

00:00.000 --> 00:15.200 Support for Yale Cancer Center Answers comes from AstraZeneca, a global biopharmaceutical company that is committed to bringing to immuno-oncology to people living with earlier stages of cancer. Learn more at [astrazeneca-us.com](http://astrazeneca-us.com). 00:15.200 --> 00:50.500 Welcome to Yale Cancer Answers with doctors Anees Chagpar and Steven Gore. I am Bruce Barber. Yale Cancer Answers features the latest information on cancer care by welcoming oncologists and specialists who are on the forefront of the battle to fight cancer. This week, it is a conversation about cancer prevention and control with Dr. Melinda Irwin. Dr. Irwin is Professor of Epidemiology at the Yale School of Public Health and Co-Program Leader of the cancer prevention and control research program at Yale Cancer Center. Dr. Chagpar is a Professor of Surgery at Yale School of Medicine.

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Chagpar Melinda, maybe we will start at the beginning. We all know that we are supposed to eat, you know, fruits and vegetables and we are supposed to lose weight and we are supposed to exercise and ....

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Irwin All that fun stuff right?

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Chagpar But the truth of the matter is that the obesity rates in this country have been escalating over the last several years and sadly we do not really think that there is much end in sight, although some of us do try?

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Irwin Yes. So, what I find ironic is we have had since the peak in 1990s when the cancer mortality rates were at its peak, we have had a 27% decline in cancer mortality rates and this is great and something that should be celebrated, and it is partly because of a lifestyle modifiable behavior; in this case, it was tobacco. So, with obesity what is ironic is over these last 2 decades, we have seen an increase in obesity rates, not just in the United States, but globally. So, what can we learn from what was done in the tobacco control or smoking cessation field that we can take into the obesity-lifestyle behavior field and one major lesson is that policy matters. So, with tobacco, it was a lot of the policy changes regarding smoking in public places and what not. So, it is so hard to eat healthy and to exercise. And so, when we look maybe upstream at what we can do to change the environment that we live in, to make it more easier to eat healthy and to exercise. Here in New Haven, a couple of years ago, there were bike paths put in or bike lanes put in so that people could bike, you know, as their transportation and hopefully that has led to an increase in that type of transportation. But when we look at our food environment as well, in grocery stores, it is not the healthiest foods and the healthiest foods are more expensive than other. So, I think there is a lot that we can do that sort of not put on the person but on our environment and society.

02:55.400 --> 03:41.600

Chagpar Well you know, when we talk about that and certainly, you know, we now know that obesity is very much like smoking was and they say that sitting is the new smoking, but when we think about nutrition for example, one of the things that I think made a huge impact in terms of reducing tobacco usage was taxation. Certainly, in Canada, they found that when they increased tobacco taxes, they found that smoking magically reduced; simply because it was unaffordable. But here, I mean, we have seen things like for example in New York with Mayor Bloomberg and his sugary drink tax, not really being widely accepted and loved by the public.

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Irwin Yeah, and really great points that you raised here and what is so important to realize over this last decade or two, which has increased the most sweetened beverages significantly and Americans are recommended to take in 30 g or less per day of added sugars. So, one good policy change has been that food labels now have to pull out added sugars as a line item on the food label so that the consumer, people, better understand how much added sugar they are getting in. But the thought was that, given most of people's sugar intake in a given day comes from the sugar sweetened beverages. So, it is not just soda, it is other drinks that contain sugar. If we can do something to just limit that sugar, sugar from those drinks, that could have a huge impact on our obesity rates, you know, trying to not have them increase in prevalence over time. So, there are opportunities, I am happy that this food label has changed to make it easier for Americans to better understand added sugars.

04:51.000 --> 05:11.200

Chagpar Yeah. But even with the added understanding, the fact is, as you said, you know, the sugary sweetened beverages, the junk food is a lot cheaper than, you know, really lean proteins or really fresh organic vegetables. I mean, it is just....

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Irwin And it is also a question of accessibility. So, every corner store has some of these unhealthy foods that are empty calories, they have no nutritional value to them and there are accessible. So, it is the fact that in some places, healthy foods are just not available to individuals.

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Chagpar Right. Especially in low socio-economic status neighborhoods, there is essentially food deserts, so how do we get around that in terms of policy, both from a taxation standpoint as well as from an access standpoint?

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Irwin Yeah. So, there is a lot of work being done at the community level, you

know, various community boards and then also at the state-wide level and the national level to really make sure that there are full, you know, grocery stores within certain miles of one another and it is not just that individuals in that neighborhood are dependent on the corner store. So, there are initiatives going on focused on everything related to accessibility to cost and what not. So, it brings us back to the point of seeing how challenging this is when you want to intervene, educate, counsel not just those with cancer but any adult or child out there and how to eat healthy and to exercise. The barriers that are in the way, it is very challenging and unfortunately, we still live in a society where many will put the onus or the blame on the person rather than the environment. So, we have to have a shift in that as to what is sort of the barriers, the root cause and what not.

06:53.300 --> 07:25.400

Chagpar Because it really is hard. It is hard to eat right, it is hard to exercise. But let's talk a little bit about how diet and exercise and obesity play in to actually getting cancer before we talk about the risks that it plays once you already have cancer. But talk a little bit about how being overweight or obese, nutrition affects your risk in terms of getting cancer because one thing that nobody wants to get these days is the "C" word.

07:25.400 --> 08:39.800

Irwin Right. Right. So, there has been hundreds of studies, observational studies and some randomized trials looking at how obesity, diet and exercise, you know, I should poor diet and physical inactivity increase the risk of, you know, over 10 different types of cancer, and there are 3 primary mechanisms -- there is the sex steroid mechanism - the estrogens, there is the insulin pathway and then inflammation. And so, all of these 3 mechanisms or pathways we know have been shown to be affected with cell growth or proliferation and causing cancer. So, higher levels of insulin, higher levels of inflammation and higher levels of estrogen are all related to certain cancers. And then, we know that there have been studies of weight loss, exercise, healthy eating that have been shown to reduce those mechanisms, those pathways -- the insulin, the inflammation and the estrogen. And so, from that, we know that there are studies showing direct association between these lifestyle behaviors and cancer and now better understanding the mechanisms and how that happens.

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Chagpar So, Melinda, you know, one of the things that I think we in the public have become aware of is this epidemic now of childhood obesity and I think a lot of that recognition has come to bear from our former first lady Michelle Obama, who really put a spotlight on childhood obesity. So, if you are overweight as a child due to whatever reasons, poor nutrition, you live in a food desert, you eat junk food, you know, yes you go to school and there is some physical education that is there, but maybe not enough, and you are overweight as a child, does that mean that you are destined to get cancer?

09:20.700 --> 11:07.400

Irwin No. But, you know, obesity is associated with a number of chronic disease, not just cancer, but diabetes and heart disease, but similar to like you hear that if you quit smoking, you can reverse, you know, your risk for lung cancer and your lungs can become brand new within so many years, and so, you know, preventing weight gain and promoting weight loss throughout our life is really important and we know that a 5% weight loss in adults is clinically meaningful and can reverse or slow some of the impact on not just cancer but other diseases associated with obesity. A 5% weight loss is manageable by many people. So, if they weigh 250 pounds, it is about a 12-pound weight loss, and so this has changes in those 3 pathways I mentioned - insulin, inflammation and estrogens. And so, for children, when we think about various times, you know, children innately are quite active, you know, the 2-5 year age and we want to make sure that 5-10 the elementary school years, they stay active, but then there is something that happens in middle school and adolescence and young adulthood, where they just become less active, and is it because of social media, is it because of the, you know, the devices - the iPhones and other distractions probably and so we need to think about how can we really maintain their physical activity levels as they age and hear and then also think about their eating aspects. And so, it is really important to focus on preventing unhealthy weight gain and then when they get to adulthood, you know, maintaining that weight and/or promoting weight loss of just about 5%.

11:07.400 --> 11:32.800

Chagpar So, I think that is really the key message for everybody out there who is probably looking at the bathroom scales saying - well, thank you, I am overweight, so I know that I am at increased risk but what can I do? You really can make a difference in terms of reducing your chances of getting cancer just by reducing your weight to get into that normal body weight range or maintaining an ideal body weight.

11:32.800 --> 12:16.500

Irwin Well, in fact, there has been a number of studies showing that if you are of a high BMI, body mass index, and you cannot, you know, you want to focus on preventing weight gain because you know you just cannot get down of that ideal body weight - exercising can make a difference even without weight loss. Even if you stay at a high BMI or a high body weight, if you exercise, if you can add that into your daily routine, you are lowering your risk for cancer and coronary heart disease even without the weight loss. So, you know, it is sort of looking at this as 2 different behaviors - the eating and the exercise, culminating in body weight, but if it is hard to meet one of those, the healthy eating or the exercise, think about one of the behaviors.

12:16.500 --> 12:28.800

Chagpar So, but for exercise Melinda, a lot of people are going to say jeez, do

you want me to go to the gym for an hour every day, I can't afford that, I have a busy job, I have got 3 kids, I have got life and everything is going on, like I do not have that kind of time?

12:28.800 --> 13:27.800

Irwin I know, that's why once again we have to change our environment to making it so it is very easy to walk out your door and walk to work if you live close enough or have it easier to exercise, but it is all about sedentary behavior now. So, over the last 2 decades with the rise of technological advances in the iPhone and all of that, we sit so much and in fact the significant rise in obesity rates over the last 2 decades have been explained by about 200 calories per day, a deficit, meaning people are moving 200 calories less per day or they are eating 200 calories more per day or combination. And so, with the lot more sitting that we are doing, that easily is about 200 calories per day. So, if you can just try to reduce your sedentary behavior, standing a little bit more, walking a little bit more, it adds up day after day. So, it is not just about having to go to the gym, you know, couple times per week to meet those recommendations.

13:27.800 --> 13:38.800

Chagpar Yeah. Well, we are going to take a short break for a medical minute. Everybody can get up and move so long as you are not driving and then come back to learn more information about cancer prevention with my guest, Melinda Irwin.

13:38.800 --> 13:55.700 Medical Minute Support for Yale Cancer Answers comes from AstraZeneca, creator of 5 new FDA-approved cancer therapies in the last 4 years and on track to provide patients with 6 new medicines by 2020. Learn more at [astrazeneca-us.com](http://astrazeneca-us.com). 13:55.700 --> 14:54.700 This is a medical minute about smoking cessation. There are many obstacles to face when quitting smoking as smoking involves the potent drug nicotine, but it is a very important lifestyle change, especially if a patient is undergoing cancer treatment. Quitting smoking has been shown to positively impact response to treatments, decrease the likelihood that patients will develop second malignancies and increase rates of survival. Tobacco treatment programs are currently being offered at federally designated comprehensive cancer centers and operate on the principles of the US Public Health Service Clinical Practice Guidelines. All treatment components are evidence based and therefore all patients are treated with FDA-approved first-line medications for smoking cessation as well as smoking cessation counseling that stresses appropriate coping skills. More information is available at [YaleCancerCenter.org](http://YaleCancerCenter.org). You are listening to Connecticut Public Radio. 14:54.700 --> 15:46.700

Chagpar Welcome back to Yale Cancer Answers. This is Dr. Anees Chagpar, and I am joined tonight by my guest Dr. Melinda Irwin. We are talking about cancer prevention and control, particularly the effect of lifestyle, diet and exercise, and we were saying that, you know what, sitting is the new smoking; where smoking was the cause of lung cancer 2 decades ago, now sitting, even a little

bit of sitting is really the cause of a lot of obesity and leading to more and more heart disease and cancer are the 2 main killers of people in this country. So, Melinda, you were saying that you do not really have to get to the gym, just, you know, getting a standing desk or walking to talk to somebody instead of texting them; like, how much exercise do we really need in our day to reduce our cancer risk?

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Irwin Yeah. So, there has been a number of recent reports that have come out, you know, about recommendations for physical activity and there is 2 that I really focus on; one is the how many minutes per week you should be doing of exercise and roughly it is 2-1/2 hours per week. So, you can do that. There has been research showing if you do that all on one day on a Saturday, you go out for a nice hike, if you do it 2-1/2 hours on that one day, it is associated with similar risk reductions for heart disease and cancer as if you did 30 minutes every day. There is another physical activity marker to look at and that is how many steps we do per day, so it is not so much how many minutes or hours per weeks, how many steps we do and the goal is kind of hard to me is 10,000 steps per day; 2000 steps is about 1 mile, so this would be 5 miles a day walking, that does not mean exercise walking, like going out for a 5-mile walk but the number of steps you take from when you wake in the morning until you go to bed at night, and the good thing is almost everyone has a cell phone or an iPhone and on that it comes with an app, a health app, and if you click that, it actually records your steps per day. Most people carry their phone with them everywhere and so when you go to bed at night, you can click on that health app and see how many steps you took. Maybe you are only doing a 1000 steps, so set a goal for the next day to be 500 more steps, which is about a half mile or maybe you are doing 5000 steps regularly because you can also look, you know, there is a calendar that shows you how many steps you did over the past month or so. So, this is another way to try and see how you can get in physical activity in a day, and none of these really require going to a gym or sweating vigorously, it is moderate intensity activity such as brisk walking that has been associated with reductions in cancer and heart disease and diabetes.

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Chagpar And the nice thing about the steps thing is that, you know, you do not have to do a whole half hour at a given time, right? Take an extra lap around the grocery store. PS: Stay at the perimeter of the grocery store that is where the healthy stuff tends to be. But you know, take an extra couple of laps, you know, park at the other end of the parking lot, small things can often help you to get those steps and take the stairs instead of the elevator, you would be surprised how many steps you can get in. Our office has recently moved in, and I am finding I can get in a lot more steps. So, this is a good thing. So, we can reduce our cancer risk by simply getting more active. What happens when people get cancer? Let's suppose, you are diagnosed with cancer, whether it be breast cancer or any other kind of cancer, is your weight associated with

your prognosis, how well you do, your outcome, your survival, is it associated with any of those things or is it really the cancer that dictates how well or how poorly you are going to do?

18:42.000 --> 20:16.100

Irwin It is a great question. So, as I mentioned, body weight has definitely been shown to be related to developing a cancer and that is from observational studies. Similarly, among those diagnosed with cancer, there are 10-plus different cancers where obesity at diagnosis is also associated with poor prognosis, meaning a higher risk of recurrence and mortality. However, those are observational studies. We do not really know if you intervene and you would lose body weight, does it actually lower your risk of recurrence and mortality. There are about 5 different randomized trials going on right now around the country and around the globe in different cancers, couple in breast cancers, some in prostate and other cancers, that would be the definitive research of, say for example, there is a 5% weight loss, actually, you know, change your risk of recurrence and mortality. However, in the absence of those randomized trials, we do have trials, randomized trials, of exercise, nutrition and weight loss on changing those pathways I mentioned, those biomarkers - the insulin, the inflammation and the estrogen, which we know are directly related to increasing risk and outcomes of cancer recurrence and mortality. So, the trials we have done as well as others have shown that exercise, nutrition and weight loss lowers insulin, inflammation and estrogen by about 10-30% within 6 months of that intervention.

20:16.100 --> 20:30.700

Chagpar So, you can certainly affect the pathway and now we are waiting for the long-term studies that can tell us, okay so you effected the pathway, is this really going to have an impact on how long I am going to live, how long I am going to live without cancer?

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Irwin Right. And so, the reason we want to be sort of cautious in this is that we do know that higher BMI is associated with certain types of cancer, so for example, with breast cancer, triple negative breast cancer has been more associated with obesity, and once diagnosed with the triple negative breast cancer, would weight loss make a difference on recurrence or mortality risk, we do not know. It may only be beneficial in those whose tumors are ER positive. And so, we just like we do with our adjuvant therapies and we do trials that are very personalized or targeted to different tumor types, we need to look at that with lifestyle interventions too. My hypothesis, I do believe that exercise, nutrition and weight loss really matter for risk of recurrence and mortality, and even if they do not, we know with certain cancers that cardiovascular disease might be a primary cause of death and that these lifestyle behaviors improve that outcome.

21:34.000 --> 22:00.400

Chagpar So, because I mean a lot of people have said, you know, doctors are ought to be writing prescriptions for exercise or in addition to prescriptions for toxic drugs that we give that often have side effects to kill of these cancers. Exercise often can reduce risk of cancers and has fewer side effects if any aside from making you healthier overall.

22:00.400 --> 23:09.200

Irwin Right. And also, you know, the cancer treatments might increase, you know, certain factors related to cardiovascular disease, where here exercise and healthy eating affect all these chronic diseases favorably. So, I agree I think there is no downside to, you know, having physicians or clinicians write a prescription so to speak for exercise or healthy eating. You know, we really need to make sure that patients are referred to programs in the community close to their home that they can hopefully, makes it easy for them added into their daily routine; for example, the YMCA offers the Live Strong Exercise Program, which is a free 3-month exercise program twice a week sessions, group-based sessions, for anyone diagnosed with a cancer, whether they were diagnosed yesterday or 10-plus years ago and the YMCAs also offer the diabetes prevention program, which is a healthy eating weight management program. So, I really encourage those listening to, to reach out to their local Y, these services are free and available to them.

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Chagpar Yeah, you know, a patient of mine actually came back to clinic and said that she had joined one of these programs in addition to the exercise what she loves is she really loves the comradery of meeting all of these people who have gone through a cancer journey and, you know, they have really bonded and become friends and now have social events outside of the Y and hopefully are doing healthy eating during those social activities too.

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Irwin Yes.

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Chagpar But tell us a little bit about your clinical trials in this space too because one thing that almost anybody can avail themselves of is programs like the Y. Fewer people might have access to clinical trials that actually can help push some of the research and our understanding in this area, and we always appreciate kind of getting the answers to these questions so that other patients can benefit and we can figure out what is the best therapy for people. So, tell us about your work and the trials that are going on now.

24:09.100 --> 26:56.900

Irwin Sure. So, lot of the research myself and others across the country and world have done of interventions of exercise and nutrition and weight management have been done post-treatment, so after chemotherapy or radiation therapy



and that has been great to really look at the mechanisms and how this could impact cancer outcomes. Tara Sanft, a breast medical oncologist, here at Yale and I have partnered to do a study in women about to receive chemotherapy for breast cancer. You are involved in this too as well. So, thank you. And what we are doing, what we find very novel about the studies were actually intervening when women are receiving chemotherapy. It is over the first year, so it actually extends a little bit longer than their chemotherapy and there are 16 sessions and some of them are done where the registered dietician meets with the patient when she is getting chemotherapy and then some of the sessions are on the telephone throughout the year, and the reason we chose to do this study, which is funded by the National Cancer Institute during treatment is because when we were intervening later, post-treatment, many of the participants in our study when they learned about the risk of cancer recurrence and mortality associated with say obesity, they were frustrated that they did not hear that at diagnosis, and so we decided that's right and let's intervene earlier and our primary endpoint actually is chemotherapy completion rate because not all patients finish chemotherapy; they either have dose delays or dose reductions often due to side effects such as fatigue or neuropathy, so we think exercise and nutrition may improve those side effects and in turn improve chemotherapy completion rate, and this might be just another mechanism of how these behaviors help with cancer outcomes. So, we are in year two of this trial, we recruited 40 women who are receiving chemotherapy, our goal is to enroll 250 women over the next 2 years, about 50% of the women that we have approached that are eligible are enrolled. So, that means it is a pretty good enrollment rate, but the other 50% that are not enrolled but they are eligible, it is because they are overwhelmed, they are overwhelmed with their diagnosis and it is very understandable, it is hard for them to think about doing a trial, does not matter what the trial is, just it is not a perfect time for them. So, we are learning from those women as well as when is the best time to intervene with healthy lifestyle behaviors. We think it is never too late to start so that at diagnosis they have given some sort about counseling about this, understanding if they are not ready, then they can get it post-treatment.

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Chagpar Well, you know, that brings up a really good point, which is even outside of a clinical trial, you are diagnosed with cancer and your life has just been turned upside down, and then to kind of throw into that mix on top of that, oh! by the way, you know, you should really lose weight, eat better, exercise, get that 150 minutes and I can imagine for patients, they really want to do that because they want to live a long time and they do not want the side effects and they want their heart to be healthy and they know that chemotherapy can potentially affect your heart health depending on the drug that is given and so on and so forth, but my goodness, I mean for some patients that might just be too much?

27:39.700 --> 28:42.400

Irwin I know. So, the message we say often is, you know, prevention of weight gain rather than focusing so much on weight loss. So, prevention of weight gain and trying to move more, just reducing sedentary time, but it is hard and so, you know, we take that into consideration, you know, with all that they have going on, but we do know that a lot of men and women with diagnosis of whatever disease have lived many years before unhappy with their eating habits or their body weight and they see this time in their life as a time to really focus on them, the priority is them and so they are very receptive to this information. As I said, it is only about 50%, you know, who are receptive at that time at diagnosis, but I think we cannot assume the 50% are ready, so we have to give them some sort of little information and then they can determine when they are ready.

28:42.400 --> 29:13.600 Dr. Melinda Irwin is Professor of Epidemiology at the Yale School of Public Health and Co-Program Leader of the cancer prevention and control research program at Yale Cancer Center. If you have questions, the address is [canceranswers@yale.edu](mailto:canceranswers@yale.edu) and past editions of the program are available in audio and written form at [YaleCancerCenter.org](http://YaleCancerCenter.org). I am Bruce Barber reminding you to tune in each week to learn more about the fight against cancer here on Connecticut Public Radio.