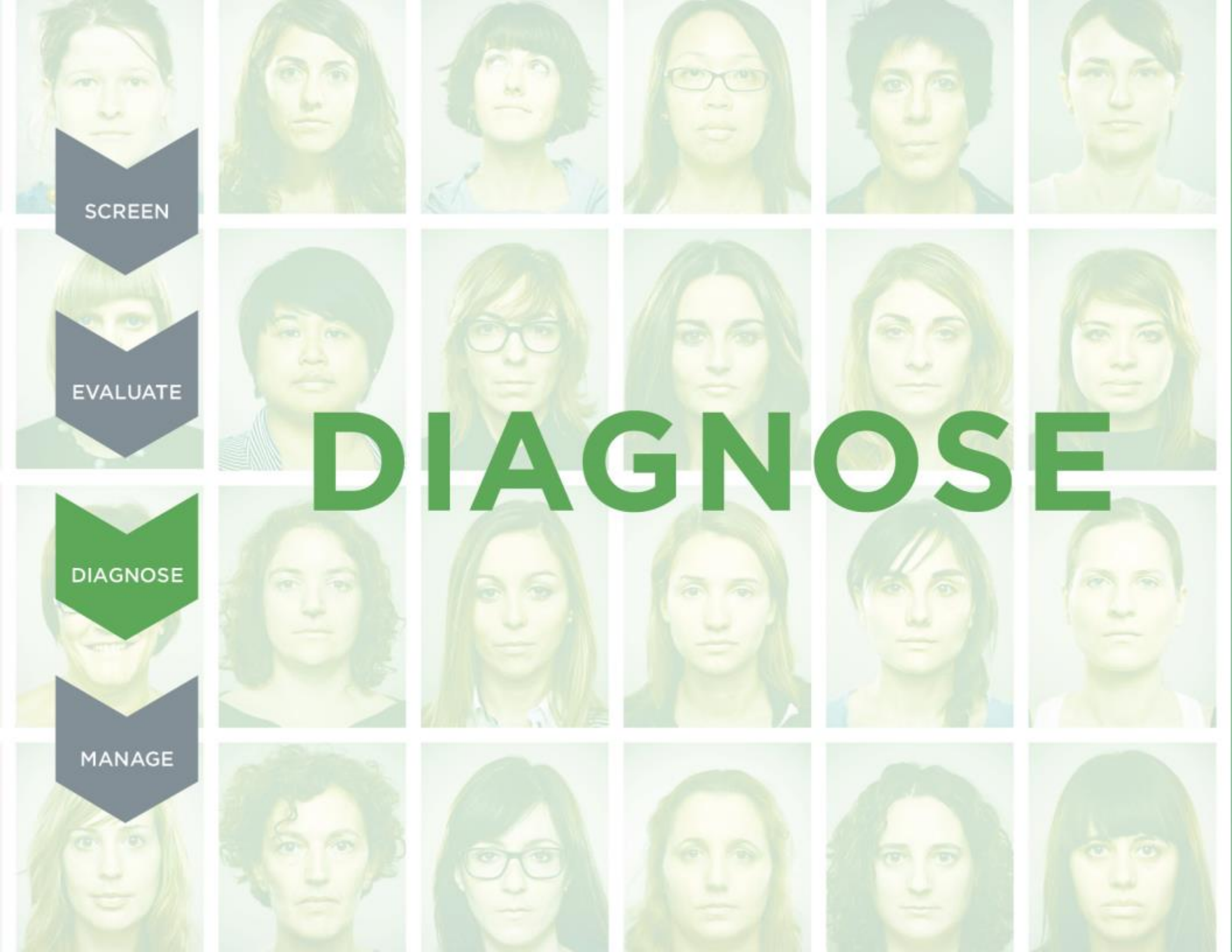
§ Lynch syndrome-associated cancers include colorectal, endometrial, gastric, ovarian, ureter/renal pelvis, biliary tract, small bowel, pancreas, brain, sebaceous adenomas. ¶Cancer history should be on the same side of the family

For full list of references visit MyriadPro.com/references

Evaluate

OB/GYN/PCP &HCRA




SCREEN
EVALUATE
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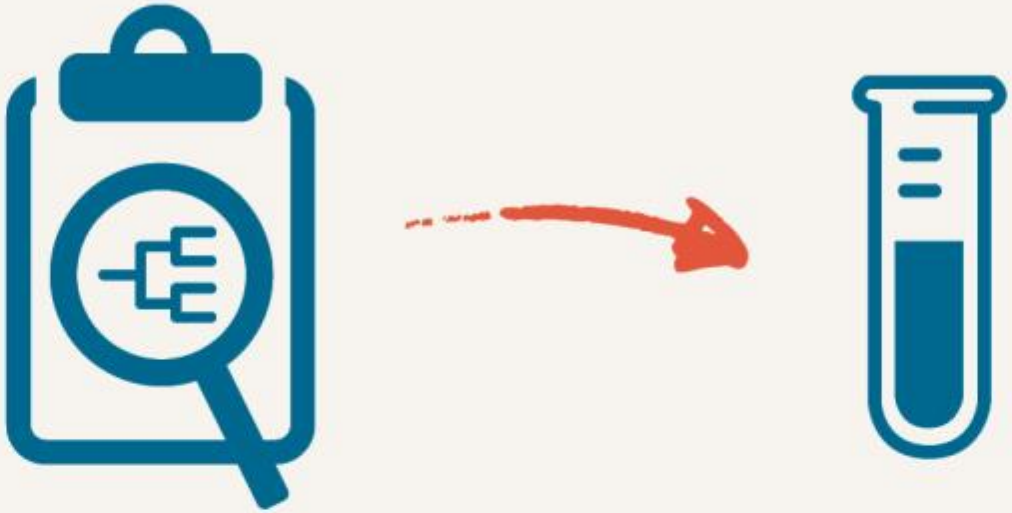
DIAGNOSE

DIAGNOSE

OB/GYN/PCP &HCRA



APPLY CRITERIA

- Test appropriate patients

FOLLOW UP

- Use follow-up protocol for all patients whether tested or not
- Document follow-up appropriately

What is Your Patient's Cancer Risk?

OB/GYN/PCP &HCRA

Patients per year: *4,000**

~3,600 Patients
NORMAL CANCER
FAMILY HISTORY

~400 Patients
ABNORMAL CANCER
FAMILY HISTORY **(~10%)**

~372 Patients
FAMILIAL
RISK (~93%)

~28 Patients
HEREDITARY
RISK (~7%)

SCREEN **EVALUATE** DIAGNOSE MANAGE WORKFLOW

*Approximate numbers based on general primary care practice information.

Hughes KS, et al. Prevalence of family history of breast and ovarian cancer in a single primary care practice using a self-administered questionnaire. Breast J. 2003 Jan-Feb;9(1):19-25. BRCA1 and BRCA2 prevalence table for unaffected patient with a cancer family history. https://www.MyriadPro.com/bracanalysis-prevalence-tables. Result rate may vary based on ethnicity and specific cancer family history.

Informed Consent

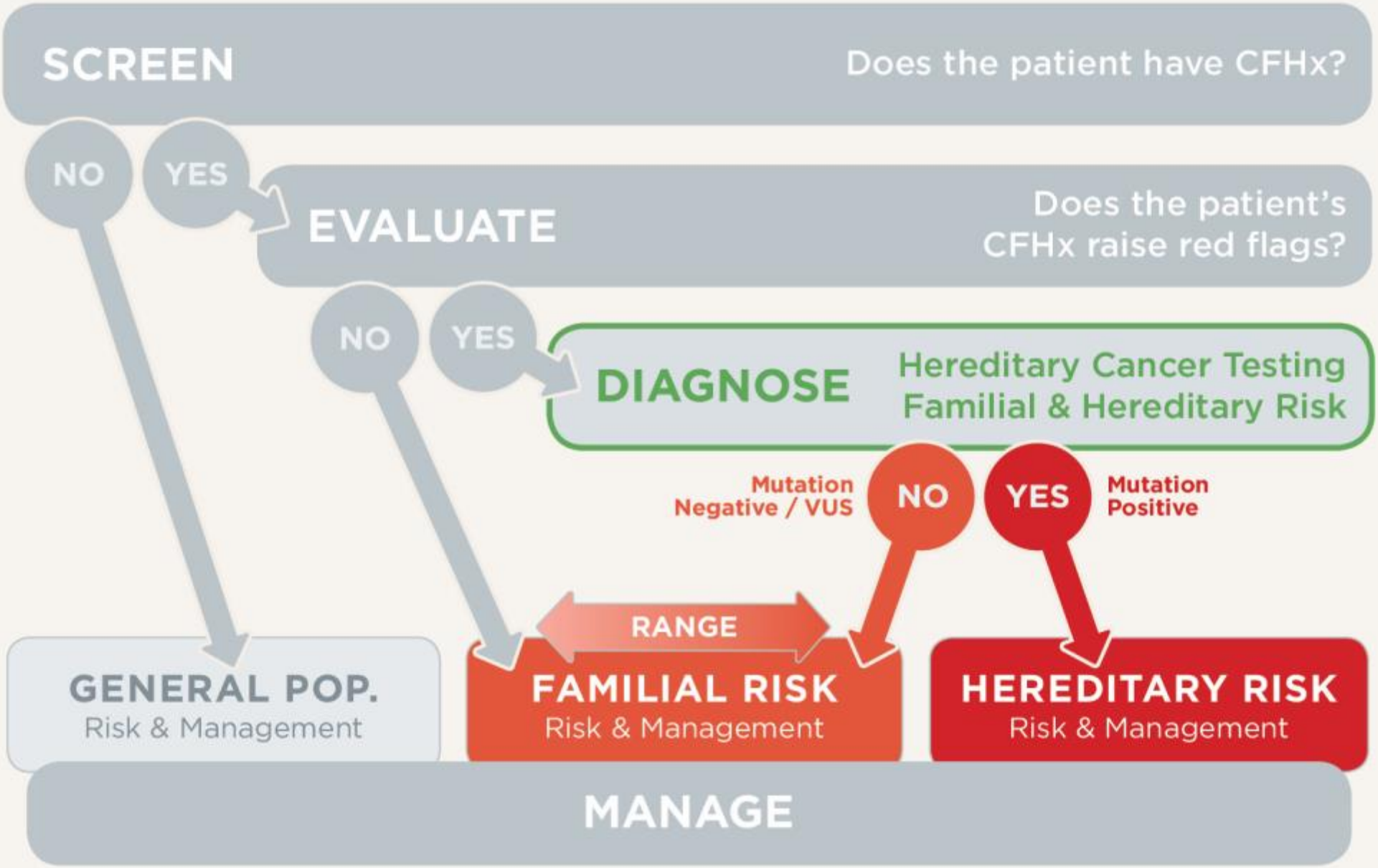
OB/GYN/PCP &HCRA

If patient meets testing criteria:

- Discuss testing with patients just as you do with other common diagnostic tests such as an abnormal pap
- Emphasize the need for a test result in order to manage the patient properly
- Gain agreement from patient
- Patient Education Videos
  HBOC - http://bcove.me/v57lya6q
  Lynch - http://bcove.me/oai8af1u

Diagnose

OB/GYN/PCP &HCRA




SCREEN
EVALUATE
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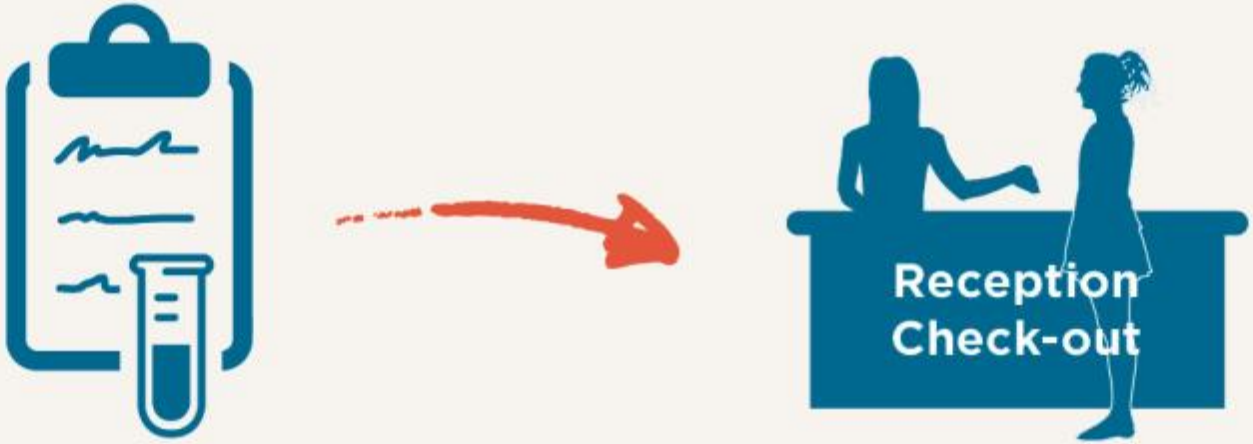
MANAGE
MANAGE

MANAGE

OB/GYN/PCP &HCRA



FOLLOW UP

- Document results & management
- Communication plan for patients and referring providers

PLAN

- Manage patients based on individualized risk
- Document individualized medical management plan
- Involve other providers as appropriate

HBOC Diagnosis/Management Options

OB/GYN/PCP &HCRA

HBOC Risk Assessment: Personal & Family History

GENERAL POPULATION
Routine Care

FAMILIAL RISK
No Mutation or VUS
Empiric Care

HEREDITARY RISK
Deleterious Mutation
High Risk Care

Intervention
May include:
Chemoprevention such as:
OCs, Tamoxifen, Raloxifene

Lifestyle: Family Planning,
Diet, Exercise,
Normal BMI, Avoid EtOH

Surveillance
May include: Mammogram,
Breast MRI, TVUS, CA125,
Skin/eye, Prostate, Pancreas

Surgery
- RRBSO
- BPM

1) NCCN Clinical Practice Guidelines in Oncology v.1.2011 Genetic/Familial High-Risk Assessment: Breast and Ovarian. Accessed at www.nccn.org 2) Warner E, et al. Surveillance of BRCA1 and BRCA2 mutation carriers with magnetic resonance imaging, ultrasound, mammography, and clinical breast examination. JAMA. 2004;292(11):1317-25. 3) Saslow, et al. American cancer society guidelines for breast screening with MRI as an adjunct to mammography. CA Cancer J Clin. 2007;57(2):75-89. 4) Warner E, et al. Prospective Study of Breast Cancer Incidence in Women With a BRCA1 or BRCA2 Mutation Under Surveillance With and Without Magnetic Resonance Imaging. J Clin Oncol. 2011;29(13):1664-9. 5) NIH Consensus Development Panel on Ovarian Cancer. Ovarian Cancer. Screening, treatment and follow-up. JAMA. 1995;273:491- 497. 6) Burke W, et al. Recommendations for follow-up care of individuals with an inherited predisposition to cancer. II. BRCA1 and BRCA2. Cancer Genetics Studies Consortium. JAMA. 1997;277:997-1003. 7) Berchuck A, et al. Role of BRCA1 mutation screening in the management of familial ovarian cancer. American Journal of Obstetrics & Gynecology. 1996;175:738-746. 8) Robson ME. Clinical considerations in t he management of individuals at risk for hereditary breast and ovarian cancer. Cancer Control. 2002;9:457-465. 9) Narod SA, Offit K. Prevention and management of hereditary breast cancer. J Clin Oncol. 2005 Mar 10;23(8):1656-63. 10) Rebbeck TR, et al. Prophylactic oophorectomy in carriers of BRCA1 or BRCA2 mutations. NEJM. 2002;346:1616-1622. 11) Finch A, et al. Salpingo-oophorectomy and the risk of ovarian, fallopian tube, and peritoneal cancers in women with a BRCA1 or BRCA2 Mutation. JAMA. 2006;296(2):185-92. 12) Kauff ND, et al. Risk-reducing salpingo-oophorectomy for the prevention of BRCA1- and BRCA2-associated breast and gynecologic cancer: a multicenter, prospective study. J Clin Oncol. 2008;26(8):1331-7. 13) Rebbeck TR, et al. Meta-analysis of risk reduction estimates associated with risk-reducing salpingo-oophorectomy in BRCA1 and BRCA2 mutation carriers. J Natl Cancer Inst. 2009;101(2):80-7. 14) Kauff ND, et al. Risk-reducing salpingo-oophorectomy in women with a BRCA1 or BRCA2 mutation. NEJM. 2002;346:1609-1615. 15) Narod SA, Offit K. Prevention and management of hereditary breast cancer. JCO. 2005;23(8):1656-63. 16) Hartmann LC, et al. Efficacy of bilateral prophylactic mastectomy in women with a family history of breast cancer. NEJM. 1999, 340:77-84. 17) Meijers-Heijboer H, et al. Breast cancer after prophylactic bilateral mastectomy in women with a BRCA1 or BRCA2 mutation. NEJM. 2001;345:159-164. 18) Hartmann LC, et al. Efficacy of bilateral prophylactic mastectomy in BRCA1 and BRCA2 gene mutation carriers. JNCI. 2001;93:1633-1637. 19) Rebbeck TR, et al. Bilateral prophylactic mastectomy reduces breast cancer risk in BRCA1 and BRCA2 mutation carriers: The PROSE Study Group. JCO. 2004;22:1055-1062. 20) Van Sprundel TC, et al. Risk reduction of contralateral breast cancer and survival after contralateral prophylactic mastectomy in BRCA1 or BRCA2 mutation carriers. Br J Cancer. 2005;93(3):287-92. 21) Heemskerk-Gerritsen, et al. Prophylacti c mastectomy in BRCA1/2 mutation carriers and women at risk of hereditary breast cancer: long-term experiences at the Rotterdam Family Cancer Clinic. Ann Surg Oncol. 2007;14(12):3335-44. 22) J. Clin. Oncol. 2013 July 8 [doi 10.1200/JCO.2013.49.3122]

Lynch Diagnosis / Management

OB/GYN/PCP &HCRA

Lynch Risk Assessment: Personal & Family History

GENERAL POPULATION
Routine Care

FAMILIAL RISK
No Mutation or VUS
Empiric Care

HEREDITARY RISK
Deleterious Mutation
High Risk Care

Intervention
May include:
Chemoprevention such as:
OCs, Aspirin

Lifestyle: Family Planning,
Diet, Exercise, Normal BMI

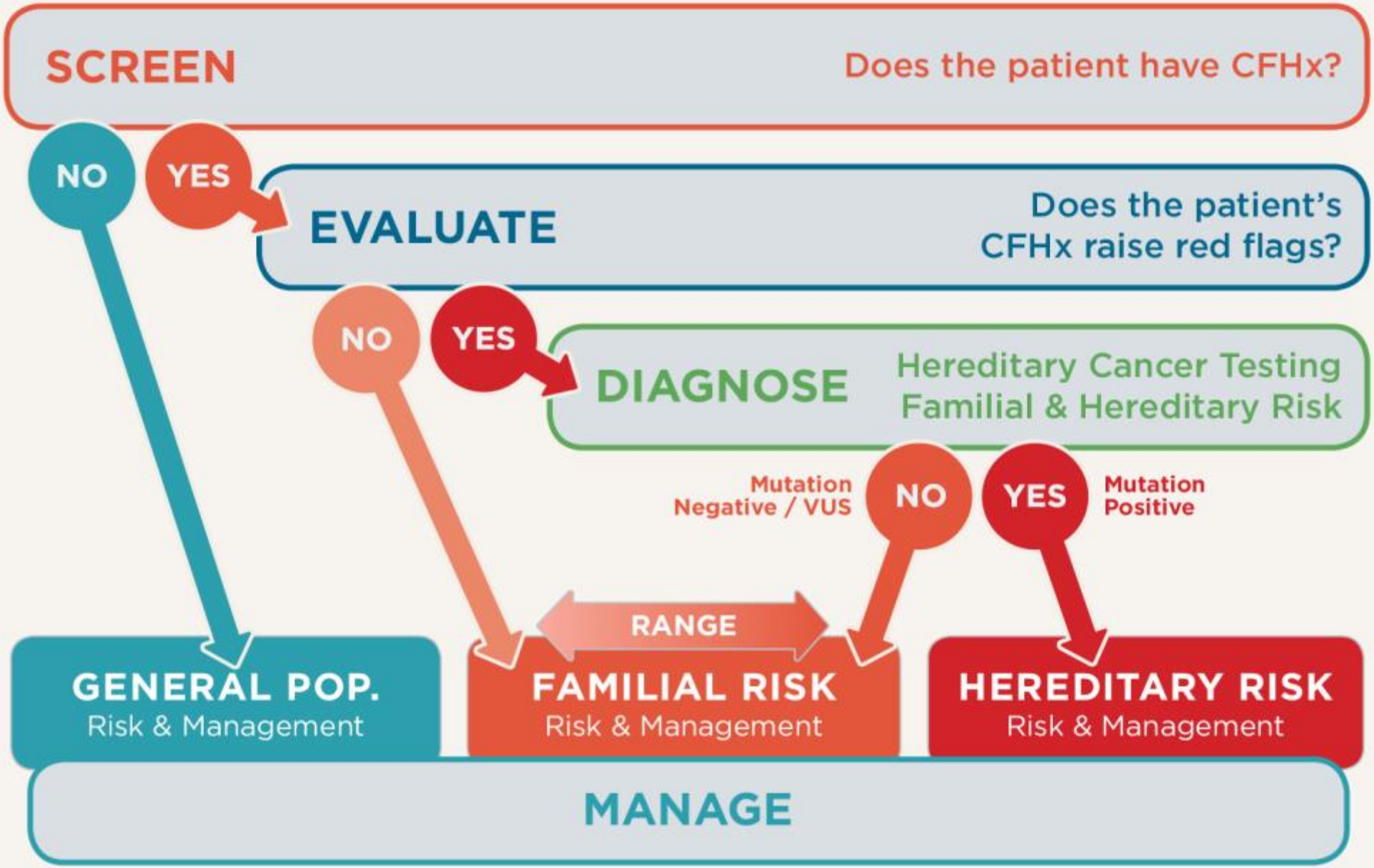
Surveillance
May include: More frequent clinical exams, Endometrial biopsy, Hysteroscopy, Colonoscopy, Upper endoscopy, TVUS, CA125, Renal, Neuro, Pancreas, Biliary, Skin

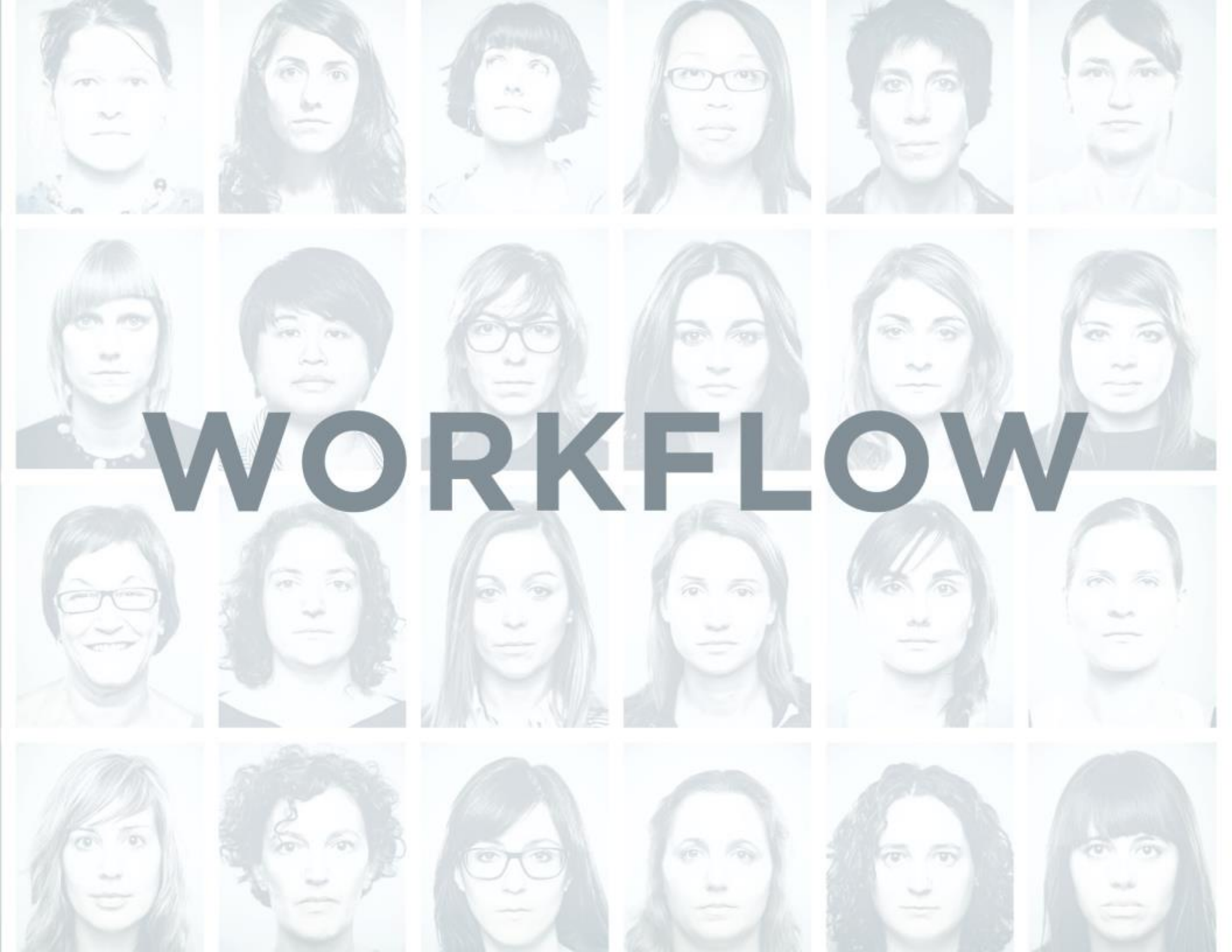
Surgery

- RR Hyst+BSO
- RR Colectomy

1) NCCN Clinical Practice Guidelines in Oncology v.1.2011 Genetic/Familial High-Risk Assessment: Breast and Ovarian. Accessed at www.nccn.org 2) Warner E, et al. Surveillance of BRCA1 and BRCA2 mutation carriers with magnetic resonance imaging, ultrasound, mammography, and clinical breast examination. JAMA. 2004;292(11):1317-25. 3) Saslow, et al. American cancer society guidelines for breast screening with MRI as an adjunct to mammography. CA Cancer J Clin. 2007;57(2):75-89. 4) Warner E, et al. Prospective Study of Breast Cancer Incidence in Women With a BRCA1 or BRCA2 Mutation Under Surveillance With and Without Magnetic Resonance Imaging. J Clin Oncol. 2011;29(13):1664-9. 5) NIH Consensus Development Panel on Ovarian Cancer. Ovarian Cancer. Screening, treatment and follow-up. JAMA. 1995;273:491- 497. 6) Burke W, et al. Recommendations for follow-up care of individuals with an inherited predisposition to cancer. II. BRCA1 and BRCA2. Cancer Genetics Studies Consortium. JAMA. 1997;277:997-1003. 7) Berchuck A, et al. Role of BRCA1 mutation screening in the management of familial ovarian cancer. American Journal of Obstetrics & Gynecology. 1996;175:738-746. 8) Robson ME. Clinical considerations in t he management of individuals at risk for hereditary breast and ovarian cancer. Cancer Control. 2002;9:457-465. 9) Narod SA, Offit K. Prevention and management of hereditary breast cancer. J Clin Oncol. 2005 Mar 10;23(8):1656-63. 10) Rebbeck TR, et al. Prophylactic oophorectomy in carriers of BRCA1 or BRCA2 mutations. NEJM. 2002;346:1616-1622. 11) Finch A, et al. Salpingo-oophorectomy and the risk of ovarian, fallopian tube, and peritoneal cancers in women with a BRCA1 or BRCA2 Mutation. JAMA. 2006;296(2):185-92. 12) Kauff ND, et al. Risk-reducing salpingo-oophorectomy for the prevention of BRCA1- and BRCA2-associated breast and gynecologic cancer: a multicenter, prospective study. J Clin Oncol. 2008;26(8):1331-7. 13) Rebbeck TR, et al. Meta-analysis of risk reduction estimates associated with risk-reducing salpingo-oophorectomy in BRCA1 and BRCA2 mutation carriers. J Natl Cancer Inst. 2009;101(2):80-7. 14) Kauff ND, et al. Risk-reducing salpingo-oophorectomy in women with a BRCA1 or BRCA2 mutation. NEJM. 2002;346:1609-1615. 15) Narod SA, Offit K. Prevention and management of hereditary breast cancer. JCO. 2005;23(8):1656-63. 16) Hartmann LC, et al. Efficacy of bilateral prophylactic mastectomy in women with a family history of breast cancer. NEJM. 1999, 340:77-84. 17) Meijers-Heijboer H, et al. Breast cancer after prophylactic bilateral mastectomy in women with a BRCA1 or BRCA2 mutation. NEJM. 2001;345:159-164. 18) Hartmann LC, et al. Efficacy of bilateral prophylactic mastectomy in BRCA1 and BRCA2 gene mutation carriers. JNCI. 2001;93:1633-1637. 19) Rebbeck TR, et al. Bilateral prophylactic mastectomy reduces breast cancer risk in BRCA1 and BRCA2 mutation carriers: The PROSE Study Group. JCO. 2004;22:1055-1062. 20) Van Sprundel TC, et al. Risk reduction of contralateral breast cancer and survival after contralateral prophylactic mastectomy in BRCA1 or BRCA2 mutation carriers. Br J Cancer. 2005;93(3):287-92. 21) Heemskerk-Gerritsen, et al. Prophylacti c mastectomy in BRCA1/2 mutation carriers and women at risk of hereditary breast cancer: long-term experiences at the Rotterdam Family Cancer Clinic. Ann Surg Oncol. 2007;14(12):3335-44.

HCRA Process




WORKFLOW

Example Provider Workflow

OB/GYN/PCP &HCRA

Step	Responsible	Resources Available
SCREEN • Gives and collects cancer Family History Questionnaire (FHQ) for every patient ☐ • Informs the patient on the need to fill out her/his complete cancer family history ☐	• Receptionist • Receptionist	• Family History Questionnaire • Online Family History Tool • Family History Reminder
EVALUATE • Reviews the FHQ for cancer family history ☐ • Determines and documents appropriateness of hereditary cancer testing for patient based on cancer family history ☐	• HCP / MA • HCP	• Field Based Support • Red Flag Card • Societal Guidelines
DIAGNOSE • Counsels appropriate patient on hereditary cancer testing ☐ • Collects specimen and fills out test request form ☐	• HCP • HCP / MA	• Patient Education Tools • Patient Education Videos • Test Kits • MyriadPro.com • Patient Risk Cards
MANAGE • Sets up follow up appointment in _____ weeks for results discussion ☐ • Determines and recommends individualized management plan; follows-up with patient ☐	• Receptionist • HCP	• Results Patient Education Tools • NCCN Management Guidelines • MySupport360.com