

Angelica Ladd:

Hi, and welcome to the Healthy Living Series. I am Angelica Ladd, community relations specialist at Dartmouth Hitchcock Health. Today we are joined by Dr. Lynn Butterly and Dr. Gabriel Brooks, who will discuss the importance of colorectal cancer screenings and will also answer your questions on colorectal cancer, but first we just have to go through a few housekeeping items so bear with me.

Angelica Ladd:

We have reserved some time at the end of the presentation for questions and answers. If you would like to ask a question, please use the Q&A function. Tonight's event is being recorded and will be posted on our Healthy Living Series page at go.dh.org/hls, as well as our YouTube page so you can watch it again or share this presentation with your friends and family. We also have closed captions available for tonight's presentation, just click on the closed caption icon and that will get you streaming with live captioning.

Angelica Ladd:

At the end of the event, you'll be sent a three-minute survey. We would be so grateful if you could just take a little bit of time to fill out that survey. That helps us with future programming for the Healthy Living Series. Finally, stay tuned for our upcoming Healthy Living Series on Parkinson's disease and other movement disorders, which is slated for April 14th. More details are coming soon and those will be on our Healthy Living Series page, which I'll pop that link into the chat box now so you have it.

Angelica Ladd:

All right, and now I'd like to introduce our presenters. Dr. Lynn Butterly is a gastroenterologist, professor of medicine at the Geisel School of Medicine at Dartmouth, and director of colorectal cancer screening at THMC. She has led several federally-funded projects to improve colorectal cancer screening and has published and lectured extensively in this area. Her work includes both scientific research and improvement in public health. After graduating from Harvard Medical School, Dr. Butterly served her internship, residency, and fellowship at the Massachusetts General Hospital in Boston. She has focused on decreasing colorectal cancer throughout her career.

Angelica Ladd:

Dr. Gabriel Brooks is a medical oncologist at the Norris Cotton Cancer Center. He specializes in the treatment of colorectal cancer and other gastrointestinal cancers. Dr. Brooks is the principal investigator of a Norris cancer study titled Clinical Trial of a Novel Dose Adjustment Algorithm for Preventing Cytopenia-Related Delays During FOLFOX chemotherapy.

Angelica Ladd:

Thank you both so much for being with us this evening. I am going to throw it to you, Dr. Butterly, to start your presentation. Thank you.

Dr. Lynn Butterly:

Great. Well, thank you so much for that lovely introduction. There, can you see this okay? Gabriel, you're going to have to tell me. Okay, perfect.

Dr. Lynn Butterly:

Thank you all for participating today. I hope we can tell you some things that will be of interest, and we will very much enjoy answering your questions at the end. As Angelica said, we're going to talk about screening for colorectal cancer. I think that a good place to begin is to talk about why does screening for colorectal cancer make sense? Why are all these primary care providers and everyone else saying, "Well, as you get older it's time to get screened, particularly for colorectal cancer."

Dr. Lynn Butterly:

There really are some very good reasons why screening for colorectal cancer makes a lot of sense. For one thing, it is the second most common cause of death from cancer in the United States. Lung cancer is first, and if people didn't smoke, more people would die of colorectal cancer than any other cancer, so second most common cause of death from cancer in the US. However, it is also one of the only cancers for which prevention is possible, so not just catching it early, but actually preventing an individual from ever getting the cancer at all.

Dr. Lynn Butterly:

There's a good reason why that's the case, and that's because almost all colorectal cancer starts off as a polyp. A polyp is a small growth on the lining of the colon, inside the colon on the lining, and over a period of about 10 to 15 years, some of those polyps can turn into colon cancer, colorectal cancer. If we find the polyp and remove it before it has a chance to become a cancer, then the person never gets the cancer at all. Here we have a common cause of death from cancer, and it's a disease which we can prevent, as well as detect early, so it makes a lot of sense to have screening, which is how we find those polyps so that we can remove them.

Dr. Lynn Butterly:

Just as a comparison of prevention versus early detection, if a person has a mammogram, they either have cancer or they don't. Our objective is to find it early because the earlier you find a cancer, the better their survival is and the better that chemotherapy and other treatment will work. When we do that, we are trying to find it as early as possible. However, when we do screening for colorectal cancer, we are not only trying to find cancer early if it happens to be there, we're trying to prevent the person from ever getting the cancer at all.

Dr. Lynn Butterly:

One thing that is very reassuring to people when they are told it's time to go have screening, and that is that if you are an average risk person with no symptoms and you go for screening for colorectal cancer, it is extremely unlikely that a cancer will be found. It is extremely unlikely that a colorectal cancer will be found at a screening colonoscopy or any other test. However, it is not at all unlikely that a polyp would be found. The incidence of polyps is at least 40%. That means we can find them, we can remove them, which is entirely painless, and that then reduces your risk of ever getting colorectal cancer. Those are all the reasons that it makes a lot of sense to go and do screening when it is suggested.

Dr. Lynn Butterly:

This is a list of all potential colorectal cancer screening test options. I put this list here just as a little reminder, if anybody wants to a question about a test I'm not going to talk about, I'm happy to answer any questions about any of this. The ones that we're going to talk about are the ones in yellow, which are the commonly-used screening tests, so fecal occult blood testing, which can be done two ways with

either guaiac stool cards or a FIT, which is a fecal immunochemical test, Cologuard, and colonoscopy. We'll talk about each of those a little bit, just so that we become familiar with how they work.

Dr. Lynn Butterly:

Fecal occult blood testing, often called FOBT, is looking for hidden blood in the stool, occult means hidden. We're looking for hidden blood, so this is not a test we would do if you are seeing blood in your stool. This is when your stool looks normal, brown. We are looking for blood that might not be visible that might not be seen, and there are two ways in which we do that. One is guaiac-based testing, this is just a chemical reaction that turns blue on the card if there is hidden blood in the stool, and then becoming increasingly more common in usage is FIT, which is fecal immunochemical testing. This test, the FIT test is specific for human blood, so that is an advantage because it will not pick up the rare steak you had yesterday that was mooing on the plate. It is going to only detect human blood, and that's an advantage in terms of ease of use.

Dr. Lynn Butterly:

Both fecal occult blood tests are very easy to use, you can do them at home, they are relatively inexpensive. The hemoccult testing requires some dietary and medication restrictions because it is not specific for human blood and because some foods and medications can interfere. FIT, on the other hand, is specific for human blood and you do not need the same dietary and medication restrictions when you do a FIT.

Dr. Lynn Butterly:

However, it's important to keep in mind that colonoscopy is recommended for any positive fecal occult blood testing. If it's guaiac or if it's FIT, whatever it is, if it is positive, we do not repeat it to check it out, but rather, we move straight to colonoscopy to see if there's a polyp or some other reason why there might have been hidden blood in the stool. If the test is negative, you're all set for another year, but if the test is positive, time for a colonoscopy.

Dr. Lynn Butterly:

This is the appropriate stool card for the guaiac test, the Hemoccult SENZA guaiac test. This picture is showing you three cards, one, two, and this is the third card. That's how the test is done, three separate cards. When you pull open this tab where it says, "Open tab when ready to use," if you lift that up, what you see is shown over here. These are two windows, window A and window B. What you do is you apply a thin smear of stool inside each box. The wooden applicator comes right in the kit. You get an envelope, it contains the cards and it contains the wooden applicator. You apply a little on each window, you close the window, and then you do three separate bowel movements, one, two, and three, one per card. When you're done, you close it up, you put it in the envelope and you mail it back. Then it is tested either in your primary care provider's office or in a lab, depending on whatever your instructions say. That's how the test is done. It's repeated every year if it's negative.

Dr. Lynn Butterly:

This is one example of a FIT test, a fecal immunochemical test. This is the sample container, in which there's a little bit of liquid. When this comes, it's closed. This green cap and the probe are on the top here. What you do, the instructions always come with it in the envelope, you twist and lift. You lift the cap off with the probe. This is the part of the probe that gets scraped into the stool. There's a little doily, which you place on top of the water, you have a bowel movement. The tip of this probe goes into the

bowel movement to collect the stool. You then close that, putting this probe right back into the container, it clicks shut. Then that also gets mailed back to either the lab or the doctor's office for developing. There are different types of FITs, but this is one of the commonly used ones, just to give you an idea. Very simple, very easy, done at home, not expensive.

Dr. Lynn Butterly:

We've talked a little bit about the fecal occult blood testing, either the Hemocult SENSA or the FIT. Another screening test that one can use, and is commonly used, is a stool DNA test, a Cologuard. Sometimes it's called DNA FIT, sometimes it's called multi-target stool DNA or mt-sDNA. The brand name is Cologuard, and that is the only type of Cologuard, of multi-target stool DNA tests that is currently available.

Dr. Lynn Butterly:

This was a study in the New England Journal, for those of you who might be interested. It was the study that showed back in 2014 that Cologuard was a very effective test. Since then, we've learned a lot about it. We know that it is more sensitive than FIT, both for colorectal cancer and for potentially precancerous polyps. More sensitive means it finds them more often, so Cologuard will find colorectal cancer and potentially precancerous polyps somewhat more often than FIT will, but they are both very good tests for average risk people. We're going to talk about what is average risk in a few minutes.

Dr. Lynn Butterly:

The current recommended use is every three years. Remember that the stool cards, the FOBTs, are every year. Cologuard, the recommended use currently is every three years. The cost is very high compared to an FOBT, which is very inexpensive. But first of all, there's a molecular component that allows you to detect one particular type of polyp that's not well detected by FIT, and in addition, you get navigation. In other words, when you are sent a kit by Exact Sciences, and if you don't return the test, the Cologuard test, you will probably get a call from a nurse navigator at Exact Sciences to help you remember to do it and to get you through the test. It's every three years, you do get navigation, it is a little better at detecting particularly certain types of precancerous polyps and cancer. Every Cologuard test also includes FIT, so we are looking both for blood and for molecular markers, in other words, DNA that's shed in the stool. That is how Cologuard works. I skipped over one thing.

Dr. Lynn Butterly:

Now, that brings us to colonoscopy. The whole idea behind colonoscopy is to interrupt the polyp-to-cancer sequence. In other words, you have a polyp, over 10 to 15 years some of those turn into cancer, we're trying to interrupt that and find that polyp before it becomes a cancer and get rid of it. But the effectiveness of all screening tests, any test you have, whether it's FOBT, Cologuard, colonoscopy, if we're going to prevent colon cancer, we do it by a polypectomy, by removing a polyp. That is how we prevent colon cancer, and that's why if you have a positive FIT or a positive Cologuard, you need to have a colonoscopy.

Dr. Lynn Butterly:

This is an example of a normal colon. The little red lines are blood vessels, those belong in the colon. The colon is a long pink tube or tunnel, and this would be the way in. If you can use your imagination, the colon makes a left turn here and goes up in that direction. This here is a polyp. It's about the size of your thumbnail, this polyp. What we have done is we have put a snare out through our scope, opened the

wire, closed it around the polyp and lifted it up off the wall. This is being lifted up off the wall. We then use electrocautery, which is just a tiny little bit of current that is painless, there is no feeling for that, to cut the polyp off. A couple of seconds later, this little white area is all that remains. That is all that you would see. Two weeks later, a few weeks later, that would be completely healed. You would not have any idea that there had been a polyp here because this polyp is relatively small.

Dr. Lynn Butterly:

I always show this picture because this was a lovely gentleman with three children who happened to attend a lecture like this and decided to go for screening. This polyp actually contained the earliest stages of cancer. It was not at a level that could have spread, but it was the earliest stages of cancer. He had it removed and that was the end. It protected him from ever developing colorectal cancer.

Dr. Lynn Butterly:

We'll turn our attention for just a minute to the risk factors for colorectal cancer. The words we use are screening and surveillance, all that means is screening is people who have never had polyps or cancer and surveillance is a word we use for screening in people who have had potentially precancerous polyps or colorectal cancer, because we know they are at increased risk. Surveillance means you are at slightly increased risk and we might follow you more often.

Dr. Lynn Butterly:

Colorectal cancer can be thought about as people are either at average risk or increased risk. People who are at average risk are asymptomatic people who are age 45 or older, they do not have a personal or a family history of colorectal cancer or potentially precancerous polyps. They're average risk. People who are at increased risk are people with a personal history of colorectal cancer or polyps, with a family history of colorectal cancer or polyps, or inflammatory bowel disease. People who have hereditary syndromes like Lynch syndrome are at much higher risk, and that is handled entirely differently and is not part of what we're talking about here with routine screening.

Dr. Lynn Butterly:

Family history is the part of this that is often very confusing to people, so we'll just take a minute to touch on that. The important factors to know about family history are the relationship of the affected relatives to the person. A first-degree relative is your parents, your siblings, and your children. Those are your first-degree relatives. The closer a person with colorectal cancer is to you, the closer their relationship is to you, the higher the risk, the greater the chances that you too might develop colorectal polyps or cancer.

Dr. Lynn Butterly:

The ages of the relative at the time of diagnosis is very important. The younger a patient is when they get colorectal cancer, the greater the risk to family members. The older a patient is, the less the risk to family members. But remember that this is the age at diagnosis, not the age at death. Someone can be diagnosed as having colorectal cancer at 50 and die at 90. It's the 50 that we need to think about when we think about your risk, is your relative had colorectal cancer at 50. That's what we would consider to look at your risk and which test would be right for you. Then the number of affected relatives is important. The more relatives, the greater the risk. Those are the things we ask about in terms of the family history so we know the best test to do.

Dr. Lynn Butterly:

That brings us to the last part of our talk, which are the guideline screening recommendations that we would use to take care of people. The age to begin screening, you may have heard that that has recently changed. In 2018, the American Cancer Society recommended that we lower the age to begin for average risk people from 50, which is what it's always been for quite some time, to 45. The reason for that was that although the incidence of colorectal cancer in people over age 50 was going down dramatically over the last few decades, the incidence of colorectal cancer for people less than 50 has been going up, it's been increasing. In the US, there are at least 15,000 cases of colorectal cancer in people less than 50 every year and 3,600 deaths a year. Therefore, the American Cancer Society reviewed modeling, reviewed the literature and reviewed what was happening and made the recommendation to drop the age from 50 to 45.

Dr. Lynn Butterly:

Evidence was needed at that time for actual outcomes for average risk patients who were 45 to 49, because remember previously we started at 50. Now the question is, okay, well, if we switched that and we start at 45 and they start getting screened, people 45 to 49, what are we going to find? Is it really worth screening those people? Our data from the New Hampshire Colonoscopy Registry, as well as other studies, has shown that the frequency of polyps at age 45 to 49 is very similar to the frequency of those same potentially precancerous polyps at 50 to 54. If we're going to screen people who are over 50, it makes sense to screen people who are 45 to 49 because they have a very similar frequency of the exact same polyps that we're concerned about. These findings did support the recommendation to begin average risk colorectal cancer screening at age 45.

Dr. Lynn Butterly:

The current recommendations for average risk patients is to begin screening at age 45 and you have a choice of tests. If you are at average risk, there is a choice of tests. One can do a high sensitivity FOBT, that's the Hemoccult SENSAs that cards that I showed you. Those are the high sensitivity guaiac cards, and they're done every year. Or you can do a flexible sigmoidoscopy. Oh, and the other high sensitivity FOBT is the FIT, that we talked about.

Dr. Lynn Butterly:

So either Hemoccult SENSAs or FIT every year, or flexible sigmoidoscopy, which isn't done much anymore but it is an option, every five years or every 10 years when you combine that with an annual FIT, or colonoscopy every 10 years if the test is normal. If it's not normal, we might need to do it more often. But if you are an average risk person and you have a normal colonoscopy, then you're off the hook for 10 years. Or this is what's called virtual colonoscopy that we didn't talk about today, that I'm happy to answer questions about it. That's done every five years. Cologuard stool DNA is done every three, as we mentioned before.

Dr. Lynn Butterly:

If you are at increased risk, however, the test of choice is colonoscopy. If you have a family history in a first-degree relative, you begin screening at age 40, or 10 years younger than the age of the relative at diagnosis, whichever comes first. What do we mean by that? Well, if you have a sister who had colorectal cancer at 60, you would start screening at 40, not 45 as it would be for average risk, but at 40, because you have a first-degree relative. However, if your sister had colorectal cancer at 45, then it wouldn't be 40, it would be 10 years younger than the age at diagnosis. If she had colorectal cancer at

45, you would start at 35, because it's whichever comes first. If you have a first-degree relative with colorectal cancer, we start screening at 40 or 10 years younger than the age of the relative at diagnosis, whichever comes first.

Dr. Lynn Butterly:

The test of choice is colonoscopy. As we said, if you have a hereditary syndrome like Lynch syndrome and the other syndromes, that's managed by a specialist, testing begins at a much earlier age and it's often done much more frequently. That isn't part of routine screening for people who are at average or increased risk.

Dr. Lynn Butterly:

Another thing just to think about is a healthy lifestyle, obviously that's good for everything. Eating a diet that's high in fiber, low in fat, lots of fruits and vegetables as opposed to red meat, avoiding smoking, which is a very important risk factor for colorectal cancer, avoiding being overweight, getting exercise, these are all parts of a healthy lifestyle and similarly they're important for colorectal cancer prevention. But it's important to know that you eat the healthiest diet in the world and exercise every single day and you still need screening, because this is not absolute prevention against colorectal cancer. It is screening that helps us to find the polyps and remove them before they become cancer.

Dr. Lynn Butterly:

There really is a very compelling case for colorectal cancer screening. It's a preventable disease, as we said, on top of being the second most common cause of death from cancer. The decrease in colorectal cancer in people over 50 in the last few decades shows us that screening really works, it really decreases the incidence of colorectal cancer. We spend \$14 billion a year in the US just on treating colorectal cancer, and it's going up all the time, for a preventable disease. We can save lives, we can keep people healthy by doing screening. Really, the bottom line is make sure that you and your loved ones and your friends and relatives do get screening and talk to your primary care provider about it.

Dr. Lynn Butterly:

With that, we are all set. I will stop sharing and I will turn the slides over to Dr. Gabriel Brooks.

Dr. Lynn Butterly:

You're on mute, Gabe, just FYI.

Dr. Gabriel Brooks:

Thank you.

Dr. Gabriel Brooks:

All right. Thank you very much. I think my slides are showing now. I'm going to go a little bit shorter because the main purpose of this talk was really to address the question of screening, but we thought that it would be helpful to talk a little bit about colon cancer treatment as well. I was just talking to one of my partners and she said to me, "Well, you're going to make screening look good because treatment, frankly, is much more difficult than screening." Many times, I think that the more screening we do the less treatment we have to do, which is good for everybody.

Dr. Gabriel Brooks:

Briefly, many patients who are diagnosed with colon or rectal cancer, they're diagnosed after some sort of test, often because of a symptom, but sometimes because it's a screening test. Most often the first diagnostic test that they'll get is that biopsy during a colonoscopy procedure, and that colonoscopy, maybe is being done because of a symptom or maybe it's being done as part of a screening evaluation. If someone is then diagnosed with a cancer, we often will get a CT scan as the next step. That is done to make sure that there's no evidence of the cancer having spread outside of the colon, because if we did find that, that would change the treatment.

Dr. Gabriel Brooks:

In the case of rectal cancer, and the rectum is just the last part of the colon, there's an additional step to the initial evaluation and that's to get an MRI of the pelvis. This is important because getting that MRI of the pelvis, which shows us whether or not there are any enlarged lymph nodes which might be involved with cancer in the area of the rectal tumor is important for the treatment planning, which I'm going to show in some more detail.

Dr. Gabriel Brooks:

You may likely have heard of these three modalities or approaches to cancer treatment. Those are surgery, chemotherapy and radiation therapy. Each of these is used in specific circumstances, and many patients who are getting treated for colon cancer will have one or two, or in some cases, three of these different modalities.

Dr. Gabriel Brooks:

Surgery is the primary treatment of localized colon and rectal cancer in most cases. That's surgical removal of the part of the colon or rectum that is affected by the cancer, with an additional margin to make sure that any lymph nodes that are involved with the cancer or any distant extent of the cancer in the colon or rectum is fully removed. The goal is to get a margin negative resection, meaning that there's no residual cancer left behind and meaning that any involved lymph nodes are also removed at the time of the surgery. Surgery is the primary curative-intent treatment for most colorectal cancers. It may be performed to by a colorectal surgeon or by a general surgeon, and this might depend on the scenario. There are some situations where a person will have an emergency surgery, and that is usually performed by a general surgeon. I'm lucky to work with some very good colorectal surgeons here at the medical center and this is their specialty and they're very skilled in their surgeries.

Dr. Gabriel Brooks:

These are three of the most common surgical procedures. The diagrams here show the colon. I'm hovering my cursor over the proximal or right side of the colon, this is the part of the colon that it attaches to the small intestine. Then this here is the rectum, this is the part of the colon or the rectum that attaches to the end of your intestinal tract to the anus. When a patient has a tumor, a cancer of the right side of the colon, then the surgery that's performed is called a right-sided colectomy, it's removal of the right side of the colon. When the surgery is done that way, it means that they can remove it without a major ... I'm not a colorectal surgeon, but the surgeries are done this way because that allows the removal of the tumor, as well as the local blood supply and the local lymph node supply. Alternatively, if the cancer is on the left side, then a patient can have a left hemi-colectomy, a removal of the left side of the colon.

Dr. Gabriel Brooks:

If the tumor is in the rectum, then often the surgery is what's called a low anterior resection, or sometimes even something called an APR, or an abdominal perineal resection. This is where the distal part of the colon and the rectum are removed. This is the most complex of these three surgeries, because it involves the rectum and the end part of the colon.

Dr. Gabriel Brooks:

A lot of people ask about, "Well, what will my life be like if I do need a or surgery for colon or rectal cancer? How will my body be different?" The answer is that most patients who have a non-electant colon surgery will actually have a primary reconnection of their intestinal tract. They'll never have a bag like this, but I'll talk more about a colostomy bag and when that might happen, when that might be necessary. Patients who have the right or left side of their colon removed will often have a change in their bowel habits. Actually, their bowel habits will change for up to a year after their surgery as the bowel adapts to the fact that it's significantly shorter than it was before the surgery. Sometimes patients will have stools that are looser and have higher water content, because one of the major jobs of the colon is to remove the water from the stools. But most patients will have intact continence after a colon surgery, and they'll have some changes, but those changes actually will become less and less pronounced over time.

Dr. Gabriel Brooks:

Rectal cancer surgery can be different, because in many cases, patients will of a temporary colostomy, which the colostomy is this bag, where the bowel is implanted into the abdomen because it's not able to be reconnected to the rectum. In some cases that will be permanent, because the alternative is to do a reconnection without an adequate sphincter so that you're not able to control your bowel movements and that's obviously not a good situation. Living with a colostomy is obviously different and it's not the same as living with an intact GI tract, but actually, people can live very normal lives with a colostomy. You probably see many people in the course of day-to-day life who have a colostomy and you'd never know that about them, because people can live very full, normal, active lives, at least as they've seen from the outside, even though clearly it does change your body in a major way.

Dr. Gabriel Brooks:

Before I talk about radiation therapy and chemotherapy, I was going to talk about cancer staging. Briefly, most cancers are divided up into stage 1, 2, 3, or 4, and each type of cancer has a different way of dividing up these stages. With colon and rectal cancer, the earliest stage cancers are the stage 1 cancers. Now, these are not as early stage as a precancerous poly, but this is, in a way, the first stage after a precancerous poly. This area here is where it says T1 and there's this blue dot that involves just the first layer of the mucosa of the intestinal tract, that's supposed to represent a T1. This is a T2 tumor, this T tumor invades into, but not through, the muscular wall of the colon. Stage 1 cancer has either a T1 or a T2, and there are no lymph nodes involved.

Dr. Gabriel Brooks:

A stage 2 cancer is more advanced in terms of how much of the wall of the colon it goes through, but it still does not involve any lymph nodes. In a stage 3 cancer, the tumor may be anything from a T1 to a T4, meaning that it may only involve the inner wall of the bowel, or it may go all the way through the wall of the bowel, but there is at least one lymph node in the local area of the removed cancer that is involved

with cancer. Stage 4 cancer is where there's been metastasis, or spread, outside of the local lymph nodes to the liver, the lungs, or some other site outside of the bowel and outside of the lymph nodes.

Dr. Gabriel Brooks:

Chemotherapy is the part of the treatment that I'm used to giving. The two types of chemotherapy or the two modes of chemotherapy that we used are adjuvant chemotherapy. Adjuvant means literally in addition to, and specifically it is in addition to surgery. We use adjuvant chemotherapy for patients who have stage 3 colon cancer, so that's where they have involvement of at least one lymph node, and we also use it for some of the stage 2 colon cancers, especially the stage 2 colon cancers that go all the way through the wall of the colon and are these what we call T4 colon cancers, stage 2, but they've gone all the way through the wall of the colon and into the fat layer that surrounds the colon.

Dr. Gabriel Brooks:

The purpose of adjuvant chemotherapy is that after the cancer has been removed, or in some cases before the surgery, but often afterwards, the cancer is meant to try to eradicate any microscopic amount of cancer that may still remain in the body, so any small number of cancer cells that may be circulating within the body and that could, without chemotherapy, run a risk of growing and causing problems in the future.

Dr. Gabriel Brooks:

The most common chemotherapy regimen is a regimen called FOLFOX, F-O-L-F-O-X. It's a combination of 5-fluorouracil and another drug called oxaliplatin. Both of these drugs have been around for a long time and the reason why they've been around for a long time now is because they're effective at reducing the risk of recurrence of cancer. Ordinarily, chemotherapy is given over 12 to 24 weeks. More and more we're using actually shorter treatment courses, which I think is very good because it means that people are done with their treatment earlier. It seems to be, in many cases, just as good as longer treatment courses.

Dr. Gabriel Brooks:

The other mode of chemotherapy is palliative chemotherapy. That's when chemotherapy is being used to treat advanced cancer that is not able to be removed with surgery. In palliative chemotherapy, the goal is no longer to cure the of cancer, but to try to treat the cancer, control the cancer, help someone live longer and feel as good as they can feel, unfortunately without being able to cure the cancer. Obviously, whenever possible, we prefer to be doing treatments that are curative and that is very often in conjunction with a surgery.

Dr. Gabriel Brooks:

Radiation therapy is used predominantly for treating rectal cancers. It's really not used for treating colon cancers, but rectal cancers are one third of all colorectal cancers, so this is a significant and important treatment. It's important because it reduces the risk of local recurrence of rectal cancers. It's not needed for stage 1 rectal cancers, those early stage rectal cancers that only grow partly into the wall of the rectum, but it is effective at reducing recurrence in patients who have higher stage cancers.

Dr. Gabriel Brooks:

It can be given in two ways. Increasingly we're using what's called short course radiation, where radiation is given over 15 treatments. It's given Monday through Friday for three weeks without chemotherapy. Then there's the so-called long course treatment, which is a more traditional approach to chemotherapy that has a longer history. That's given over five and a half weeks, 28 days, with chemotherapy that's given at the same time, or we use oral chemotherapy that's taken twice daily each day during the radiation treatment.

Dr. Gabriel Brooks:

I wanted to briefly mention some areas of active research. Here at Norris Cotton, we are part of the National Cancer Trials Network. That's an NCI-funded, NCI is the National Cancer Institute, which is part of the National Institutes of Health, and the NCI funds a number of clinical trials that are conducted at centers throughout the United States. These are really excellent clinical trials that help us learn how to make treatment better over time. Questions that are being asked right now is, can some patients with rectal cancer skip radiation? That's a study that has been completed and a number of patients here at Norris Cotton were enrolled in that study. We don't have the results yet, we're expecting them perhaps later this year, and we'll learn if there are some patients who might not need to go through with radiation.

Dr. Gabriel Brooks:

Are there some patients who don't need surgery for rectal cancer, who can be cured with chemotherapy and radiation without surgery? This is a very active area of interest. It's an approach that has been used in some studies and is even used in some cases without a clinical trial, but there's a clinical trial that we're expecting to open in the next year. There is uncertainty if some patients might not need chemotherapy and we expect more research to be done in that area. There are new technologies to look at DNA cells that are circulating in the blood, and we're about to open a clinical trial, the CIRCULATE-US study, that will help us identify patients who might not need to do chemotherapy at all, even if they have stage 3 colon cancer. That study will evaluate whether or not chemotherapy is needed in patients who have stage 3 cancer, but do not have the DNA of any tumor cells circulating in their blood. On the other hand, some patients may need more intensive chemotherapy, and the same study will look at that question.

Dr. Gabriel Brooks:

Lastly, increasingly we know that not all colon and rectal cancers are the same. There are some cancers, about 5%, that seem to be very different and they seem to benefit more from immunotherapy treatments, which are a newer type of treatment that is different from conventional chemotherapy. We have a study open that is studying whether adjuvant treatment should use immunotherapy instead of, or along with, chemotherapy.

Dr. Gabriel Brooks:

Briefly, surveillance is what we do after someone has had definitive treatment of a colon or rectal cancer. It means close follow up after treatment. If there's a recurrence, by finding it early, that recurrence may be more amenable to treatment with surgery or with other techniques to treat a local recurrence. The kinds of things that we can do during surveillance, we can do blood tests for something called the CEA. When that's elevated, it helps us understand that we might need to do a scan sooner than planned. We can do CT scans about every six to 12 months over the first three to five years after a colon cancer diagnosis. We can do colonoscopy, which now is no longer a screening test, but is a

surveillance test, because people who have had colon cancer in the past are at higher risk for developing a second cancer and so we recommend colonoscopies after treatment. Then I mentioned this circulating tumor DNA test, which is something that is an emerging technology, which may replace some of these other surveillance tests over the next five years. Really, we're waiting for more data on this technique.

Dr. Gabriel Brooks:

Lastly, this slide is very similar to something that we've already seen today. What do we recommend? What do I recommend and what do my colleagues recommend for patients who have had colon or rectal cancer, in terms of how can they change their lifestyle to reduce the risk of a cancer recurrence? Really, number one on this list is to recommend smoking cessation because of how important it is in preventing a first cancer and how important it is at preventing recurrence of a cancer or development of a second cancer. Smoking cessation, really, we think is the most important thing that a person can do if they are a smoker, either before or after they've been diagnosed with cancer. Recognizing that it can be very difficult, but when someone tries, they're more likely to succeed. I recommend regular, and if possible, daily physical activity, which is difficult in the wintertime in New Hampshire, but possible. I recommend a healthy diet that's high in fruits, nuts, grains and vegetables, that's low in red meat and that's low in refined carbohydrates.

Dr. Gabriel Brooks:

That was the end of my slides. With that, I think I'll pass it back to Angelica.

Angelica Ladd:

Thank you so much. Thank you both for that presentation. That's a lot of information, a lot of really good information. I hope that we'll have some questions come in through the Q&A, but I will get us started. I think one of the questions that we had ahead of time, maybe Dr. Butterly, you can answer this, but how often should screening tests be done?

Dr. Lynn Butterly:

Right, great question and definitely of interest to everyone. It all depends on what is found at the screening test, what the result is. If you are having a fecal occult blood test, which was the Hemoccult SENSE or the FIT, those tests are repeated every year as long as they're negative. If they're positive, then the person should have a colonoscopy, and then follow up would depend on what was found at the colonoscopy. If you have a Cologuard test, the recommendation is to have one every three years if it's negative. Again, if it's positive, you would need a colonoscopy.

Dr. Lynn Butterly:

If you have a colonoscopy, how often you come back, how often the test is repeated, depends on your individual risk and the findings. If you are at average risk, which means you don't have a personal or family history of colorectal cancer or the potentially precancerous polyps, you're at average risk and the test was negative, then you can come back in 10 years.

Dr. Lynn Butterly:

That is provided you did a good job on your preparation and we were able to see the inside of your colon well, because just in the same way as if somebody tries to look at the back of your throat and you have a mouth full of food, we are not going to see very well. If we clean all the stool, or in this case the

food out of your mouth and try to look at the back of your throat, or try to look at your colon, we'll see a lot better. If you did a good job on your prep and the test went all the way around and you're at average risk and you don't have anything, it was normal, you're off the hook for 10 years. Everybody wants the 10-year plan, so that's always nice and that's great.

Dr. Lynn Butterly:

However, if you are found to have polyps, especially significant polyps, we want to take good care of you, we want to prevent you from getting colon cancer. We know that it is important for you to come back sooner in order to make sure you don't have any other polyps and to keep removing those polyps before they have a chance to turn into colorectal cancer.

Dr. Lynn Butterly:

It really depends on what the results are and whether the test was a good quality test and which test it was and what your individual risk is, but that's what we're all here for. Your primary care provider or your endoscopist, we're all here to help you know what's best for you in order to protect you. But the bottom line is you really should get screened because it can save your life.

Angelica Ladd:

How young have you seen colorectal cancer in patients? Is it typically older, like that over 40 threshold, or have you seen younger people who have presented with color?

Dr. Lynn Butterly:

Colorectal cancer is more common as we age. However, it certainly is prevalent enough, it happens often enough, that in the past we were starting to screen people at 50 because the incidence of polyps begins to go up at 40 and by 50, the incidence of cancer is going up. Now, there is good evidence that colorectal cancer is increasing in frequency in people under age 50. That includes everybody under 50, but in particular, we know that polyps, the potentially precancerous polyps, are more common in people who are over age 40. That's why the recommendation is to begin screening by 45 now, unless you have another risk factor, like a family history in a close relative, then we would start at 40 or 10 years younger than the age of your relative at the diagnosis of the cancer.

Dr. Lynn Butterly:

That's why we're here. Your PCP, your primary care provider, can help you know what's right for you, but those are the considerations. The reason is because we're trying to prevent people from ever getting colon cancer, so we want to make sure we get there in time.

Angelica Ladd:

Yeah. We have time for more questions. If anybody has more questions, please feel free to put those in the Q&A. Another thing I was curious about, and you may have mentioned it, but it was just in the treatment of colorectal cancer, are you able to really treat it very well? What are the outcomes for people who are being treated for colorectal cancer?

Dr. Gabriel Brooks:

Surgery is a very effective treatment for early stage colon cancers. Most people who have a preoperative evaluation that shows that they are early stage are then able to have surgery. Then there

are a number of features that can determine the risk of the cancer reoccurring, but surgery is by itself an effective treatment. Then the treatments are even more effective when we combine the surgery with chemotherapy in the case of colon cancer, if the person meets the criteria of being at higher risk for recurrence.

Dr. Gabriel Brooks:

For those people who have a stage 1 or a low risk stage 2 colon cancer, surgery is the only treatment that, in most cases, they would need. If they have the stage 3 colon cancer or the higher risk stage 2 colon cancer, then the evidence does show that the risk of recurrence is reduced substantially by having chemotherapy. Of course there are patients who either do or don't go through chemotherapy after their surgery and then have a recurrence. That can be as much as 20% or 30% or even higher depending on the risk factors.

Dr. Gabriel Brooks:

Although it is a highly treatable condition and most people who have an early stage colon cancer will be cured, still, there are people who can go through all that treatment and not be cured and have a recurrence. That's one thing that makes my job difficult.

Angelica Ladd:

We have a question here that talks a little bit about the fear around the screening. We have someone who says they have an idiopathic angioedema, I don't know if I'm saying that right, and they're afraid of internal swelling. They have an allergist who said it shouldn't be a problem, "But I'm still scared. Also, I have a brother who's being treated for stage 2 rectal cancer. He is 61. I've had the Cologuard test before and I made my colonoscopy appointment today." So just a little bit about getting around the fear of having those screening tests.

Dr. Gabriel Brooks:

Yeah. I gather part of the fear here is that the idiopathic angioedema might complicate the screening. That's not a condition that I know a lot about, because it's a little outside of my area of expertise, but in this case, unfortunately, I don't think we can address all the details of this question, it sounds like a complicated question and a question that speaking with your primary care provider or with other experts about your case may be helpful, but there probably is a way to mitigate any risk associated with many conditions. Again, I can't speak to the specifics of this condition.

Dr. Lynn Butterly:

Right. To add to that, I would say if your allergist told you that you will probably be okay, that is probably true. When we do colonoscopies, which I think is what your question is directly about, because you made the appointment today, which good for you, because with a brother who is a first-degree relative who has colorectal cancer, absolutely that is the right thing to do, but when we do colonoscopy, depending where you're going, and feel free to talk to your endoscopist ahead of time, but we have access to any kind of medication we might need if a person is going to have a problem that might require medical intervention outside of the colonoscopy itself. That's one thing.

Dr. Lynn Butterly:

The fact that your allergist said it shouldn't be a problem is probably true. We do many millions of colonoscopies every year in the United States with people having all kinds of conditions, but it is good that when you talk to the endoscopist before the procedure, you want to make sure, and it's my helper, you want to make sure to mention that, just so that they're aware. They may decide to talk to the allergist or whatever it is they need to do to make sure that you'll be safe and you'll be comfortable.

Dr. Lynn Butterly:

But for sure, having a first-degree relative, in your brother having colorectal cancer at 61, as you know, we would've recommended that you start at 40. I don't know how old you are, but I think it's great even if you are over 40, it's better late than never. It's very good to do. It's an excellent question you're asking, and if it puts your mind at ease, you should just contact the endoscopist ahead of time. Patients used to call me all the time, ahead of time, or contact my office so that we could be aware and calm their fears about the test.

Angelica Ladd:

Thank you. We have about two minutes left and I don't see any more questions in the Q&A. I just wanted to give you both a minute to add any final thoughts, any calls to action for our participants today. Dr. Butterly, do you want to start?

Dr. Lynn Butterly:

Sure. Well, I think you've already heard the message here, but colorectal cancer can be prevented, and the way we prevent it is through screening. Going and doing the appropriate screening that's right for you really can not only save your life, but it can prevent you from having cancer at all. It's very well worth doing. We are hoping that at some point in our lifetimes, we can actually get rid of colorectal cancer altogether. That's our goal.

Dr. Lynn Butterly:

Any questions that you might have after the fact, you can always reach us at DHMC and we're happy to answer your questions and to help you make decisions. Your primary care provider will always be interested in helping you make the decisions that are right for you. So get screened.

Angelica Ladd:

Dr. Brooks?

Dr. Gabriel Brooks:

I will second that message. Colon cancer and rectal cancer are, in many cases, treatable, but they are also preventable. This is a good example of ounce of prevention is worth a pound of cure. Even though it may seem like a mild inconvenience, believe me, cancer treatment is a much greater inconvenience. I'm certainly a believer in colon cancer screening and prevention.

Angelica Ladd:

Wonderful. Well, thank you both for being here with us this evening. I'm grateful for your time and your expertise. Thank you, everyone, for attending this evening. Again, there will be that quick three-minute survey. If you could fill that out and let us know how we're doing. You can also ask any questions that you maybe didn't get answered at the presentation, you can ask questions on those surveys and we will

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forward those on to our great presenters and get those answered for you. Thank you so much for being here, and have a wonderful evening and be well.

Dr. Lynn Butterly:

Thank you, it was our pleasure.