Washington State Department of Health

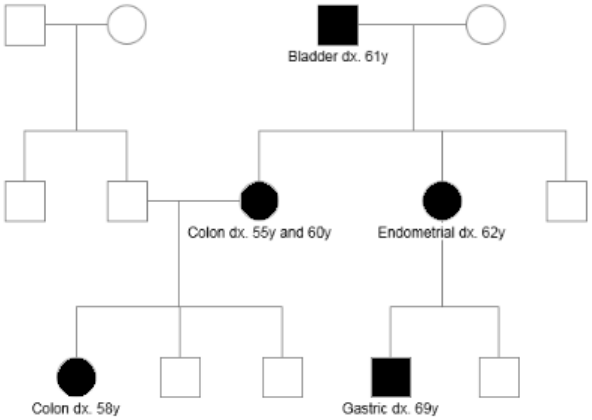
DOH 344-069 June 2017

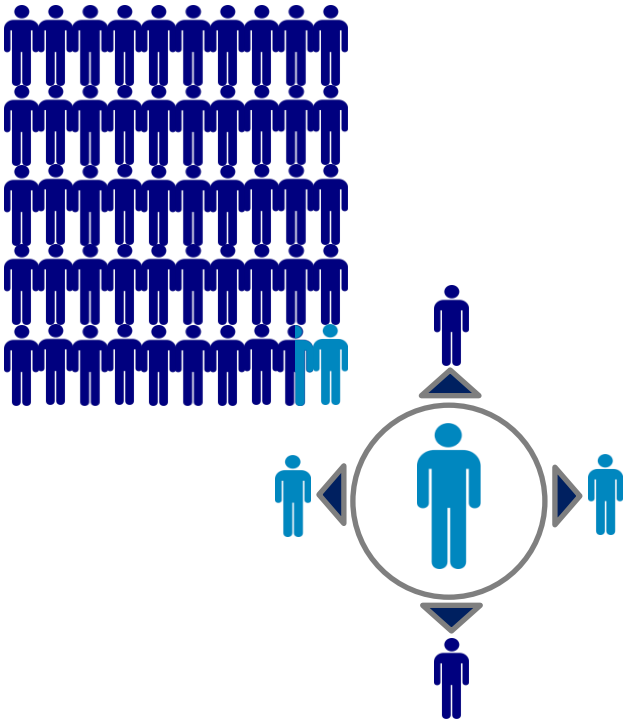
Cascade Screening:
A Critical Step in diagnosing Lynch syndrome

Cascade screening is an active process to identify **at-risk relatives of people affected** by certain genetic conditions, allowing them to seek potential lifesaving interventions.

Who has Lynch syndrome?

Lynch syndrome is an **inherited disease**. Therefore tracing it through families is one of the *most effective* ways to identify the people at-risk for Lynch syndrome before they have symptoms[1]. When asymptomatic but affected individuals are identified, they can take advantage of increased screening opportunities to reduce their risk of developing cancer.





The Numbers

Washington averages **2,758** new diagnoses of colorectal cancer each year.[2]

3% of these colorectal cancer cases are caused by Lynch syndrome, roughly **83 Washington residents** develop Lynch syndrome related cancers annually.

Each individual has an average of **4** first degree relatives, **half of whom** are likely to share the same Lynch syndrome genetic mutation as their symptomatic relative. However, within a family different cancer types may be seen.[3]

Lynch syndrome related cancers may be prevented if these at-risk relatives follow the **proper guidelines** and take advantage of **enhanced screening** and/or **prophylactic surgery**.[4]

Genetic Alliance Video on Cascade Screening

For more information on cascade screening, please view the video, "Cascade genetic screening and public health practice: An idea whose time has come".[5]

For people with disabilities, this document is available on request in other formats.
To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

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Improving Lynch syndrome Detection

Markers of a Hereditary Cancer Syndrome

A list of fields to add to your intake form that will help you to identify a potential hereditary cancer syndrome in your patient:

A biological cancer family history including at least **three consecutive generations**

Any **non-gastrointestinal** related cancer history in **both the patient and his or her biological relatives** (i.e. gynecological cancers, urinary tract cancers, and central nervous system cancers)

Cancer related **surgical histories** of both the patient and his or her biological relatives (i.e. number of polyps removed or tumor histology)

Universal Colorectal Tumor Screening[6]

*Clinical criteria (Bethesda, Amsterdam) fail to identify **25%** of individuals with Lynch syndrome. However, tumor testing can detect up to **95%** of Lynch syndrome cases*

Microsatellite Instability (MSI) Testing

Approximately 90% of colon tumors from individuals with Lynch syndrome demonstrate MSI, whereas only 15% of sporadic colon tumors do. Thus, MSI testing is useful in determining the likelihood of Lynch syndrome.

Immunohistochemistry (IHC) Testing

Tumors from individuals with Lynch syndrome are likely to demonstrate loss of mismatch repair (MMR) protein expression. The pattern of loss observed can provide information about which gene is not functioning properly. As a result, IHC testing can be helpful in both providing information about the likelihood of Lynch syndrome and in directing testing for a germline mutation to a specific gene.

When Lynch syndrome is Suspected

1. Refer patients with abnormal screen results for diagnostic confirmation to **genetic services** and molecular testing for germline **MMR mutations.**
2. When a germline mutation is identified in a patient, **accurate mutation testing of family members** can take place (cascade screening).

Relatives who test **positive** require a colonoscopy **every one to two years** beginning at **age 25**, in addition to screening for other non-colonic Lynch syndrome related cancers

First-degree relatives who test **negative** for the identified mutation are **no longer at increased risk** for CRC and other cancers.

References

1. Brumit, Mary. “Cascade Screening for Familial Hypercholesterolemia.” *The FH Foundation.* The FH Foundation, 28 Mar. 2014. Web. Accessed 21 Jun. 2016.
2. Washington State Cancer Registry Data Online. Washington State Department of Health. Updated January 2016. Accessed 21 Jun. 2016.
3. Bellcorss, C., Bedrosian, S., Daniels, E.. Implementing screening for Lynch syndrome among patients with newly diagnosed colorectal cancer: summary of a public health/clinical collaborative meeting. *Genetics in Medicine* 2012; 14(1): 152-162.
4. National Comprehensive Cancer Network. NCCN Guidelines Version 1.2015 Genetics/Familial High-Risk Assessment: Colon. MS3-7.
5. Genetic Alliance. “Cascade genetic screening and public health practice: An idea whose time has come.” Online video clip. *YouTube.* YouTube, 18 Oct. 2012. Web. Accessed 21 Jun. 2016.
6. “What.” *Lynch Syndrome Screening Network.* Lynch Syndrome Screening Network. Jan. 2014. Web. Accessed 21 Jun. 2016

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