The Economic Club of New York

117th Year
773rd Meeting

Dr. Selwyn M. Vickers
President and Chief Executive Officer
Memorial Sloan Kettering Cancer Center

October 8, 2024

Webinar

Moderator: Marie-Josée Kravis
Chair Emerita, The Economic Club of New York
Chair, Museum of Modern Art

Introduction

President Barbara Van Allen

Hello, and welcome to the 773rd meeting of The Economic Club of New York. I'm Barbara Van Allen, President and CEO of the Club, and I'm honored to be here with all of you today. Recognized as the premier nonpartisan forum in the nation for discussions on economic, social, and political issues, the Club has actually existed for over a century and has hosted over 1,000 prominent guest speakers. And that tradition, of course, continues up to and includes today.

I'd like to welcome students who are joining us virtually from Duquesne University, Harvard University, and the Gerstner Sloan Kettering Graduate School of Biomedical Sciences as well as members of our 2024 Class of ECNY Fellows. This select group of diverse, rising, next-gen business thought leaders is our largest ever, and the applications for 2025 are now available on the Club's website. So please consider sponsoring a fellow.

It's truly an honor to welcome our special guest today, Dr. Selwyn Vickers, President and CEO of Memorial Sloan Kettering Cancer Center. Selwyn is an internationally recognized pancreatic cancer surgeon, pancreatic cancer researcher, and pioneer in health disparities research. He took the reins at Memorial Sloan Kettering just over two

years ago.

After completing his education in surgical training at Johns Hopkins University, Selwyn joined the faculty at the University of Alabama in Birmingham. Twelve years later, he moved to the University of Minnesota Medical School where he was Chair of the Department of Surgery. While at Minnesota, his lab was instrumental in the development of an injectable cancer drug aimed at treating pancreatic and gastrointestinal cancer. Selwyn is a patent holder and has a limited financial interest in the pharmaceutical company licensed to develop the drug.

In 2013, he returned to Alabama, becoming Senior Vice President of Medicine and Dean of one of the largest public academic medical centers in the United States. Then in January of ‘22, he assumed the role of CEO of the UAB Health System and CEO of an affiliated health group, the UAB/Ascension St. Vincent’s Alliance. He’s a member of the National Academy of Science, excuse me, Medicine, and the Johns Hopkins Society of Scholars.

So I’d like to also welcome ECNY Chair Emerita Marie-Josée Kravis. As you know, Marie-Josée is also Chair of the Museum of Modern Art.

This event is part of our Inclusion programming. As you may know, the Club launched

this special programming in 2020 with support from founding corporate partners ranging from Bloomberg, Mastercard, PayPal, S&P Global, Taconic Capital, and others.

As a reminder, the conversation is on the record, and we do have media on the line. And we're going to end promptly at 12:45. So without further ado, I'm happy to pass the mike over to you, Marie-Josée, to get the conversation started.

Conversation with Dr. Selwyn M. Vickers

CHAIR EMERITA MARIE JOSÉE KRAVIS: Thank you, Barbara. And it's wonderful to be back at the Club. I follow, of course, the meetings very closely, and this is a really special one for me. And it's a special one, I think, for everybody, and especially women who belong to the Club. October is Breast Cancer Awareness Month so we will be discussing relevant issues.

But first of all, Selwyn, thank you so much for taking the time to do this. And Barbara elaborated on your curriculum, but I'd like you to tell us maybe more personally how a single child from Alabama became interested in medicine and more specifically in oncology.

DR. SELWYN VICKERS: Marie-Josée, thank you for those kind words, and I am excited

about the opportunity to be here with you. And Barbara, thank you for the thoughtful introduction.

So, in short, my parents and grandparents were educators. And that was always a core value for me and my family and so that was the pursuit. I had the fortune that my family, my father comes from a large family, one of his brothers was a physician. I had a chance to attend his graduation from med school in 1972. And I was really struck by the opportunities to serve people, make a difference in their lives, and actually enjoy it. I didn't know that I would be a surgeon. That led me on a journey to the place that I thought would be in some ways the best opportunity for gaining insights into medicine, that being Johns Hopkins and where I stayed for 16 years.

And almost stayed longer, I had accepted a job to stay on faculty but felt that my next level of growth would probably be in a different site. And so that's been a bit of my journey. I've enjoyed serving and leading. I love taking care of patients, and I appreciate and enjoy discovery science as well as education.

CHAIR EMERITA MARIE JOSÉE KRAVIS: And you continue to take care of patients. I mean you are the CEO of MSK, but I know that you're also in the operating room quite frequently.

DR. SELWYN VICKERS: Yes, I am afforded the opportunity to participate as a consultant. And for that scenario, I actually participate with one of our other senior surgeons to do resections of pancreatic cancer. It's both, I think, a world where I can connect with patients. They're sometimes surprised when I go back after the operation is completed and introduce myself as a surgeon, but the CEO. And it's also beneficial for me to see the rest of the hospital and how it operates. But I can't tell you how fortunate I am to still have a chance to do that.

CHAIR EMERITA MARIE JOSÉE KRAVIS: You've often said that surgeons require certain qualities that are also qualities required to be a CEO, that CEOs require, making decisions on the basis of incomplete information and execution and so on. Could you elaborate on that?

DR. SELWYN VICKERS: Yes, I think there are many aspects of what you want out of your surgeon. Clearly you want them to be technically talented but in general, I think if they're really outstanding there are some attributes. And you begin, number one, whatever we do as surgeons is done in teams. And you learn to function in a team effort by having everyone play that role, and that's fundamental for leadership as well.

Secondly, surgeons value process, and they like to do the same things the same way because they can get the best results. But at the end of the day, even though process is

valuable, they hold themselves accountable to execution. And probably no other world where that is most important is in cancer surgery. People appreciate the process, but what they're hopeful for is that the surgeon can execute on what he or she intended to do.

Finally, as you highlighted, there are so many parts of our world that you have to make critical decisions on incomplete information. And yet you realize being paralyzed or not making a decision is worse than actually moving ahead with stuff that often has significant risk but the risk of not acting is even more dangerous. So if your surgeon has a reasonable amount of emotional intelligence, these attributes can be valuable in leadership.

CHAIR EMERITA MARIE JOSÉE KRAVIS: So you mentioned moving ahead, and I'm thinking of MSK, and MSK, an institution that was first in using, giving chemotherapy, first in CAR-T cells, and checkpoint blockade, cellular therapy. But we're still talking about a war on cancer. And people, I think some people think that it's an unwinnable war.

DR. SELWYN VICKERS: Yes, I think you highlight two things. New York and the country is fortunate to have a place that, initially driven out of the largest of its citizens and continues on that basis as well, but it's an accumulation of some of the most

talented physicians who are focused on this one problem, which is a significant public health issue. We will approach two million new cases of cancer this year. And that number is growing and it's the second leading cause of death. In addition, in New York, we'll be well over 120,000 cases. And in the New York City area, approaching 50,000 cases.

And so there is a real challenge, and particularly now that 10,000 people a day, as the Baby Boomers move through, are turning 65 each year. And that's the highest incidence of cancer. Add to that, that adolescents and young adults are also having this fairly significant rise in cancer going forward. And as you've said, there are many firsts. Whether it's the early formula around Coley's treatment for immunotherapy to CAR-T to chemotherapy to radiation, there are so many things Memorial has led the way in and shared with the world.

In that context of young adults, we established a first adolescent and young adult clinic in the world and have established, helped establish numerous across the world to address this urgent rise in young adult cancers. And as you know, we have the Stuart Center for Adult...Adolescent and Young Adult Cancers, sponsored by one, our board chair.

CHAIR EMERITA MARIE JOSÉE KRAVIS: Any views or ideas on why adolescent

cancer seems to be surging, especially colon cancer, gastric cancers?

DR. SELWYN VICKERS: Yes, so a couple of things. It's clear that we are able to earlier understand some key syndromes that drive cancer now and have an ability to detect them earlier. I think there's still a complex interaction between environment and diet that plays a role that we don't understand. So I think it's both an ability to have a detection capacity to actually pick these up. There's clearly an increased incidence, and I think it's still a complex play between the diets we have, the Western environment, that have driven mutations, some that are inherited and some that are actually acquired. And you're right, they are driven in many of these areas – in breast cancer, thyroid, lymphoma, and colon cancer particularly in certain age groups.

CHAIR EMERITA MARIE JOSÉE KRAVIS: And when we think now of AI and we think of better use or more access to data or more powerful data, also more genetic data, is that helping in addressing some of these issues? Not only for young adults but cancer in general.

DR. SELWYN VICKERS: I think it is. And there are plenty of examples. Ninety percent of the data in healthcare has been created in the last five years. That just tells you the massive explosion that is occurring. And yet, our ability to manage that data still remains nascent. And so the power of what we can do in both, either early detection,

discovering patients who are at risk by looking at the data and understanding processes that can allow us to have conclusions through AI can really be fundamentally powerful. There are studies now that are showing that just by looking at charts, understanding CT scans, blood tests, you can have a predictive understanding of who is at increased risk for pancreatic cancer.

We've led a study, by looking at just the basic information of your pathology, your chest X-ray, your immunostaining, we can predict, in lung cancer, who can respond to immunotherapy. Where in general it's less than 30% if you just give it to everybody. And we have a unique capacity now to really look at early detection of genetic early advanced cancer.

So we have a screening tool for patients, really essentially anywhere on our website, where we can assess their risk for cancer based on their history, send them an opportunity for actually screening to see whether they have a genetic syndrome. There are about 94 different genes we look for. And then get them involved, if they are positive, into a screening process that can both reduce their risk and manage early detection of tumors. When we detect tumors early, our chance for cure often is greater than 90%.

CHAIR EMERITA MARIE JOSÉE KRAVIS: Well, what you're describing is very different

than what's become very popular – the full body scan, for example, which people think of as a panacea. You're describing something much more complex and complicated.

DR. SELWYN VICKERS: Yes. Yes, I think there is an urgency, in certainly the broader population about how can we detect these early, these cancers early. And to some degree these tests have gotten out a little bit ahead of the FDA. They're not dangerous by any means. So the business of consumer methodology is accepted and tolerated, but they have limited proof that they will actually be accurate and sensitive. And so I don't think there is unbelievable harm in getting an MRI or the GRAIL test with the understanding of a couple of things.

Number one, they're not perfect. Number two...and by perfect, the GRAIL test is only about 45% accurate. That's the blood screening test. The MRI is a reasonable screen for looking for solid tumors, but like many of these, they can send you down a road of a diagnostic odyssey. Some cysts, some small nodule, which may or may not mean anything, can lead you down a road of unintended consequences if it is not connected to a really intelligent and competent guide. And that's often a cancer center or a physician.

CHAIR EMERITA MARIE JOSÉE KRAVIS: But isn't there a risk also of just stressing people out, creating a tremendous amount of anxiety or a false sense of confidence?

People stop screening or don't screen as regularly. They think everything is fine.

DR. SELWYN VICKERS: Totally correct. There's nothing more miserable than having some sense of a diagnosis and you don't know what it is. You don't know what it means. And it can often drive you down roads that create undue harm. A classic example, somebody sees a cyst in their pancreas. They're now really bugged about it. They go to a physician who says I can't tell you for sure or not. They get a biopsy and there's a bleed after the biopsy. They're now told that they can't stop the bleeding. They have to go in and operate. They take out that part of the pancreas and you find out it's benign. That is the risk of that in an uncontrolled environment. And then secondarily, how often do you screen? Right? When you get one clear picture, is that a permanent result? Or is that every six months or a year?

CHAIR EMERITA MARIE JOSÉE KRAVIS: So you mentioned, we'll go back, you mentioned pancreatic cancer and some of the breakthroughs there. I'm aware of one, which is the clinical trial focused on vaccines for pancreatic cancer. Could you describe that and share that with our audience.

DR. SELWYN VICKERS: Yes. Marie-Josée, you and I talked about this. There is an area of cancer care that is terribly exciting in the future called immunotherapy. And there are three really, three to four areas, there is cellular therapy, which Marie-Josée

mentioned began at Memorial, and later on we can talk about it. And there's this antibody treatment of blocking molecules that hide the cancer from the immune system called checkpoint blockade. And then there's this one recently approved using cells called TIL therapy. And then there's this final piece called vaccines.

And one of our young scientists began to observe and asked the question. There were a few number of patients who were long-term survivors of pancreatic cancer. And Memorial was one of the few places that had the records of those who were 10-year survivors, had the blood, and had the tissue. And he began to ask the question and publish on these questions and answers what were the factors that were common among them all? And the common factor is that they had an activated immune system that targeted uniquely unrecognized antigens in the past on the pancreas cancer cells.

In light of those publications, BioNTech, which is a vaccine company, and prior to Covid focused on cancer vaccines, reached out to Dr. Balachandran and Memorial and said, might we consider a vaccine with this newly understood compound called mRNA, which is part of the genetic makeup of patients and tumors? And might we actually target a repertoire of these markers on the cells that might give the immune system an upgrade and an attacking mode to prevent the cancers from coming back?

And the study, not in large numbers, but yet very powerfully showed that if you got your

tumor taken out, that was in the head of your pancreas, the so-called Whipple procedure, those tumors were sequenced. And then the neoantigen, through the work with computational oncologists, were determined and a vaccine was developed for your cancer in a personalized way. So the vaccine was specific for that patient's tumor.

The vaccine was given in a timely fashion along with regular chemotherapy. And to date, 80% of the patients who responded and got that vaccine are alive at four and a half years. The patients who did not, 95% were dead at two years. And the rest are now dead at this four-year period. So you now have an 80% survival with evidence that the immune system is actively surveilling, keeping the tumor from coming back. And then you have evidence that everybody else with their treatment, unfortunately is no longer with us.

CHAIR MARIE JOSÉE KRAVIS: And talk about, I mean that's extraordinary, and I know you're continuing to work on that, but talk about vaccines for other forms of cancer.

DR. SELWYN VICKERS: Yes, I think the concept behind the working of this vaccine is this principle of minimal residual disease. And what we asked the Covid vaccine to do was, in part, not to treat a Covid infection, but to prevent it from ever occurring. And the vaccine is in a similar position. We asked the vaccine to now prevent disease from coming back once we've done some procedure to remove it.

But even in those scenarios of removal where your surgeon says I've taken the colon cancer out, I've taken the bladder cancer out, I've taken the lung cancer or prostate cancer out, more often than not, in many of these diseases you have cancer cells that are still lurking in your body. And the ability for them to grow back is often evidence in many of these tumors when there is often a six, five, seven out of ten chance that your tumor will come back within that five-year window.

What we then ask the vaccine to do now is to be focused on any cells that exist in your body to now prevent them from coming back. You've heard me say, Marie-Josée, that even if you develop a cancer, most likely your body has developed a social contract with your immune system. Because we believe, in general, we have niduses of cancer cells that develop and break off all the time, but they never become significant because our immune cells see them as foreign.

When a cancer does develop, it has often hidden itself from the immune system to allow it to grow. So the vaccine now takes on that role that when you've had a tumor treated, you now have this preventive mechanism to assure that you have the ability of the tumor not to come back.

CHAIR MARIE JOSÉE KRAVIS: Now, you know, with all these innovative therapies and clinical trials and so on, one issue that comes up and it's a very real one especially in

the U.S. is affordability and access. Now, in her introduction, Barbara spoke about all your work on health disparities and trying to address, not only treatment but also screening and diagnostic and why treatments differ from one population to another.

DR. SELWYN VICKERS: Yes, you touch on a sensitive issue. It's not easy. The best example I can tell you, we're one of the founders – if you would – of CAR-T cells. And probably less than 30% of patients who need CAR-T cells can get them. Complicated by the fact that up until a few years ago, and probably still to some degree, we lose about $100,000, up to $150,000 for every CAR-T cell therapy we offer.

So you have many hospitals who refuse to offer it because it costs them money. And particularly those hospitals with disparate communities that are in safety net environments that often serve the underserved in medicine, those opportunities are not afforded to them because of the cost. It's complicated in the context of how we can lower those costs but they often drive the access and disparities.

Some would argue disparities really only came about when new developments happen. Across the board, all women died of breast cancer in America at the same rate in the 1960s and 50s. Move to the 1970s and 80s when mammography becomes available, then you begin to see disparities because there is a select group, part of our country that now has access to mammographies, but you also now have a group that now

doesn't get access and are plagued to the same incidence that existed before when the rest of our country now has an opportunity to reduce that incidence.

So the final piece, I would say that much of the data says that if we improve outcomes for people who are in disparate communities or have worse outcomes and care models for them, we improve outcomes for everybody. If we reduce costs for drugs, we improve access for everybody. So it's not a zero-sum game. So it's an opportunity for us to improve overall healthcare by taking those that are often less fortunate and less accessible to the care that we provide.

CHAIR MARIE JOSÉE KRAVIS: Well, you mentioned, and I mentioned it is Breast Cancer Awareness Month and the disparities in screening for women. But also aren't there disparities in reaction to treatment. For example, doesn't tamoxifen maybe act differently in certain populations? And so therefore the treatment also requires more personalization?

DR. SELWYN VICKERS: Yes, I think that is true. It potentially is best seen in our work done by Carol Aghajanian and Carol Brown in endometrial cancers. There was a clear differentiation in the context of women of color who had a more significant worse outcome. And there was an underlying biological finding that they identified an aggressive set of gene mutations that were not being addressed by the standard

chemotherapy used for the broader population. So tailoring and personalizing that was certainly effective and important. That's true in breast cancer. Often women of color have a much greater risk of triple negative cancer which requires a different approach than the garden variety breast cancer that's often presented at an early stage.

And we have data now, we've just hired a new, young scientist who is looking at the concept of social epigenomics really showing the impact – if you would -- of the sympathetic nervous system and stress factors in disparate communities that are underserved and showing an up regulation in transcription factors that drive more aggressive tumor behavior. So that you can actually look at a zip code and its socioeconomic status and correlate it with the worst outcome for the same cancer that another person can have in a different environment.

CHAIR EMERITA MARIE JOSÉE KRAVIS: So maybe you can just tell us a little bit then about the Geoff Canada Center.

DR. SELWYN VICKERS: Yes, so the Geoff Canada Center is Memorial's more organized foray in bringing together all of our scientists who have really worked in this area. And I certainly would say that before I got here Memorial has had an interest in this and has had many people working in this area. But the center really recognizes a member of our board, but who is also a legendary contributor to New York and Harlem,

that leads us in a space of trying to make sure that all populations have the best opportunity for success.

So this center really is to help Memorial partner, further the science, further the biology, partner across the landscape – if you would – of housing, political areas, and other partner hospitals where we can actually give people greater access to the level of care that we believe they deserve. It doesn't mean everybody comes into Manhattan. It often means we transport what we do to places where there are trusted environments where people can actually deliver that care. This center gives us that umbrella, gives us the potential to recruit a new cancer disparity scientist as well, and to hopefully lead in this area like other things that we've done.

CHAIR MARIE JOSÉE KRAVIS: So talking about the things that you've done or you're doing, I know there's a lot of interest amongst the participants here today as to how MSK turns discoveries into dollars. I mean it's true that MSK has an outstanding research record, but how are some of these discoveries turned, not only into therapies, but possibly into dollars?

DR. SELWYN VICKERS: Yes, so thank you for asking that. It begins from the premise of understanding that often from many on this call, including yourself, have made major investments in our organization and in our scientists to push forward with discoveries.

Memorial is fortunate to have a broad platform of really outstanding scientists who do some of the most basic work, and many times not even cancer-focused, that have impact on disease but eventually often have a great impact on cancer.

The unique – if you would – secret sauce at Memorial is the ability to take that disease across the street and to have excited, engaged practitioners take that into patients to make a difference. That's lent to the nearly 2,000 clinical trials we have. Once we do that, Memorial has done a phenomenal job of taking those products and licensing them to companies in order to further return those revenues to feed our scientific community to further fuel discoveries.

We've recently begun to think in a more organized way, even though we've done it in the past, but to do it in a more robust way of creating an environment, an incubator for startups. Where both we bring in our best scientists with their ideas, put them in settings where they get the business support from other CEOs who've worked in biotech. They get the insight of venture capitalists who know good ideas but know good business models, where we can have that ability to nurture those companies, to launch them out in the appropriate phase as we've shepherded the science to the point that we know that it can be a viable product and viable entity. So we are excited about doing that because more than any other field in medicine, cancer has the power of new discoveries having an impact on individuals' outcomes.

CHAIR EMERITA MARIE JOSÉE KRAVIS: So speaking of new discoveries, and this is more in the popular press and so on, so many discussions of longevity, aging, NAD, GLP-1s, rapamycin, the whole gamut of drugs and therapies to enhance longevity. And obviously some of these therapies are therapies that have been used in cancer treatment. Rapamycin, for example. And GLP-1 probably has, with its impact on obesity, also an impact on cancer cells. Some say it causes tumors. Others say the decrease and decline in obesity will be a positive factor. What's your judgment on all of these very trendy, call them therapies I guess...

DR. SELWYN VICKERS: Yes, I think in the last four to five years there's been a rise in the scientific – if you would – embracement of senescence, and that is that aging is actually a disease versus a natural process. And so there have been many really bright people to take and harness and go after that. It's still early. There are recent articles that have been showing that we probably won't live much longer than 100, than what's there. I think it's credible to begin to look at.

But I also understand that as many people try the supplements and drugs, I think the first rule that you have to understand and make sure of, that it's safe for you. Because you and I have spoken that for any drug to actually be effective, there are about three or four principles that are really important.

Number one, you have to know what target it really affects. And you have to be aware of off-target impacts. Secondly, even though in a dish or in an animal you might see the effect of the target, you still have to know does it get to the target in a human? So, one, does it have a target? Two, does it actually, is the target accessible? Third, you really need to know how frequent you take that drug. All these drugs have half-lives. They don't last forever. So should you take it twice a day? And all of us know, depending on the antibiotic you take, it could be four times a day. It could be three times a day. It could be twice a day. It could be once a day. All based on the half-life of the drug.

And then you need to know, now if I take it frequent enough, believing that it actually hits the target and gets to the target, how long do I take it for it to have an impact? I can do all of those things, and if I stop my chemotherapy early, if I stop my antibiotics early, it's to no avail. The disease comes back. And I would say, in general, we know none of these things in regards to these supplements, whether it's metformin, NAD, rapamycin.

Now I would say we're seeing really a bountiful of collateral benefits from GLP-1 inhibitors. Because in the cancer world we believe a large part of cancer is driven by early inflammation. Fat and obesity drives inflammation. And so to reduce that in some major way should overall reduce the impact as well as the number of cancer cases that might be apparent in a society. So we're hopeful for that. It clearly has an impact on chronic disease like heart disease, diabetes, kidney disease, and even some

pulmonary. And as you may have heard, it appears to have some impact on dementia.

CHAIR EMERITA MARIE JOSÉE KRAVIS: Obviously there are some beneficial effects, and I think what you're saying also is that we don't have enough data. So many of these supplements are recent and so on. But just talk about obesity a little bit, and not necessarily in terms of GLP-1 inhibitors, but just obesity, in general, and its impact on cancer, heart disease we also know. But there are factors in our lifestyle that have been proven to have an impact on cancer.

DR. SELWYN VICKERS: Yes, you are correct. It certainly increases the risk for cancer about two and a half, one and a half to two-fold if you are in that obese category. And America suffers from that greatly. I think, as I mentioned, part of the driver is in the context of actually inflammation. And when you're obese you don't realize that every part of your body, every organ stores fat. In an obese person, the heart is surrounded by fat. The liver cells are replaced by fat. The pancreas is replaced by fat. So your body will concentrate fat everywhere in every organ. And that concentration of inflammation increases your risk of cancer.

So the benefit of either exercise or weight reduction is huge in how it both affects your cancer risk but also how it affects disease. So that process, in an early study several years ago, where people overweight were beginning exercise for heart disease, to get

their weight down and increase their metabolism, a bilateral effect in these men walking two miles a day, their cancer risk reduced by 30% just from the weight drop and the exercise.

CHAIR EMERITA MARIE JOSÉE KRAVIS: So, on this relatively happy note, you know, we talk a lot about cancer. It's a huge word. It's troubling and everyone apprehends hearing that word. But there are, what, 18 million cancer survivors in the United States? Almost half the population of Canada when you think of it. So what does that portend for the future in terms of cancer as a chronic disease or the treatment of cancer survivors?

DR. SELWYN VICKERS: Yes, I would say that the survival rate is continuing increasing. And now probably north of 50%, 55%, approaching 60% of patients who get diagnosed with cancer will have a chance of being alive at five years. And we now even have, as you said, therapies now that when you get recurrences it doesn't mean a death sentence. It often means what's the next opportunity for me to have my tumor treated based on the markers and the drivers that have forced and allowed it to come back. So am I now getting a targeted therapy to go after it again? Or is it set up in a way that it has markers on the cell that I now can get an immunotherapy, whether cellular or whether checkpoint blockade?

Those things are often now very part of the regimen and people are living longer and

they are treating cancer, our doctors are treating cancer like a chronic disease. So there is excitement of the fact that as you here people who often have now distant disease, and one of the places like Memorial is that not only it's a great place when you have that early diagnosis, because we make the right diagnosis and get you to the right therapy, when you have those cases of recurrence, the difference of being in a place like ours is heightened of what you have to offer and the opportunities to extend life and survive.

CHAIR EMERITA MARIE JOSÉE KRAVIS: Are you allowed to tell us how many people have their diagnosis reviewed and challenged? And then what percentage of the patients who come see you for a second opinion have their diagnosis changed when they come to MSK?

DR. SELWYN VICKERS: Yes, over the years it's been anywhere from 10 to 15%.

CHAIR EMERITA MARIE JOSÉE KRAVIS: That's a huge number.

DR. SELWYN VICKERS: Yes, who will get a diagnosis that is either reversed or will get an opinion that will be told you don't need a procedure. And that's terribly important. And there are cases where women have had a misinterpretation of a genetic screen and gotten bilateral mastectomies and come to Memorial and are told you didn't need that because of the wrong diagnosis and interpretation. So, yes, it's not only the service

of getting you treated, but it's also the service to really first determine if you need treatment at all.

CHAIR EMERITA MARIE JOSÉE KRAVIS: And that's a big number, when you say 10 to 15% because Memorial sees, what, almost a million patients a year?

DR. SELWYN VICKERS: Yes. Yes, it is a big number. And even if it were a small number, one life that's inappropriately treated is a bad thing.

CHAIR EMERITA MARIE JOSÉE KRAVIS: So what are you most excited about if you look at the next five to ten years?

DR. SELWYN VICKERS: Well, I think the advancements that are occurring are really powerful. And they're driven by, you brought up, our ability to now use data. And the accumulation of data and information in medicine is most concentrated in cancer care. So I'm excited about the fact now that we're gaining powerful tools to now basically help us predict who is at risk of cancer, help us use drugs that may not have been normally thought about for a number of different cancers because we can look at their targets in a more global way, that we can now stratify trials with people who we know will have the highest chance of responding to the drug. Versus having to wait to accumulate 300, we can tell you the drug works with just 30 patients because we've enriched the trial based

on data.

And then I think the other aspect is obviously being predictive of what outcomes can occur by knowing your history, your tumor, and your genetics in a way that gives us a much more intelligent approach with the physician who is seeing the patient. Then this idea of precision oncology also is really coming to bear in an even more powerful way. We early on had these drugs called Gleevec and Herceptin to attack leukemia and GIST tumors and breast cancer. But we have a whole host of new drugs.

You know the study led by our head of neuro-oncology looking at gliomas, which are a deadly tumor that over some short period of time, seven to ten years, kills young people. Young being in their 40 and 50 years of age. He led a trial called the INDIGO Trial based on the science in his lab looking at a common gene in the energy cycle of a cell that was mutated and that drove the development of this brain tumor, these so-called IDH mutations. And finding a drug, developing a drug, in this case Vorasidenib, which was used to treat the tumors remarkably getting across the blood-brain barrier and significantly, almost tripling the disease-free survival for these patients who had the brain tumors. Their growth and their progression was so significant, the study was stopped and allowed people to cross over to get the drug because it was so impactful.

And then you've heard me talk about immunotherapy, whether it's the CAR-T cells,

taking your cells out of your body, engineering them to attack targets on your tumors, or whether it's TIL therapy, which Memorial has worked to lead in and develop like CAR-T, using those cells. We're the leader of this with Steve Rosenberg. But now taking those cells out of tumors and then giving them back to attack your tumor. Or in this concept of where we were the first with designing antibodies to unmask the immune system to allow the immune cells to attack cancers, and finally vaccines.

I think those things, because the immune system is often agnostic to wherever the tumor is and what it's driven by. It's looking more of what goes on in surface, proving that it doesn't belong in your body. These are really powerful things for our future that I think make it exciting to be in the field of cancer. But most of all give hope in a business where for so many years we were bearers of bad news.

CHAIR EMERITA MARIE JOSÉE KRAVIS: Selwyn, just before, we just have very little time left, but we've mentioned CAR-T a number of times. Could you just succinctly explain what CAR-T therapy is because I think that would benefit – I see in the chat questions about that.

DR. SELWYN VICKERS: So CAR-T therapy is a scenario where someone has a tumor, often a leukemia or myeloma. We take a segment of their immune cells out of their body. We draw their blood. We then take those immune cells and engineer a specific

antigen within the T-cell, that it can actually be expressed. This chimeric antigen receptor is a receptor that can go after a marker on the tumor when the cells are given back.

The cells, then after engineered with this new ability to target the cancer cell, are grown up to the millions. And then given back to the patient, personalized to their tumor. And some of the bad leukemias that had a 20% survival, CAR-Ts took them to an 80% survival. And so it's a personalized approach of taking your immune cells that normally are geared to attack tumors but can't find this tumor, we engineer in the marker that gives them that finding and homing signal and we give them back to the patient to attack their tumors.

CHAIR EMERITA MARIE JOSÉE KRAVIS: Well, that's a hopeful note on which to end. And I see that I need to turn the microphone to Barbara. But, Selwyn, I really want to thank you for sharing so clearly the challenges of cancer but also the promise of treatment and therapy. And so thank you for all you do and thank you for being with us today.

DR. SELWYN VICKERS: It was my pleasure. Thank you for having me.

PRESIDENT BARBARA VAN ALLEN: Well, Selwyn, Marie-Josée, what a wonderful,

insightful conversation. And I think we all wish you every success, Selwyn, as you go forward there. It's exciting that so many wonderful things are on the horizon.

I want to just take a minute to talk about our lineup. We have a lot of speakers throughout the rest of the year and more being added regularly. I'm just going to focus for a quick second on October. We, on October 17th, have the Former Vice Chair of the Federal Reserve and now with PIMCO as Global Economic Advisor, Richard Clarida, joining us. Actually coming back. He has certainly come to the Club before. And a new addition, on October 21st, we will host the Finance Minister of India, Nirmala Sitharaman, and we're excited about that. And that just got added so if you are available to come, that should be a very exciting event for us. On the 22nd of October, we will bring back Charlie Cook, who will be in a conversation with Bob Rubin. Charlie is the Founder of The Cook Political Report and joins us every election year to talk about what he sees happening in the election just ahead. And that will be followed by Wyc Grousbeck, who is the Governor of the Boston Celtics, on the 28th of October. So we have a lot of variety in October.

And just to give a peek into November, we have General Bryan Fenton on the 18th of November followed by Ken Griffin on the 21st. And tables are still available for these events so please do get your reservations confirmed. As always, please check the website and your email for updates in the weeks ahead. And we, of course, encourage

you to bring guests.

And as always, I'd also like to thank our members of the Centennial Society that are joining today. Their contributions continue to provide the financial backbone of support for the Club. And thank you everyone that attended today. We look forward to seeing you again in the future. And again, Marie-Josée and Selwyn, a fantastic conversation. We will definitely be getting this on our channel on YouTube so that outside of our sphere and into the world, the general public has access to this great interview. So thank you both.

DR. SELWYN VICKERS: Thank you.

CHAIR EMERITA MARIE JOSÉE KRAVIS: Thank you.