

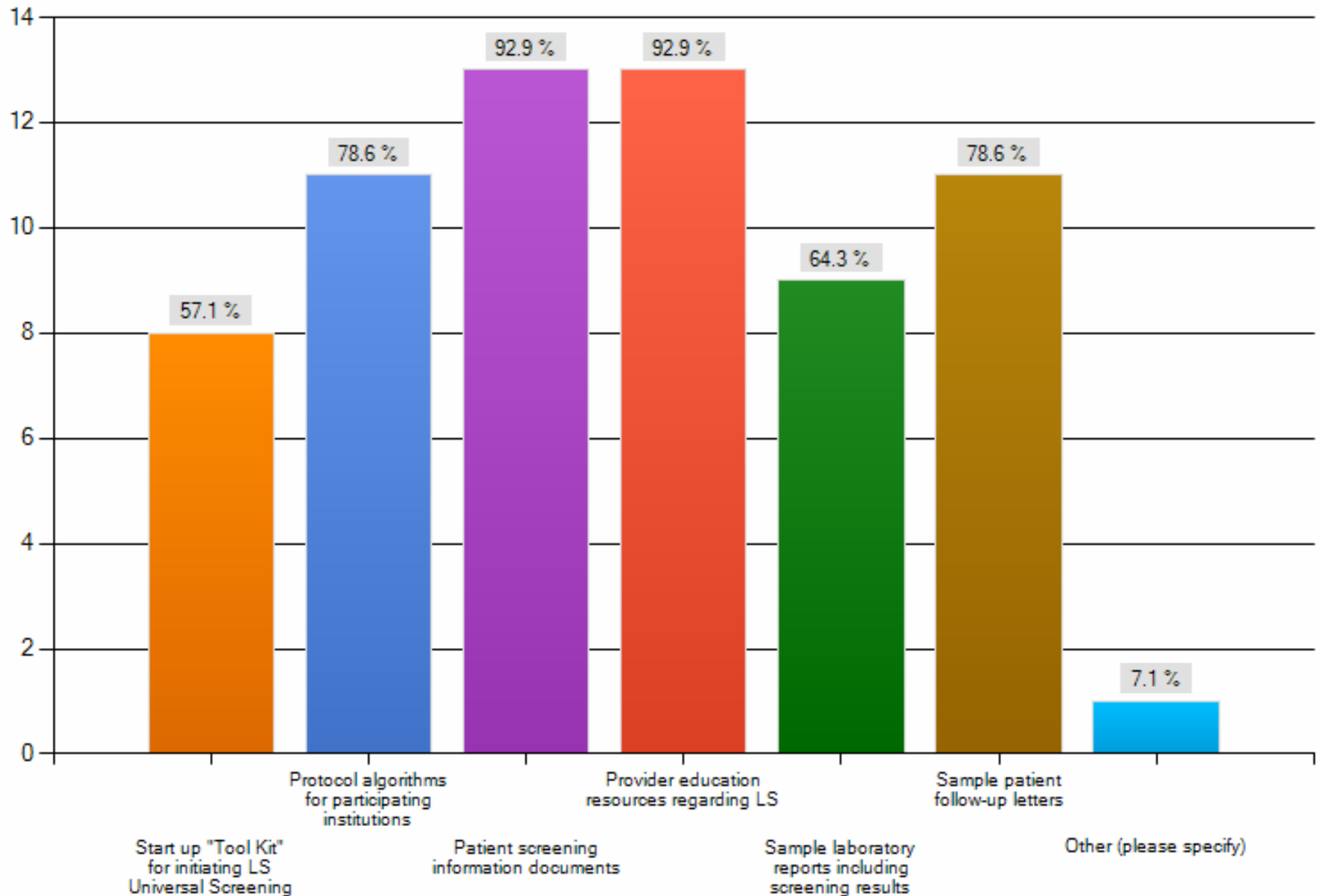


Universal Tumor Screening for Lynch Syndrome

Educational Resources for Patients and
Providers

What educational resources and tools would your institution like to see made available through the network? (check all that apply)

N = 14



Would your institution be willing to share any of their above existing materials with the Network?

Answer Options	Response Percent	Response Count
Yes	50.0%	8
No	0.0%	0
Possibly	31.3%	5
Not applicable - no existing materials	18.8%	3
Comments:		1
<i>answered question</i>		16
<i>skipped question</i>		3

Types of Materials Received

- II Centers provided some educational materials
- Divided into 2 categories
 - Provider Materials
 - Patient Materials

Provider Materials

Seven institutions shared their provider materials, including

- Letters (3 centers)
- Schematics (3 centers)
- Interpretation guides (2 centers)
- LS Fact sheet (1 center)
- Power Point presentation (1 center)
- IHC Staining procedure (1 center)

Provider Materials: Introducing your screening protocol

Themes

- Give rationale for screening
- Provide statistics
 - % CRC due to LS
 - Sensitivity/specificity
- Summarize screening and follow-up protocol
- Identify how physicians can follow-up with questions or comments

Differences

- Timing
 - When to contact providers
 - Before and/or after protocol approval
 - Intermittently to share program statistics
- Process of referring to genetic counseling
 - Opt-out/opt-in vs automatic
- Literature citations

Provider Materials: Schematics

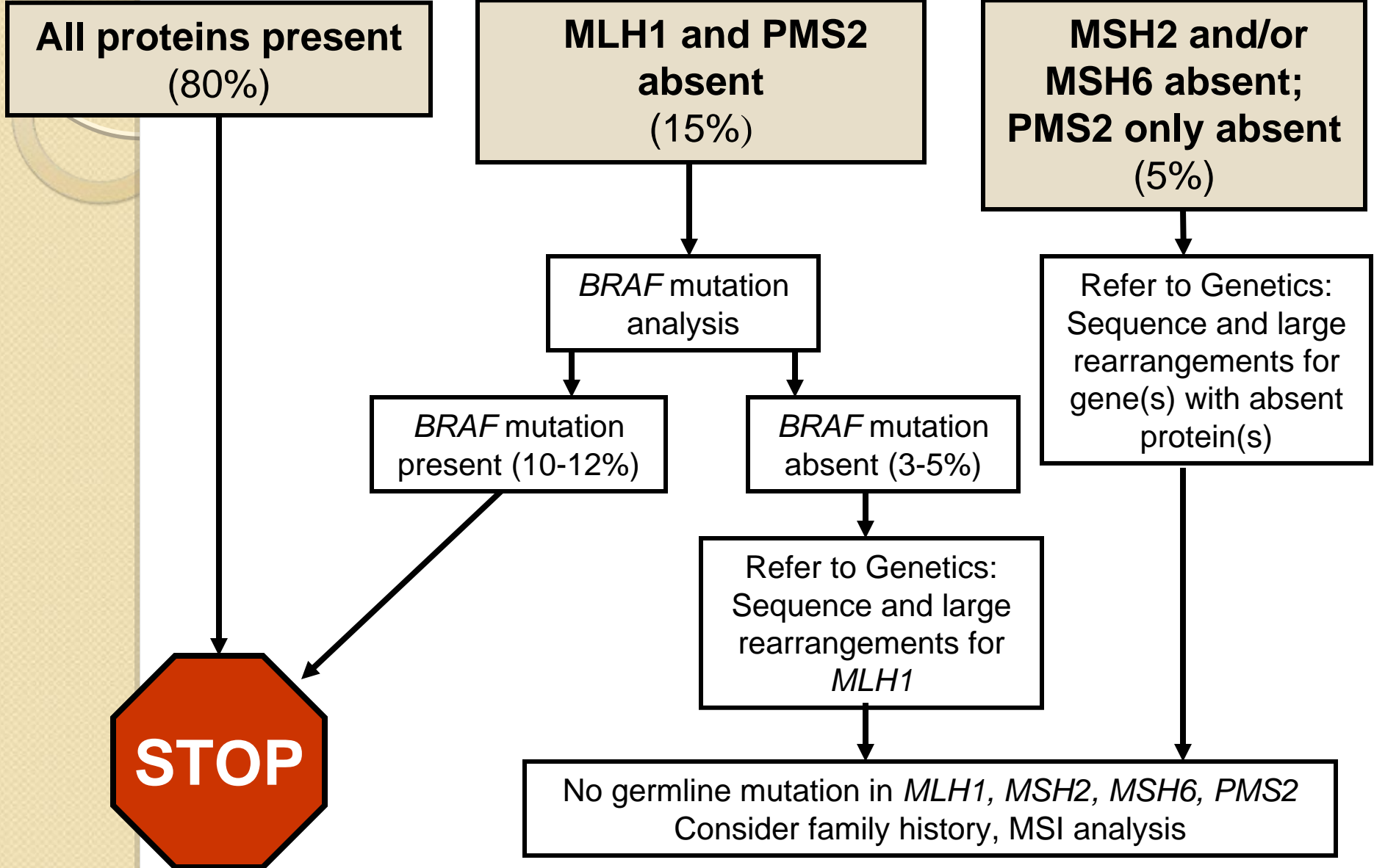
Themes

- Outline when to refer to GC
- Snapshot of how to interpret results

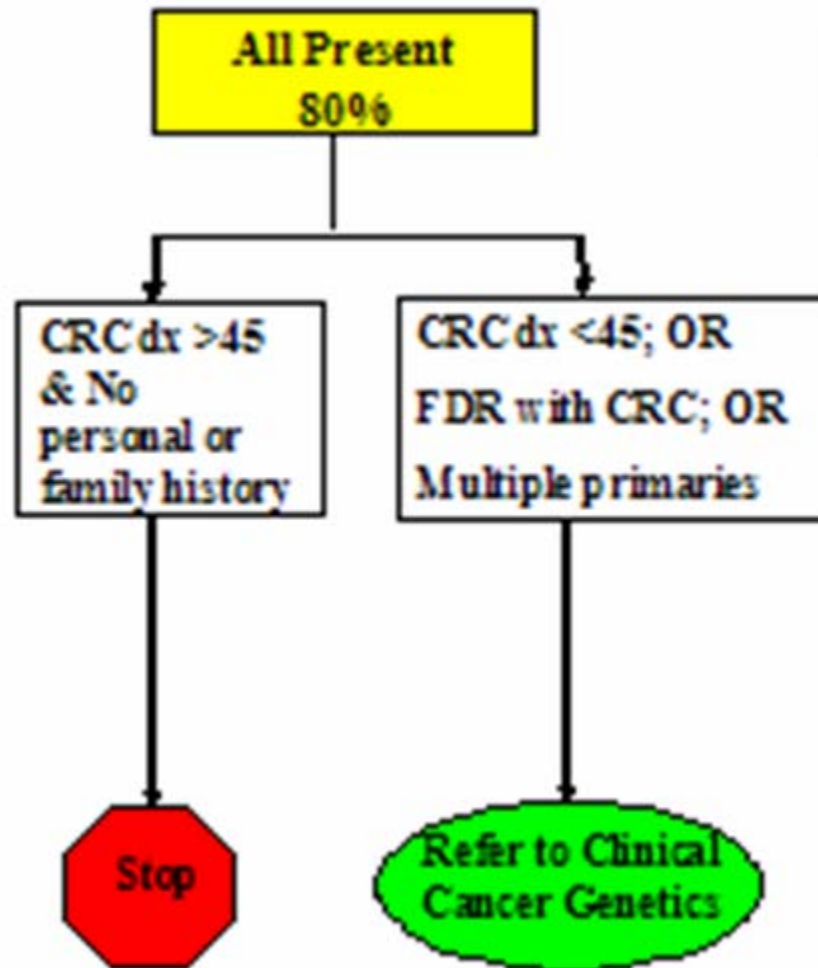
Differences

- Number of steps and amount of detail
 - Incorporation of BRAF and methylation studies
 - Incorporation of age of onset and family history scenarios

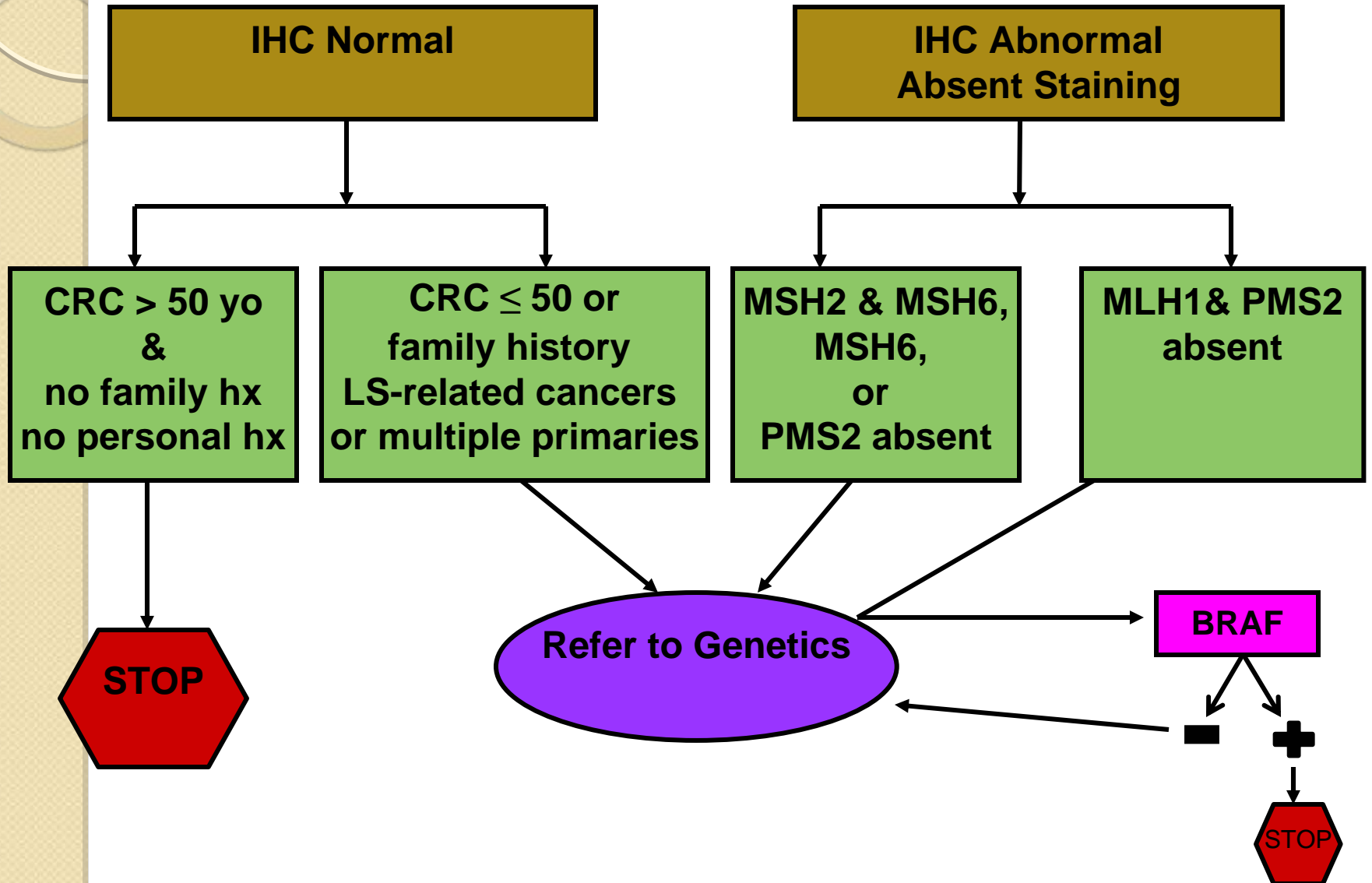
Ohio State University



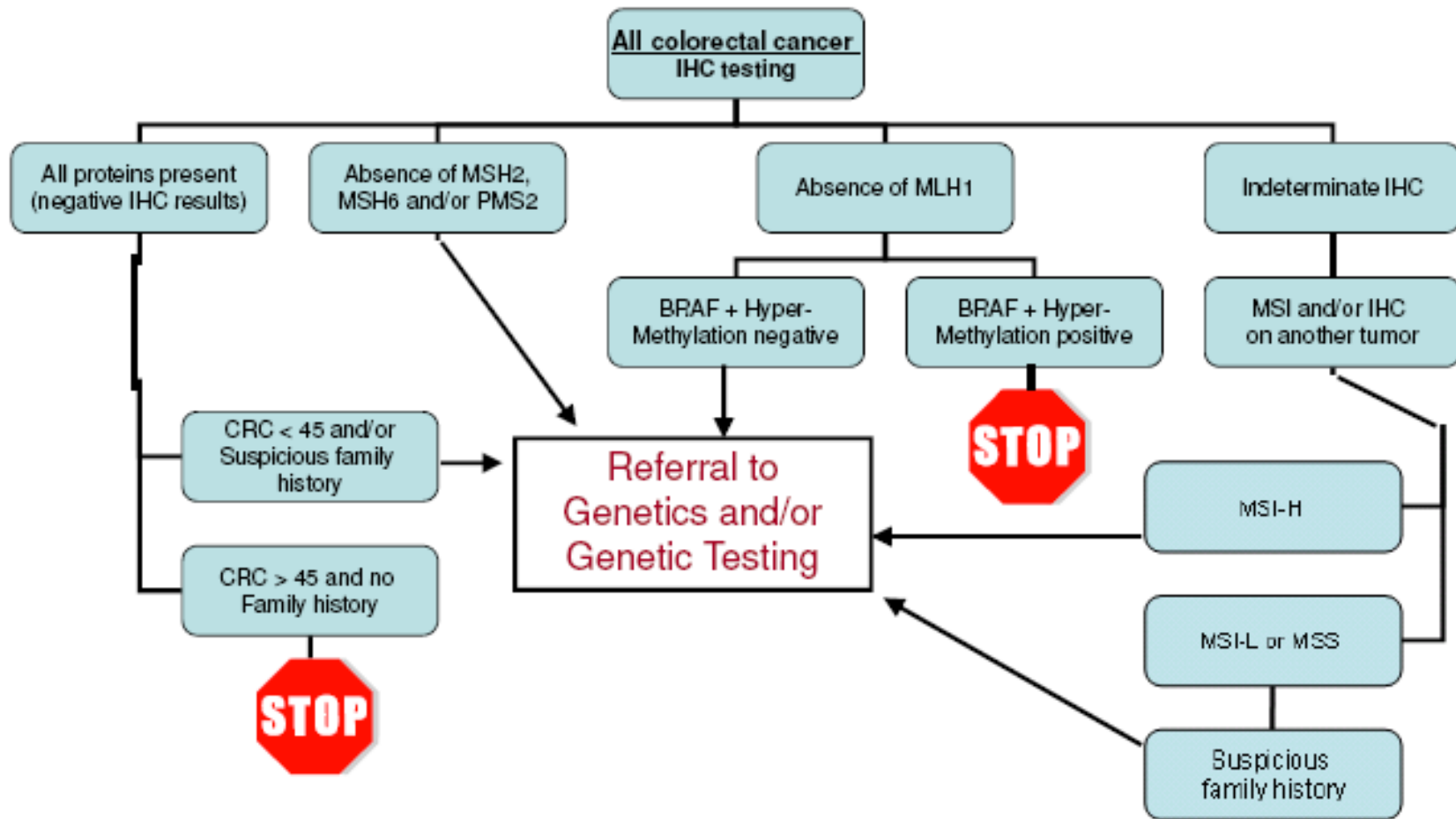
Ohio State University



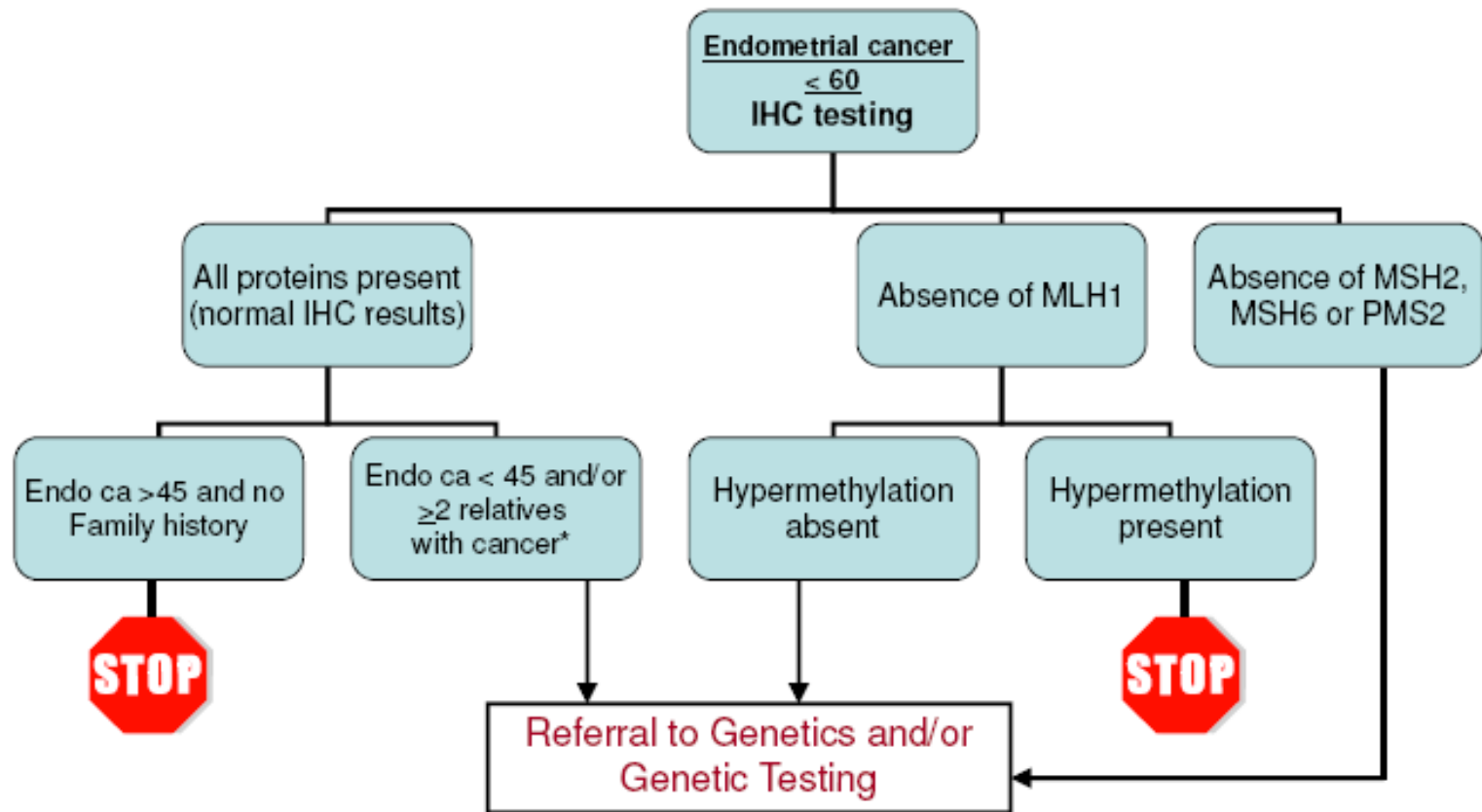
Beaumont Hospital



St. Vincent Hospital - CRC



St. Vincent Hospital - EC



Hampel et al. (2009), *Gyn Onc* 114, 128-34.

Garg & Soslow (2009), *J Clin Path*, 679-84.

*Lynch syndrome: Colon, uterine, ovarian, small bowel, transitional cell ureter
Cowden syndrome: Breast, uterine, thyroid

Provider Resources: Interpretation Guides

Themes

- Interprets the likelihood of LS

Differences

- How to interpret protein expression in relation to likelihood of having a LS mutation

vs

- How to interpret a variety of testing scenarios and how to proceed with screening and management recommendations

Other Provider Resources

- Fact Sheet – frequently asked questions
 - Background information for providers regarding Lynch Syndrome
- Business Analysis
 - Gudgeon, et al. (2011), *Am J Manag Care* 17, 288-300
- Obtaining informed consent
 - Proposal to ethics committee

Patient Educational Materials

Eight institutions shared their patient educational brochures and handouts on:

- IHC tumor screening
 - 4 CRC
 - 2 Endometrial cancer
- MSI and IHC tumor screening
 - 2 CRC
 - 2 General

Patient Educational Materials: Themes

- Description
 - What is IHC/MSI
 - What does the test evaluate
 - Background information about LS
- Purpose
 - To identify those with an increased risk of cancer and offer screening
- Results
 - TAT
 - How will the patient be informed
 - What a normal/abnormal result might mean
 - Percentage of patients with abnormal results who do/do not have LS
- Follow-up
 - What to expect if results are abnormal
 - What is genetic counseling
 - Additional testing (genetic testing)
 - What to expect if results are normal
- Where to go for more information

Patient Educational Materials: Differences

- Information to distinguish between a screening test vs. diagnostic
- Mention of additional/reflex testing
 - BRAF or MLH1 hypermethylation
- Information about insurance coverage
- Background information about LS
 - Genes, proteins, and cancer
 - Red flags of hereditary cancer
 - Prognostic information

Immunohistochemistry (IHC) TESTING

What is IHC testing in Colorectal Cancer?

When you have surgery, the tumor from your colon or rectum will be closely studied. A tumor is a growth, which may or may not be cancer. The results will be given to your doctor in a pathology report about one week after your surgery. This pathology report helps the doctor to know:

- *How well you might do after surgery*
- *The size of the tumor*
- *If the tumor was cancer*
- *If the cancer has spread*

Your doctor may discuss this report with you in a visit after surgery.

The Ohio State University (OSU) has added a new test to this report for all colon and rectal cancers. This test is called IHC. IHC tells your doctor more about how well you might do and if you may have a hereditary form of cancer known as Lynch syndrome. Hereditary cancers are those that run in families. People who have Lynch syndrome have a high chance of having more than one cancer in their lifetime. Their close relatives may have Lynch syndrome too and may have an increased risk for cancer.

What does IHC test for?

IHC tests for four proteins in the tumor. A protein is a substance that helps your body work the right way. These proteins are present in normal colon cells. They may be absent in colon cancer cells. The IHC test will look for these proteins:

- *MLH1*
- *PMS2*
- *MSH2*
- *MSH6*

What do the results of IHC mean?

- **All four proteins are present in your tumor.** This result occurs about 80% of the time (8 out of every 10 tests). This result means that you have the most common type of colon or rectal cancer. Your doctors will decide how well you will do based on the stage of your cancer at diagnosis. This also means that you are at a low risk to have Lynch syndrome.
- **One or more of the proteins is absent in your tumor.** This result occurs about 20% of the time (2 out of every 10 tests). This result means that you have the less common type of colon or rectal cancer. Your chance of having a good outcome is better than someone with all four proteins present. This result also means that you may have Lynch syndrome. Your doctor may ask you to see a staff member in the OSU Clinical Cancer Genetics Program. The staff member will tell you more about your results. They will take your family history and may discuss the need for more testing.

What if my tumor does not have some of the proteins?

- **MLH1 and PMS2 are absent.** This result will occur 15% of the time. Most people (4 out of 5) with absent MLH1 and PMS2 do not have Lynch syndrome. People with Lynch syndrome may have cancer at a younger age (under 60) and/or have a family history of certain cancers (colon, rectal, uterine, stomach, ovarian, ureter). If MLH1 and PMS2 are absent, it may be hard to tell if you may have Lynch syndrome so your doctor may ask you to see Clinical Cancer Genetics.
- **PMS2 alone, MSH2, or MSH6 are absent.** These results will occur only 5% of the time. Most people with these results have Lynch syndrome. It is very important that anyone who receives one of these results goes to Clinical Cancer Genetics.

If you have questions about your IHC result or to make an appointment with the OSU Clinical Cancer Genetics Program, please call 614-293-6694 (or toll free 1-888-329-1654).



Fact Sheet Revision 2011

- Add BRAF testing
- Add MLH1 methylation testing
- Add combination of BRAF & MLH1 methylation testing
- MSI testing as initial screening test
- MSI and IHC as initial screening test
- IHC then MSI for equivocal tests

Patient Follow-up Materials

Two institutions shared template for a normal IHC f/u letter

Themes

- Both explain chance of having LS in presence of normal tumor screening

Differences

- Center A recommends referral for GC based on age of onset and/or risk factors based on info obtained from patient questionnaire
- Center B advises patients to seek GC if he/she has certain risk factors on checklist

Patient Follow-up Materials

Three centers shared template for abnormal IHC f/u letter

Themes

- All were essentially the same in terms of content and format
 - 4 scenarios to select from, depending on proteins absent
 - Include statistics regarding chance of having LS depending on protein expression
 - Includes recommendation for GC

Differences

- Recommendations for f/u when *MLH1* and *PMS2* are absent
 - Centers 1 & 2 perform BRAF test before IHC results are disclosed
 - Center 3 explains that an additional test (BRAF) needs to be done to identify candidacy for genetic testing, and both are facilitated by a GC

Ideas for the Future

No materials were shared in the following areas

- Materials for unaffected relatives
- Schematics for protocols that include both MSI and IHC
- Schematics for protocols that only include MSI
- Materials that explain reflex testing for BRAF
 - Patients
 - Providers
- Schematic for centers developing a proposal
 - Key contacts in the community
 - Who to approach at the institution level
 - Supporting literature on the topic
 - How to determine what protocol to follow

Ideas for the Future

- Example pathology reports
- IHC screening protocols for other tumor types (e.g. ovarian)
- Guidelines for following up with patients who decline further testing

Other Ideas

Standardize content

- Brochures
- Follow-up letters
- Recommendations for managing patients with ambiguous results
- Referrals for GC in the case of a normal or abnormal result
- Protocol for reflex testing

A Special Thanks

To centers willing to share their existing patient resources for this presentation

- Ohio State University Medical Center
- Beaumont Hospital
- Huntsman Cancer Institute
- St. Vincent Hospital
- M.D. Anderson Cancer Center
- Dana Farber Cancer Institute
- Mayo Clinic
- Massachusetts General Hospital
- Karmanos Cancer Institute
- University of Colorado
- Intermountain Health