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NCI Director's Address

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This text is the basis of Dr. Bertagnolli's oral remarks. Use with the understanding that some material may have been added or omitted during final presentation.

Thank you so much, Dr. [Lisa] Coussens, for your wonderful introduction. And thank you to AACR for welcoming me.

Everyone who enters cancer research shares this one goal: to end cancer as we know it. This is our common vision: whether you're a basic scientist or a healthcare delivery researcher or the President of the United States, we have this common goal. We want to end cancer as we know it.

That's what unites all of us. It means we all want to dramatically improve the lives of people with cancer or prevent people from ever having to face the disease. It also means achieving the President's goal to reduce the cancer mortality rate by 50% in 25 years.

A new analysis by NCI researchers, published today in *Cancer Discovery*, shows that to achieve this goal, progress against lung, colorectal, and breast cancer must be maintained or accelerated, and new strategies for all other cancers are needed. So, we have our work cut out for us.

An essential key to achieving much faster progress is collaboration. Working together effectively to get the best we possibly can from the extraordinary expertise and resources that are available to us.

Today, I'd like to talk about *how* we work together. To transform people's experience with cancer so that it is no longer a terrible disease, but something we can treat, manage, or even prevent, we all need to align our work, wherever possible, with this in mind.

It will take all of us, across society, to take action to end cancer as we know it for *all* people. And how well these actions fit together will determine how fast we achieve this result.

When I say, "all of us," I mean *everybody*—everyone across the cancer research continuum, and beyond. We must meet cancer's challenge from all angles, from basic science, to care delivery, to people adopting proven health practices, to health policy that affects all factors that drive cancer outcomes.

Research—new knowledge generation—*must* be the backbone for all of this. Because research is the backbone, we should think about how cancer research drives societal changes to improve cancer outcomes.

To show why it takes everyone working together to achieve our goals, let's consider the example of Multi-Cancer Detection (MCD) tests.

What if we could screen for cancers that currently have no screening tests and detect cancers that are hard to identify much earlier when treatments could make a bigger difference? That's the goal of multi-cancer detection assays.

New assays can diagnose cancers, but we don't know if—and especially how—this new approach can be optimally applied to achieve benefits for individual people and society overall. This is the focus of current research.

This technology needs to be tested in large-scale clinical trials to determine if screening with these tests will work as we hope and lead to patient benefit.

A positive MCD test is a signal that a person might have cancer. Not everyone with a positive signal will have cancer, just like a woman with an abnormal finding on a mammogram may not have breast cancer. The person with a positive MCD test will need additional testing to determine whether that person has cancer. We need to conduct the trials that will demonstrate that screening with these MCD tests will result in reducing both death from cancer and the burden of cancer.

What does it take to bring innovation like this full circle?

First, basic science must identify the critical features of a tumor that can be detected in the blood, can predict clinical behavior, and can be used to guide effective treatment. Which molecular features signal the presence of a tumor? Which can identify the tissue of origin? Which features predict risk for diagnosing a harmful cancer versus a neoplasm for which treatment produces more harm than benefit? These are fundamental biology questions.

Second, we need to develop the devices to pull these diagnostic elements—their proteins, their mRNA, their DNA mutations—out of the blood and reliably test them in the clinic.

Next, we need to test these assays in clinical trials to understand their sensitivity, specificity, and ability to detect cancers of different origins and clinical stages.

Then we need to understand the implications of the assay results for patient management. Can they identify harmful malignancies earlier or provide information that allows a tumor of any stage to be treated more effectively? What are the downstream implications of a negative test versus a positive test? How does a negative test change our management? How does a positive change test change our management? Ultimately, how can these tests be used to benefit people by allowing necessary treatment to be more effective and less toxic, and by reducing cancer mortality?

And finally, once we understand precisely how these tests can be used to reduce mortality, we must figure out how to make these tests available to everyone who can benefit from them.

In a nutshell, we need: basic science, diagnostic device development, clinical trials, health care delivery research, and patient engagement. And we need the benefits of MCD tests to reach *all populations*, so we need research directed at eliminating health disparities.

And public policy will enter the equation: Once we show MCD tests provide benefit to patients, should insurance companies or taxpayer dollars pay for the test and its downstream healthcare utilization effects? Would a positive test on an insurance coverage application physical exam lead to higher costs or changes in coverage for an individual? Above all else, these important policy questions must be well informed by research.

Finally, who will make sure that all of this is accomplished? We need a knowledgeable workforce that includes basic scientists, research clinicians, data technologists, health care delivery researchers, experts in health disparities research, and policy experts.

Each of these people, working at their respective steps of the process, can't work in silos. Speed and eventual success require close collaboration across all these different fields. Knowledge and data must flow between them so they can fulfill their roles with the best information possible. Finding ways to effectively store and share data along all these steps is very important. Data from the bench informs the clinical environment, which in turn can feed back and inform basic science.

For MCD assays, these feedback loops that are helping us to develop the assays and study them in people will ensure that we reach a new technology that brings benefit to society.

So, in short: basic science discovery is essential to everything we do, and it takes multi-level collaboration for that discovery to achieve benefit for patients.

At NCI, we think that more frequent and more effective collaboration can dramatically accelerate progress. And yet, there are many roadblocks that limit collaboration along the path to progress, from the bench to the patient. We want to eliminate all roadblocks to collaboration. That is our first and most important step to end cancer as we know it.

This is why, with many collaborators, we developed the newly released National Cancer Plan to provide a focus so that we can all work together. The National Cancer Plan is, first and foremost, a tool to promote and facilitate collaboration that will end cancer as we know it.

It details a set of goals that, if achieved, will dramatically reduce the harm that cancer causes. Each of these goals will be very familiar to you. They are presented in the Plan to illustrate how each component of our work is essential and inter-related.

We want to make it possible for everyone to see where they fit in the grand scheme of what it's going to take to end cancer as we know it. And to encourage more partners to come together when their work would benefit from broader collaboration so that the whole is greater than the sum of the parts.

For example, basic science is interspersed through all of this – we couldn't achieve any of the NCP goals without it. And taking the example of MCD assays used today, you can also see the interplay of each of these major goals to achieve the real promise of cancer research.

This interplay exemplifies why it takes everyone to succeed.

Through this plan, we've provided a call to action. Those doing research should read the National Cancer Plan and see where they fit in. We want to know what is currently underway to achieve these goals so we can monitor progress and identify gaps. And, at NCI, we want to amplify what everyone is doing and help break down barriers to collaboration.

We are working on the communications tool that will allow everyone to share descriptions of their work in a public forum. We will build in more calls to action with concrete steps we're

conversation. And please stop by our booth and meet NCI scientists and staff. We'd love to meet you! We've also got a National Cancer Plan activity there that you can participate in.

Cancer progress is still very far from where it needs to be for the people who are counting on us.

With the remarkable data, technology, and scientific talent available to us today, and President Biden's unwavering support, we have the potential to achieve faster progress against cancer and end cancer as we know it for *all* people.

Now that we have the tool for collaboration the National Cancer Plan provides, we can focus our energy to remove the roadblocks in the way and unite our efforts. How we work together across the cancer research continuum—basic science, translational and clinical research, healthcare delivery and public policy will make all the difference.

Now the real planning begins.

Thank you very much for the opportunity to speak today. I look forward to discussing this and more in my fireside chat with Dr. Coussens.

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