

Scott Redding: Welcome to the 3Ps of Cancer Podcast where we'll discuss prevention, preparedness, and progress in cancer treatments and research brought to you by the University of Michigan Rogel Cancer Center. I'm Scott Redding. In this special episode, Michigan medicine social media strategist, Ed Bottomley, sits down with surgical oncologist Dr. Karin Hardiman and gastroenterologist Dr. Keith Naylor to talk about colorectal cancer.

Ed Bottomley: Let's meet our experts Dr. Keith Naylor and Dr. Karin Hardiman. If you guys could just tell us a little bit about yourselves, if we could go for you first, Dr. Naylor.

Dr. Keith N.: It's wonderful to be here. My name is Keith Naylor. I'm a general gastroenterologist. I originally actually was raised in Kalamazoo, Michigan, and I attended the University of Michigan for undergraduate and medical school education. I'm a general gastroenterologist. This means I see patients with various different types of digestive disease issues, but I spend probably about 20% of my time doing colorectal cancer screening in terms of screening colonoscopy and other procedures, and then also I perform research as well trying to increase the uptake of colorectal cancer screening to try to see if we can get as many people screened as possible. I think that's generally what I do, but I'd be happy to add more as we talk.

Ed Bottomley: That's fantastic. Dr. Hardiman?

Dr. Karin H.: I'm colorectal surgeon here at the University of Michigan. I've been here almost eight years. I'm also the multi-disciplinary cancer clinic surgical director at our multi-disciplinary colorectal cancer clinic at Michigan Medicine where I see colorectal cancer patients. Surgically, I specialize in lots of different types of GI cancer such as Dr. Naylor but predominantly colon and rectal cancer.

Ed Bottomley: I was wondering how common is colorectal cancer in America.

Dr. Keith N.: It's generally about a little less than 5% of the population that would be affected by colorectal cancer, so that's about 1 in 20, a little more than 1 in 20 individuals. Overall, the incident and mortality from colorectal cancer has been decreasing over the last 20 to 30 years, and we believe that's due to multiple factors, but in regards to what we're talking about today one of the biggest would be the increased uptake in screening and prevention of colorectal cancer.

Dr. Keith N.: It's still one of the most common forms of cancer as well as one of the most common causes of cancer-related deaths. Even though we've done I think improving job over time of decreasing a lot of the issues related to it, it's still a major public health issue, and I think months like this gives us an opportunity to really focus on that, but there are so many people affected by it up to several hundred thousand people. 500,000 to 700,000 people a year can be affected by colorectal cancer, so it's certainly still something that is a very important issue

that people should be aware of, and I'm glad that we're here to talk about it today.

Ed Bottomley:

I'm glad you guys are here.

Dr. Karin H.:

Nationally, in the US it's the third leading cause of cancer-related deaths, so it is a very big deal. Even though we've seen over time this decrease in incidents across the board, we actually more recently have seen an increase in younger people who are getting colorectal cancer for unclear reasons.

Ed Bottomley:

Thank you for that. The next question that we move on to. What causes colorectal cancer?

Dr. Karin H.:

We think it's probably a combination of genetics and environment. It's ill-defined. There's certainly a certain population of patients, probably around 20% of patients, where it's pretty clearly familial, meaning either they have a family history of it, or they're the first in their family to have a hereditary cause for colorectal cancer, but for the vast majority of people it's unclear what caused their cancer, and most people with colorectal cancer have no symptoms, which is why there are screening guidelines, so that we can start and find it early enough that it's treatable.

Ed Bottomley:

Absolutely. Are some people more at risk for colorectal cancer?

Dr. Keith N.:

As you're mentioning, one of the bigger risk factors is having a family member with a history of colorectal cancer. It could be a sibling, or a parent, or even a grandparent, or sometimes even relatives that are more distant than that, but the closer the family member is to the individual, usually the more direct effect it can have on the individual's risk. Other than that, the other risk factors that individuals can't really control would be things like other conditions that cause inflammation in the colon like inflammatory bowel disease. Those patients also have an increased risk of colorectal cancer.

Dr. Keith N.:

Other familial related or genetic causes of cancers can have increased risk of colorectal cancer, and we'll talk I think about some of the specific types of diseases that can do that, but then in terms of the things that we can actually modify, smoking, like many other cancers, can have an increased risk of colorectal cancer. There's some ideas that weight or having an increased weight can also have an effect on that. Our diet and exercise also seem to have an effect on colorectal cancer risk, but I would say that the biggest risk would be family history of colorectal cancer and then having a disease that may increase the risk like inflammatory bowel disease or the familial causes of colorectal cancer.

Ed Bottomley:

Sure. Then next question that we have. What's the difference between rectal cancer and colon cancer?

Dr. Karin H.: Often this is really important when we start thinking about treatment. We were talking about this earlier. Patients rarely ask us if they have one versus the other. We kind of think of it in one bucket, but the treatment paradigms are pretty different, and so it's important for us to differentiate. The rectum is actually the very last part of the large bowel or the large intestine, and it's in the pelvis, and the difference from a long-term perspective is really that it's got a higher local recurrence rate, meaning it's more likely to come back where it started than colon cancer.

Dr. Karin H.: The local recurrence rate for rectal cancer, historically before we had the treatments that we do now, was up to 50%. Now it's more like less than 10%, but it's still higher than colon cancer local recurrence, which is around 2%. The treatment is different, so we try to figure out is this in the rectum or not? And that's really based on our endoscopy and our exam, and that tells us how far from the outside world it is. It's really just in that last 10 to 12 centimeters that we think of that as rectal cancer.

Ed Bottomley: Interesting. Is colorectal cancer a fast-growing cancer?

Dr. Karin H.: I think it's an interesting question. A lot of patients ask me this when we're talking about how quickly do they need to get in for surgery, how quickly do they need to start treatment. I would say it varies quite a lot. For most patients, it's probably not super fast, but I have seen particular patients where it is faster than we expect. This usually comes up when we're trying to schedule a surgery, and people are worried about doing it very soon, but in any given patient we don't know how quick it's going to grow because we don't have multiple points in time where it's been there and we've been monitoring it.

Dr. Karin H.: Once we diagnosis it, we generally start to treat it, but we think of a polyp or a pre-cancerous growth as taking 5 to 10 years to become a cancer. That's where screening guidelines come from. It's actually the timeframe in which it takes to grow. Anytime someone comes to me with a colorectal cancer already, it's probably been there a while. We want to make sure that we get an appropriate work up, get all the information we need, make sure the patient's healthy enough to undergo treatment, and then we move forward.

Ed Bottomley: Thank you for that.

Dr. Keith N.: I think one other thing that comes up in my conversations with patients frequently is because of screening, many times we're able to identify or diagnose the cancers at a earlier stage. We talk about staging, but sometimes people may not be aware of what that refers to, and it just has to do with the depth which the cancer is involving the colon, so cancers that are very superficial show signs that they've become cancerous, but they haven't really invaded through or all the way into the outside of the colon.

- Dr. Keith N.: The more the cancer is isolated to the surface, the more likely it is that it's not going to be a fast-growing tumor or cause greater mortality related to the cancer itself. One of the goals of screening is not only for prevention of cancer but to diagnosis it at the earlier stage possible, so that when we send patients to surgeons like yourself and oncologists, they can get the best outcome or potentially even a cure after the cancer has been diagnosed.
- Dr. Karin H.: Right, for sure. As I think you're saying, when we are able to scope patients through screening, we can prevent colon cancer by taking off pre-cancerous lesions or adenomas, and that is a very good outcome. And then if we catch the cancer early, actually colorectal cancer is highly curable.
- Ed Bottomley: Fantastic. My question for you, Dr. Naylor. Does colorectal cancer affect men and women differently?
- Dr. Keith N.: That's an interesting question. I think that there's still a lot of work being done to help answer that. In general, when you look at mortality and incidence, the incidence and mortality of colorectal cancer is higher in men. Some of that is due to how often people utilize their healthcare system and screening. Women are usually better at actually going to their physicians and undergoing the recommended screening at the recommended times.
- Dr. Keith N.: Some of the effects that we see with men having a higher likelihood of dying from colorectal cancer has to do with them presenting later in the disease process or with more advanced cancers, but there is some idea that men do tend to have greater a number of adenomas, which are the types of polyps that have the risk of developing into cancer, so there may be some genetic factor related to men that also may have some increase in the risk of developing cancer even outside of them potentially having screening at the recommended time, but a lot of the factors that we actually see in outcomes could hopefully be erased if we all equally were able to undergo screening at the recommended intervals.
- Ed Bottomley: Okay. The next question that we have. What is Lynch syndrome?
- Dr. Keith N.: We'll probably will both talk about this to some degree. We mentioned earlier that some forms of cancer have a genetic or familial component. That basically means that an individual can have a risk that they can transfer on to their children or grandchildren, and Lynch syndrome is one of the more common familial types of colorectal cancer where the risk is higher in those individuals. The other name for that is hereditary non-polyposis colorectal cancer.
- Dr. Keith N.: Essentially, it's a condition where individuals when they develop a polyp that polyp has a much higher chance of going from a pre-cancerous polyp to an actual colorectal cancer. I think the thing for individual non-healthcare providers to know is that it's very important to know your family history because the way we usually identify these patients is because their grandparents parents, or their

aunts and uncles may have a history of colorectal cancer. Particularly cancer that's diagnosed early before the age of 50 in particular can be a sign of someone having a genetic predisposition for colorectal cancer.

- Dr. Keith N.: There's a handy rule that sometimes we use where if you have three relatives that you know of with a history of colorectal cancer, and it goes across two generations, so meaning yourself and then either your parents or grandparents, and then if one of those individuals has a history of being diagnosed before the age of 50, then that's definitely something that you should talk to your doctor about even if you are not at the age of screening, and there's other testing that can be done to see if someone has the actual genetic genes that actually diagnosed Lynch syndrome, but those are some of the things we use to isolate out the high risk population.
- Dr. Karin H.: Yeah, you were talking earlier about patients whose cancer gets worse quickly. Actually, Lynch syndrome patients is one group where that's definitely true. Not only do the polyps progress more quickly, but the cancer can become a worse stage quickly. What happens in Lynch syndrome is there's a problem with the ability to repair the DNA. All of us throughout our whole body we're making new cells all the time where cells have died.
- Dr. Karin H.: In Lynch syndrome anytime a mistake is made it isn't fixed properly. We all make mistakes when we make new DNA to make new cells, and those mistakes get fixed, but if you have Lynch syndrome, then the mistakes don't get fixed, so it pretty quickly adds up problems. When patients come in and we know they have Lynch syndrome, then we consider what the best surgery for them would be. In some patients, especially if they've had colon cancer more than once, we actually sometimes will recommend to take more of the colon than just the part that has the cancer as a preventive measure.
- Dr. Karin H.: The other alternative is to do colonoscopy more frequently about every one to two years. Again, in most patients that's enough to keep them from getting colorectal cancer, but depending on their overall risk and their history, sometimes we recommend taking more of the colon out.
- Ed Bottomley: Thank you. The next question that we have. It's a treatment question. What is the typical treatment for colorectal cancer?
- Dr. Karin H.: For colorectal cancer, typically we have patients come in, and we want to know the answer to a series of questions to understand how bad it is, where are we starting from. We want basic blood work, and we want CAT scans of the chest, abdomen, and pelvis. The purpose of those is really just to tell us has it moved on from where it started or not. In addition, we want a full colonoscopy all the way around the colon, so we can know if there's any other problems going on, and so that we can identify where the problem is.

Dr. Karin H.: Usually, the endoscopy if it's not in a very clear location, we'll tattoo, meaning put dye in the wall of bowel so that we can see the tumor from the outside surgically. As long as the tumor hasn't moved on to other parts of the body, which is called the stage four cancer, then the first step for colon cancer is actually to remove the tumor surgically, which we can do either laparoscopically or through a bigger open incision.

Dr. Karin H.: For rectal cancer, it depends on the staging. We have to get a couple of extra tests to see how far through the wall it's gone, and that changes whether we can either cut it out locally through the anus, or they need chemotherapy and radiation before we remove it. There are a lot more factors when it comes to rectal cancer.

Ed Bottomley: The next question that we have. Is immunotherapy therapy available for treatment?

Dr. Karin H.: Interestingly, the only patient population who has colorectal cancer who responds to immunotherapy therapy is patients who have what's called MSI-high tumors. Patients who have Lynch syndrome have MSI-high tumors, but also up to about 20% of all colorectal cancers actually are MSI-high, which just means they have a lot of mutations. Those patients we know respond to immunotherapy, and all of the other patients who have more standard or the more common colorectal cancer they don't actually respond to it, so it's not used.

Dr. Karin H.: We don't know of a benefit for patients unless it's metastatic, meaning it's moved on to other places already for immunotherapy in colorectal cancer, so it's not part of the initial treatment.

Ed Bottomley: Thank you for that. The next question that we have for you, Dr. Naylor. Does colorectal cancer affect people of different races the same way?

Dr. Keith N.: This is a particular interest of mine. I think that it's an answer that's a little bit gray in terms of race. Often times we use race as a proxy for biology, but it's not always that easy. There's a lot of things that go along with race and how individuals are able to access the healthcare system. In general, when you look at the mortality and incident for colorectal cancer it is within the US highest amongst African Americans, both men and women, and then typically the next racial group would be the white Americans, both men and women, and then Hispanic and Latinos, and then generally Asians and Asian Pacific Islanders would have the lowest incidence in mortality.

Dr. Keith N.: When they look at genetic causes of that, there seem to be some factors in individuals that they can detect, but it doesn't really explain the overall differences in the populations as a whole. Some of this could be actually more due to insurance-related issues because we know individuals with more insurance that provides earlier access to this screening and early detection and

treatment generally do better, so that may have a factor in it. Also, diet that we have. To some degree our cultural practices may have some impact in this as well.

Dr. Keith N.: Certainly, race can in some ways, unfortunately, predict the likelihood someone is going to potentially die from a colorectal cancer. I don't believe it's probably due to a biologic factor. It's probably multiple factors that come together to make that the case. Excuse me.

Ed Bottomley: Thank you for that. Thank you. The next question. Does HPV cause rectal cancer?

Dr. Karin H.: No. HPV stands for human papillomavirus. It causes a lot of problems, but it does not cause rectal cancer. In the region, if we're talking about the large intestine, it causes actually anal cancer instead. Rectal cancer is an adenocarcinoma, which just means it originates from the inner lining of the bowel whereas anal cancer is actually a squamous cancer, which means it originates from the skin.

Ed Bottomley: Thank you for that. Are there clinical trials available?

Dr. Karin H.: There are lots of clinical trials. As a surgeon, I don't actually ... We have some clinical trials open surgically, but most of the clinical trials around treatment in terms of chemotherapy and radiation. We have several open in our cancer clinic and we're always looking for patients to match trials up with.

Ed Bottomley: Okay. In terms of treatment options, what new options are on the horizon for treating colorectal cancer?

Dr. Karin H.: This is actually also my area of research. I study cancer genetics and trying to understand how we can better match up treatments with patients. For rectal cancer, several groups noted long ago that a certain percentage of the patients, probably somewhere between 20% to 30% of patients, will have a complete response if you give them radiation and chemotherapy before you do the surgery. We got to take out the tumor, and we give it to the pathologist, and they look at it under the microscope, and there's nothing there.

Dr. Karin H.: The questions as part of my research and actually more growing interest nationally is, who are those people, why do they have a complete response, and how can we increase that for other people?

Ed Bottomley: Thank you for that. The next question we have for both of you. What are the symptoms of colorectal cancer?

Dr. Keith N.: One of the reasons we're talking here is because the most common symptom is to have no symptoms.

- Dr. Karin H.: Yes.
- Dr. Keith N.: The biggest thing I think we probably both say that we want to put forth is the importance of screening even if you're feeling completely well, and you don't have any symptoms, but the things that we usually talk about in terms of if someone was to develop a symptom from their cancer it can be anything from having blood in the stool, to weight loss for unknown reasons, to in some cases abdominal pain. But I'd say the most common would probably be blood in the stool. That's typically what most people can initially present with.
- Dr. Keith N.: That doesn't always mean that it's a colon cancer. There are many reasons where there can be blood in someone's stool, but it does mean that someone should fairly urgently receive evaluation from a physician to undergo further testing. The most common reason for blood appearance in your stool is most of them are very benign like hemorrhoids and other kinds of issues that otherwise healthy people can have, but certainly if you see something, you should talk to your doctor about it to determine if further testing is necessary and what testing might be best for that particular individual. But yeah, unfortunately, for this cancer the most common symptom is no symptom, so screening is really a forefront in prevention and early detection of the disease.
- Dr. Karin H.: Yeah, I completely agree with Dr. Naylor. I would add screening for most people who don't have a family history the recommended age starts at 50, although that may be changing, so that misses a lot of the population who are younger and who have less likelihood of having colorectal cancer, but if patients who are younger or older develop symptoms, then that's a different category. That's not screening. That's investigating something that's already happening. Even if you're not of age to have a colonoscopy typically for screening, if you're having bleeding, changing your bowels that's different, these other symptoms, that really needs to be investigated.
- Ed Bottomley: Let's move from symptoms. Let's pivot over to diagnosis and prevention. The first question here. Is colon cancer preventable?
- Dr. Keith N.: Absolutely. We have very clear evidence that it is preventable. Colon cancer is generally developed from adenomatous polyps like we were talking about before, which are polyps that have the factors that can eventually lead them to develop into cancer, although not all adenomas do develop into cancers, but we can't predict which ones will and which ones will not, so we remove them when we find them during a colonoscopy.
- Dr. Keith N.: But when we talk about adenomas in the colon, we're generally talking about colon polyps, which can have different forms. Some of them look almost like mushrooms where they come out of the lining of the surface of the colon. Others can be flat. Some can even be depressed. It's very important that when you undergo a screening exam that the doctor's able to detect and remove all the polyps that are able to be found. I think one of the things that we're

probably are going to talk about is there are multiple types of screening that are available.

Dr. Keith N.: Colonoscopy and really CT colonography, which is a special kind of CT, are the ones that can detect or identify polyps whereas some of the stool testing is more geared towards the detection of cancer alone or more advanced polyps, but just in general of prevention it really comes to identifying and removing polyps, which is more directed towards colonoscopy as the biggest preventive type of test for the prevention of colorectal cancer.

Ed Bottomley: Thank you.

Dr. Karin H.: I completely agree.

Ed Bottomley: Fantastic. Okay. The next question we have. You've touched on this a little bit already, Dr. Naylor. Besides a colonoscopy, are there other testing options that do not require a prep?

Dr. Keith N.: The testing options are being developed over the course of time, and there has been some change over the last several years in regards to which ones are recommended. Currently, colonoscopy is the most commonly performed colorectal cancer screening test with probably between 70 or more percent of people will undergo a colonoscopy, but it's not the correct test for everyone, and there are other tests that have been shown to reduce the mortality related to colorectal cancer.

Dr. Keith N.: The most common would be the stool-based testing, and there are several stool-based tests available. Some of them are referred to as FIT or the fecal immunochemical testing, or also guaiac-based, which looks for the evidence of blood in the stool. The stool-based testing you're generally looking for evidence of blood, or some of them like Cologuard, which also is a more recent test, look for evidence of DNA that is more predictive of cancers.

Dr. Keith N.: The stool-based test don't require a prep. They can be done at home and then mailed in for screening test, so they can be very helpful in individuals who have difficulty accessing screening because of barriers to getting to a healthcare facility or issues related to the ability to complete a prep. And then lastly there is the CT colonography, which is a special version of a CT, but you still need a prep for that, so it's really not applicable when you talk about screening without prep.

Ed Bottomley: And then what are the different types of prep available to [inaudible 00:25:15]?

Dr. Keith N.: The most common type of prep it's referred to as polyethylene glycol prep, and it's basically a four liter prep, so it's four liters of liquid that is prescribed by a physician, and then that prep actually acts by ... The volume fluid works to clean out the colon. That's by far the most common type of prep available and the

one that has the most track record for being effective and safe. People don't necessarily always like the taste of the prep or the fact that they have to drink such a high volume of prep, so there are other preps available. Many of them are preps that try to either reduce the volume that's required to drink or preps that may come in pill form.

Dr. Keith N.: Although some of these preps as the volume decreases, there can be some issues in patients who are susceptible to it to the development of kidney-related problems because the smaller volume preps rely more on changes in how the fluids in the body are handled, and patients who are predisposed to either cardiac or kidney disease sometimes can have trouble with that. Here at the University of Michigan we primarily use the polyethylene glycol prep. That's our primary prep that we use because it is the safest and most effective, but if there's someone who cannot tolerate it, they should definitely talk to their doctor because there are other options available.

Ed Bottomley: Let's circle back. I know that you mentioned Cologuard. What about tests like Cologuard? Are they as good as a colonoscopy could be in identifying a health problem?

Dr. Keith N.: Cologuard it's not new. It has been around for a few years, but it's something that we're still trying to see how it works on a population level. One of the big discussions I have with people is it really depends on what your goal is when you undergo the test. These types of test their goal is more the identification of cancer at the earlier stage possible, so they don't have as much of a relationship in cancer prevention.

Dr. Keith N.: But in terms of early detection, we do know that by detecting the cancers earlier they do reduce mortality related to cancer, so the Cologuard definitely has a place to play in identification of patients, but once you're identified, you still will need to undergo a colonoscopy for the actual diagnosis. I can tell you that if you do a Cologuard test or these other tests, and they come back positive, it does not mean that you definitely have cancer.

Dr. Keith N.: I've done several colonoscopies on people with these positive tests, and they may have what's called a false positive where the test is positive, but they don't actually have colorectal cancer, but in many people it is a very good way of being able to identify the population of people that can benefit the most from screening, so it definitely has a part to play in the overall trying to get as many people screened as possible because there's not enough gastroenterologists to do colonoscopy on everyone who would be available or appropriate for the screening test, so definitely stool-based screening test have a very important part to play in the reduction of colorectal cancer.

Ed Bottomley: Okay. The next question. Why did my husband get a one day prep and I was given a two day prep?

Dr. Karin H.: That's a good question.

Dr. Keith N.: That's a very important point that we sometimes have discussions with patients about. Even though you may be prescribed a particular type of prep, the way that that prep is carried out may be different in individuals. In many times it has to do with if you have underlying constipation, or diabetes, or other types of medical conditions that can make it take longer or require more medication to effectively clean the colon. That's something that usually is identified on questioning during a clinic visit with your primary care doctor or gastroenterologist or others.

Dr. Keith N.: It really would have to do with if you have a history of having infrequent bowel movements or things that make it more difficult for you in one evening be able to clean out the entire the colon. It's something that's very important.

Dr. Karin H.: The reason that's so important is the number one predictor of whether you're going to be able to have a good colonoscopy that identifies even small polyps is whether the prep is good or not, so your colon needs to be squeaky clean, and for some people it takes one prep, and some people it takes more. We often get asked about splitting the prep and why we ask for people to have part of the prep and then wait a while and do part of the prep. That's because even though the split prep often means you're getting in the middle of the night, the outcome, meaning the cleanliness of the colon, afterwards is much better.

Ed Bottomley: Absolutely.

Dr. Karin H.: It's important to follow the instructions.

Ed Bottomley: Yes.

Dr. Keith N.: And then one other thing I'd add is many times the recommendation for a different prep is made after someone may have already had a colonoscopy that was not as clean as we would have liked. If we're not sure that we could see the entire colon effectively, then that may reduce the time between the recommendation for you next colonoscopy, and at that time there may be a recommendation for either greater medication or a longer period of time where you're on a clear liquid diet, which is also part of the prep, where we have you just drink liquids for a day or two to try to reduce the amount of material that needs to be cleaned out from the actual medication itself.

Ed Bottomley: Absolutely. The next question. What can I do to make the prep more tolerable?

Dr. Keith N.: I'll take that again. There are things that we usually recommend when we're specifically talking about the polyethylene glycol preps. In terms of tolerability, part of it is drinking the prep over a period of time where you're not trying to drink too much over a shorter period of time because it is a large amount of volume of fluid. The way the prep is designed is that you don't absorb the fluid

into your body like you would if you drink water or some other typical fluid, so it can make you feel full more quickly, so the importance of drinking a cup of prep and then waiting 10 to 15 minutes before the next cup.

Dr. Keith N.: These instructions are really clearly outlined in the information that you receive, but taking enough time to drink the prep and then keeping the prep very cold. Some people feel that that makes it more tolerable as well as using a straw because the flavor of the prep sometimes is not as ... People don't necessarily enjoy that, so using a straw to keep the prep in the back of the tongue as much as possible, so you're not getting it all over your tongue can sometimes make it more tolerable as well. There are flavor packets that are given with the prep, but I've been told that those don't necessarily improve the flavor of the prep as much as we might like.

Ed Bottomley: The next question we have for you. What happens if the prep wasn't very successful, and you find out during the colonoscopy?

Dr. Karin H.: It depends on how bad it is. For some patients if we can see most of the colon, especially through washing off residual stool. For some patients we can get it to a point where it's acceptable, but as Dr. Naylor was saying, we might recommend a shorter interval, meaning having come back either very soon if it was terrible or just a year or two years. If there's a lot covering the inside of the colon, we're not able to see it all, and we can't rule out smaller polyps.

Dr. Keith N.: I guess the other thing I'd add is when we talk about the risk of colorectal cancer from the polyps the size of the polyp is one of the factors that we use to determine risk. Normally, polyps that are about less than eight millimeters in size or so are considered small polyps, but those are the ones that can be missed more routinely if the colon is not as clean, but as polyps get larger, the risk of cancer is higher in the larger polyps.

Dr. Keith N.: Ideally, we'd be able to see those even if it's not perfectly clean, but the colonoscope that we use to do the procedure has a very small section, so it limits our ability to clean the colon if it's not just liquid in the colon. Even if it's a prep that's not perfect, it's need to be liquid. If there's solid material, we really don't have the ability to remove that. That would really require someone to have a repeat colonoscopy generally within a few months of their initial colonoscopy. In order to eliminate that as much as we can, we really try to encourage people to complete their entire prep, which allows them to at least get all of the solid material out of the colon.

Ed Bottomley: Sure. The next question we have. Will I be awake during the colonoscopy, and what happens if I wake up during the procedure?

Dr. Keith N.: I guess I'll take that one as well. Some people actually choose to be completely awake without sedation during the colonoscopy. Many times those are individuals who would like to return to work immediately following their

colonoscopy. Colonoscopy is not routinely a painful procedure. We're not making incisions through the skin like a surgery typically would be done, but it can have some bloating or cramping during the procedure, which we try to limit as much as possible.

Dr. Keith N.: Many people do prefer to have sedation, which we do generally provide during a colonoscopy. The most typical kind of sedation that's performed is what's called conscious sedation, or twilight sedation is also sometimes used to refer to that sedation where individuals are not as asleep as they would be during a surgery, but they're usually not as aware of what's going on, but if we talk to them or ask them a question to respond, they can usually open their eyes, turn around.

Dr. Keith N.: They can converse, but when you are not directly interacting with them, often times they'll fall right back to sleep, so individuals may come in and out of being aware that they're having a procedure, and that's not something that we actively try to prevent them from waking up, but if they have any discomfort, we can always provide them more medication. If there are individuals who either because of anxiety or because of a lot of discomfort during procedures, we can use medications like Propofol, which are medications that are commonly used during surgical procedures to provide a more deeper level sedation where people will not really be aware of the procedure at all, so they're different levels, and individuals can talk to the physician about finding the right type of sedation for them.

Ed Bottomley: The next question. Will I remember the procedure?

Dr. Keith N.: Most people will not remember their procedure or will remember maybe just the last few minutes of their procedure where the medication starts to wear off, but as I mentioned, many people may remember when Katie Couric had her colonoscopy broadcast. It's not something that you have to be completely unaware of the procedure, but many people because of the sedation they may have fleeting memories of the procedure itself, but they may not have detail memories of the procedure. Then they're provided with a report of the findings of the procedure, so that even if they don't remember exactly what was told to them, they have something that tells them how many polyps, where they were, so that they know later on down the line when the next time they should have their next colonoscopy would be.

Ed Bottomley: Thank you for that clarification. Next question. Do we still recommend a colonoscopy at age 50, and what about younger ages?

Dr. Keith N.: We can probably both discuss this to some degree, but in general for the average patients it still starts at age 50, but that may be changing as you mentioned. But I know you work a lot with the higher risk population, and that can affect when the first recommended screening test would be, so I don't know if-

Dr. Karin H.: There were recent recommendations put up by the American Cancer Society this year saying that they recommend actually starting at 45 now. Other organizations and insurance companies have not responded yet. This I think is in response to the increase in young people that we've seen over the last 10 years in colorectal cancer. I think that it's moving a little. We'll see how much and whether uptake of that younger age is going to be across the board or not.

Dr. Karin H.: Certainly, screening definitely is starting at 50 and then in terms of other populations where we would screen, meaning assess even without any symptoms at an earlier age. Anyone with a family history of colorectal cancer we recommend screening at either age 40 or 10 years before their family member was diagnosed, whichever is earlier. And then for people where they have known FAP, which is a polyposis, we start actually when they're teenager, and then for Lynch it's usually somewhere between 25 and 30, and these are for people who know they have this problem in their family.

Dr. Keith N.: I think the insurance part is a very interesting piece of it because it does drive a lot of healthcare utilization behavior, and that may be changing in the future, but for many patients the first time that they have the opportunity to have screening where they'd be able to have that covered by their insurance is at age 50, but as we get more and more information about how patients can benefit from this, that might be changing in the future.

Dr. Keith N.: But one thing that I would say is that, as I mentioned right now, we don't really have the ability to provide screening for everyone who's due for screening, so if and when they do change that age to 45, it may stretch the healthcare system a little bit in regards to having enough ability to provide screening for that whole group of patients who now are recommended for screening, so those other factors like using stool-based testing or other forms of screening may become important in individuals who live in areas where they don't have direct access to a large healthcare facility that may have the capacity to absorb those patients who are undergoing the average screening.

Ed Bottomley: The next question for you, Dr. Hardiman. I was told I have a large polyp and need surgery. Is there another way to remove large polyps?

Dr. Karin H.: Yeah. That depends quite a bit on where it is and how large. I and several of my gastroenterology colleagues endoscopically can try to remove large polyps. If there's a large polyp, and it's within 10 centimeters from the outside world, those we often remove transanally in the operating room doing a combination of just looking and also a special form of laparoscopy where we're doing it through the anus.

Dr. Karin H.: Then if it's going to be removed with an endoscope or a colonoscope, I often will refer those patients when I see them to my gastroenterology colleagues who specialize in that type of removal of large polyps. For a lot of patients if I've been referred a patient who has a polyp, and they've been told they need

surgery, I actually have them see a specialist in removing large polyps before I'll offer a surgery, again, because we want to avoid surgery if we can, but I will say there are definitely polyps that are so big that it's just not possible to remove them endoscopically, but there are special methods that can be used to lift the polyp where you inject under it and then dissect, meaning separate the polyp from the wall.

Dr. Karin H.: I don't know if you want to elaborate further, but it can be very effective for certain patients.

Dr. Keith N.: One of the biggest characteristics of polyps that makes them able to be removed this way is that they arise from the mucosa, which is the very surface layer of the colon. If we can separate them from the remainder of the colon or remove them, the risk related to that tissue is now gone because it hasn't had an opportunity to invade through any other further layers.

Dr. Keith N.: A lot of these procedures they're referred to as mucosal resection or mucosa dissection allow us to remove larger pieces of tissue but still at that very surface layer because you want to avoid when you're removing tissue through non-surgical means we have to be very careful as to not cause a hole in the colon which is called a perforation. That's one of the things that can happen with removal of very large polyps, but as technology is advancing, we're becoming better and better at being able to do things that previously required surgery. Now many of them can be done through different types of endoscopy or combination of procedures as you were mentioning. I think hopefully as technology moves forward that will become even more common in the future.

Dr. Karin H.: But hopefully, through screening-

Dr. Keith N.: That's right.

Dr. Karin H.: ... we can avoid having these large polyps.

Dr. Keith N.: Yeah, because it usually takes time for polyps to grow to a larger size. It's not typically found in younger patients, although there are some younger patients who can have large polyps.

Ed Bottomley: Very good points there. The next question. Will I need a colostomy bag?

Dr. Karin H.: The need for an ostomy really depends on where the tumor is and what the patient's function is already. For patients who've had surgery on their anal sphincter, radiation already, tumor that involves the sphincter muscle that allows us to be continent and not have accidents with our stools, those are patients there's not a lot I can do which would not require an ostomy. Those people need an ostomy, especially if I have to remove the muscle of their sphincter to get the tumor out, then I don't really have a choice but to give them an ostomy.

Dr. Karin H.: But if the tumor doesn't involve the sphincter and the patient had good continence already, we can do very advanced procedures where we even handsaw the bowel back together in the anal canal to avoid an ostomy if patients wish.

Ed Bottomley: Thank you for that. Are there other treatment options including natural treatment options for colon or rectal cancer?

Dr. Karin H.: I get asked this a lot. I think that as much as I would agree with patients and others that say that there are things that we don't understand, I have yet to see a study that gives evidence that treatments outside of what we typically offer in our national guidelines are effective. I get asked about CBD oil a lot, and there's really no study, meaning we give it to some people and not to others, that shows that it's effective to treat colorectal cancer.

Dr. Karin H.: When patients feel strongly that they want to add natural things, I often advocate for that in conjunction with the treatments that we know through trials, meaning we give it to some people, and we don't give it to others, and then we find the people who get it are much better off, that they consider accepting these things where we have evidence that they work. If they want to add things to it, I don't think that's a problem, and we don't know it's effective or it's not, but I do think that there's a reason that we have these standards and that we have standard recommendations.

Dr. Keith N.: I would say certainly patients have different feelings about medical care and what they're willing to accept in regards to medical care, but I would say anyone diagnosed with colon cancer or any form of cancer really, even if you're unsure about what in the end want to do, sitting down with an oncologist or a surgeon in certain situations is invaluable even in the end if you decide to not undergo the traditional types of therapy that we would offer. You need to have the information.

Dr. Karin H.: I completely agree.

Dr. Keith N.: I think many times patients some of the feelings they have about these things are from information they may have found on websites or other sorts of sources of information that may not be either up to date or accurate in regards to what we currently do, for instance, things like ostomy bags and how often those are used in patients. I think those things like sitting down with a doctor and really discussing that. Even sometimes talking to patients who have undergone the procedures or had treatment is very important in informing people so that they can make an educated decisions, so that you're not in the end after trying something and then coming later potentially after the cancer may have advanced the stage or become more of an issue in terms of treatment.

Ed Bottomley: Thank you for the that. The next question. What can I do to prevent colorectal cancer?

Dr. Keith N.: I'm sure we probably both can talk about this. Screening is probably the number one thing that everyone can benefit from in regards to prevention of colorectal cancer. That's not just screening in general but talking to your doctor even if you're not at the age of screening or knowing your family history, so that we know if we need to start screening earlier, so being very aware of your medical history and talking to your doctor about when the appropriate time to screen is very important.

Dr. Keith N.: And then in terms of things that you could do yourself, smoking cessation. That's probably the second biggest thing is to avoid factors that can increase of not only colorectal cancer but other cancers. Diet and exercise would probably be the other major influencer in trying to reduce the development of colorectal cancer. There have been a lot of studies looking at other things, anything from vitamin D to the use of aspirin.

Dr. Keith N.: These studies have shown some improvements in certain populations, but I don't know if we're able to really recommend them on a population level at this point. In terms of prevention, I would say just living a very healthy lifestyle and being an advocate for your own care and accessing care regularly would be the biggest things that have been shown to have the biggest factor in prevention and early detection.

Dr. Karin H.: Yeah, I agree. Even in patients who've had treatment for colorectal cancer and are now in what we call surveillance and survivorship, all of those things are still true. We know that people who have a healthy diet and exercise regularly actually have even a lower risk of recurrence of their cancer later after they've had cancer, so it's never too late.

Ed Bottomley: Thank you for that. Let's talk about family health history. How do I complete a family health history?

Dr. Keith N.: I'm sure you probably have a lot of experience in this with younger population. It starts with just asking questions and really getting to know your family history at a personal level, but there are individuals within the healthcare system. Generally, there are genetic counselors who are specialists in going through and individual's family history and really finding out more about all the different aspects of family history, because sometimes you can have a particular type of cancer, and it may actually influence other forms of cancer.

Dr. Keith N.: We talked a little bit about Lynch syndrome, which is colorectal cancer, but some of those individuals may actually have endometrial cancer or other forms of urinary cancer that also are related to that as well. We wouldn't expect patients to be aware of all the ins and outs of that, but knowing your general family history, and then if it seems like there's cancer in multiple family members over multiple generations, then having that discussion with a healthcare provider who can really determine whether or not you need to

undergo further testing or earlier screening would be the thing that I would say would be the most important part of the discussion.

Dr. Karin H.: Yeah, I totally agree. I think that knowing your family history, especially cancer and if people have died like why they died to better be able to tell your healthcare providers about your history is very important.

Ed Bottomley: Thank you. We're circling back to an overarching question for you guys. We're going to the end of our questions in our session here. I want each of you to tell one thing you feel is most important for them to know.

Dr. Keith N.: I would say that screening saves lives, and that screening is something that patients do and is not generally painful or uncomfortable. Many patients after their colonoscopy usually the most common thing that I hear is that the bowel preparation is by far the part of it that they dislike the most. Now that's something that hopefully we'll be improving in the future, but I would say the biggest thing is that colorectal cancer is a preventable form of cancer. It is also a highly treatable form of cancer.

Dr. Keith N.: By identifying it earlier, you can not only affect your life, but you could potentially even save your life because it could be curable or preventable, so the biggest thing is to undergo a test whether or not that's colonoscopy, talking to your doctor about the appropriate screening test and undergoing some form of colorectal cancer screening would be the biggest thing that I would like to put forth, but just having the test is the most important thing independent of what type of test that would be.

Ed Bottomley: Indeed.

Dr. Karin H.: Yeah, I agree. I think that screening is very important, and then secondarily I would say if you're a patient and you're having symptoms that we've talked about, change of bowel habits, bleeding, abdominal pain, that you need to be sure and talk to your doctor because you may need a colonoscopy to assess and make sure it's not colorectal cancer. Even if you're young, don't ignore symptoms. If you're unfortunate enough to have been diagnosed with colorectal cancer, come in, see our physicians, get treated.

Dr. Karin H.: It's often scary when people come in and they have been told the C word, and they're very nervous, but this is what we do every day. We will walk you through it and take really good care of you and get rid of your cancer.

Ed Bottomley: Thank you both. Thank you, Dr. Naylor and Dr. Hardiman, for your time, for your expertise during today's chat.

Scott Redding: Thank you for listening, and tell us what you think of this podcast by rating and reviewing us. If you have suggestions for additional topics, you can send them to

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