Dr. Norman Sharpless

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Margaret Flinter: Welcome to Conversations on Health Care with Mark Masselli and Margaret Flinter, a show where we speak to the top thought leaders in health policy, health innovation and technology, and the great minds who are shaping the health care of the future. This week, Mark and Margaret speak with Dr. Norman Sharpless, Director of the National Cancer Institute at the National Institutes of Health. He discusses significant changes ahead in creating a more personalized approach to cancer diagnosis and treatment based on one's own genome and the need to foster more sharing of research across institutions around the country and the world.

Lori Robertson also checks in, the managing editor of FactCheck.org, looks at misstatements spoken about health policy in the public domain, separating the fake from the facts.

We end with a bright idea that's improving health and well-being in everyday lives. If you have comments, please email us at chcradio@chc1.com or find us on Facebook, or Twitter @chcradio. We love hearing from you. Or find us on iTunes, SoundCloud, or ask Alexa to play the program, Conversations on Health Care.

Now, stay tuned for our interview with Dr. Norman Sharpless, Director of the National Cancer Institute on Conversations on Health Care.

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Mark Masselli: We're speaking today with Dr. Norman Sharpless, Director of the National Cancer Institute at the National Institutes of Health, leader of the National Cancer Program, the world's leading cancer research funder. Dr. Sharpless served as Director of the University of North Carolina Lineberger Comprehensive Cancer Center. Dr. Sharpless is also chief of the aging biology and cancer section in the National Institute of Aging's Laboratory of Genetics and Genomics. Dr. Sharpless earned his medical degree with honors from the UNC School of Medicine, completing his residency at Mass General Hospital.

Dr. Sharpless, welcome to Conversations on Health Care.

Dr. Sharpless: Yeah. Thank you for having me.

Mark Masselli: Yeah. Since you've taken on the reigns of the National Cancer Institute, much seems to be possible, given the increasing in data computation, more scientific discovery around genomics, machine learning, and personalized medicine. What are you most excited about in terms of the case of research and discovery? What do you see as some of the big challenges you have to overcome?

Dr. Sharpless: Well, I think, you have to sort of have two statements in mind about cancer research and cancer care in the United States at present. The first one is that we're making progress in cancer research and cancer care at a pace that is greater than at any point in my career as an oncologist. New discoveries, new therapies, new ways of treating patients, this has been built on decades of elegant basic science, understanding how cancer works. Now those scientific endeavors are paying off. We're developing new therapies and better ways of treating patients and better ways of preventing cancer at all the time, so a pace and progress that is really breathtaking.

At the same time, while we've made a lot of progress, that progress is not good enough. We still have a long ways to go. There's still too many people dying of cancer in the United States. Then particularly, the progress has been uneven. We've had a lot more progress in a disease like melanoma, skin cancer, than we've had in the cancer, like brain cancer, like glioblastoma.

Against that background, I'd say something that is very exciting right now is, as you mentioned, the ability to aggregate large datasets and learn from every patient, because we realize that cancer are very personalized and precise entities and each person's cancer is somewhat different, even if they all look a little bit under the same microscope. The ability to learn from every patient by aggregating data is very exciting as is these new therapeutic modalities like immuno-oncology and new ways of doing radiation and surgery, and chemotherapy.

The challenges though are that there are some cancers where we still need a better basic science understanding. There are some barriers to implementing successful cares that are problematic. We have therapies that work, but getting them in widespread use is still a problem. In some areas, we have so much success. We have so many different ways of treating things that a real challenge is how to put all those things together and use them. How to integrate care and make comprehensive care for patients is becoming a challenge.

Margaret Flinter: Well, Dr. Sharpless, when you stepped into the role as Director of the National Cancer Institute, you identified four key areas of research that you felt needed to be paid particular attention to at NCI in order to improve the research landscape. What are these focus areas and how are they driving the institute's overall research agenda and I assume well over the next several years?

Dr. Sharpless: As I entered federal service, having been an academic, I'd spent a lot of time taking stock of how the NIH works and the NCI works, and some things that National Cancer Institute does well and other areas where we can make improvements. That involves a learning and listening tour where I went and spoke to people for, those patients

and doctors, and scientists, and advocates, about where we could make progress more rapidly.

From that exercise, I did identify four areas. The four things that we came up with refers to a real focus on workforce development, on training the future scientists and doctors that will take care of patients with cancer in the future. I would argue this is possibly the most important thing the NCI does, is we have a large amount of spending on training grants and training exercises, and making sure doctors and scientists are well equipped for the future of cancer research.

The second is a steadfast commitment to basic science. While we've made a lot of progress in our scientific understanding of cancer, we're not done yet. We still need to do these very detailed and careful and in some cases elegant basic investigation of cancer to understand exactly how it works because that's where the therapeutic ideas really come from.

A third is this focusing on how we use data. We have a lot of data on oncology. We get data from patients, from scientific studies, from outcomes, and prevention trials. All these different datasets are not well linked and they're not easy to research for scientists to go into these datasets, and understand what's happening to patients with cancer. Getting aggregated and shared data, that's useful.

Then the fourth is we really have to sort of reimagine, if you will, how we do clinical trials in cancer research. Every therapy that we use successfully in cancer right now is the result of a successful clinical trial. At the same time, because of a variety of issues, making progress through clinical trials has become more difficult in cancer research over the last two decades. I think we're really focusing on how to make trials efficient and ethical for the patient, so that we can provide everyone with the best care.

Mark Masselli: Dr. Sharpless, I think the public, when they think about the progress that we're making, is looking for this cure for cancer. We're really looking at more than 100 different related diseases and possibly thousands, and all of these are influenced by this complex network of factors. I'm wondering how you're viewing the role of personalized medicine in this context as well and how that will benefit the direction that you and your colleagues are headed.

Dr. Sharpless: Right. I think the appreciation that cancer is very heterogeneous that even -- we have two breast cancers. They look the same under the microscope. We thought of them as the same disease. Really we've become to understand that even tumors that look quite similar microscopically to a pathologist can be very different in their molecular underpinnings of the tumor. That appreciation that what

we used to think of as being similar things like lung cancer or breast cancer, really are very heterogeneous entities, where almost every patient needs a personalized or a precision approach.

I believe that's one of the major advances in cancer research in the last few decades. It's really changed how we do things. It's changed the clinical trials enterprise. It's changed how we take care of patients. It has really had a widespread implication in all areas of our field.

What it means for patients who have advanced cancer is that the doctors who are taking care of them will want more studies of their tumor than we used to do. We used to sort of just look at the tumor under the microscope and say, yeah, that's cancer. You need this and that. Now, we have to do additional work, where the pathologists are asked to molecularly classify the tumors in terms of their expression of various proteins. Then that information is used to provide a therapy for the patient that is intended for them.

This is good news for patients in many ways because it means they get a therapy that is more likely to work, that is less toxic. Using this approach, we are starting to cure patients. We really can say now as opposed to just prolonged remission that we're curing cancers that we used to consider untreatable. That's great progress. At the same time, that fragmentation of cancer research, realizing that we're not dealing with 10 diseases, but thousands of diseases, makes the cancer research enterprise much more difficult. We really have to not aggregate them into groups. That is a much more complicated endeavor for a clinical trial, for example.

Precision oncology has provided a means, whereby we can make progress in lots of these individual diseases that we take them one at a time. It's also proven that there's no sort of magic silver bullet that will cure all cancers. We realized that that now was a vain hope of the past. Really what we need now are very effective therapies for each of these different kinds of cancer. Using that approach, we're making a lot of progress.

Margaret Flinter: Well, Dr. Sharpless, talk a little bit about screening and early detection. We have taken ownership in the public health and the primary care world of trying to start with prevention, right? This whole arena of screening and early detection remains an area of some controversy. We follow the evidence-based guidelines, what to screen for, given the availability of access to people's genetic profiles. What do you think we might see in the coming years over, any major changes around how we think about screening for the purpose of early detection?

Dr. Sharpless: Yeah. This is a fascinating area. Some of the major victories in cancer

care over the last few decades have really been related to the area of prevention. If you look at the progress we're now making in terms of tobacco control is great news as tobacco-associated cancers are prevalent and very deadly. As we reduce the usage of tobacco in the community, we will see a decline in those kinds of cancers. I think the dissemination of vaccines to prevent cancer with the Hepatitis B vaccine and HPV, human papillomavirus vaccines, those will prevent cancers and are useful. We know obesity is related to cancer.

Those areas of prevention, avoiding mutagens like sunlight and tobacco, and staying thin, and getting your vaccines are things I think most of us can agree on is very effective, very useful prevention measures. Then the topic gets harder as you alluded. Who should we screen for cancer and what? We think that screening for cervical cancer, Pap smears, is highly effective and has led to a widespread decline in that cancer in the United States and other countries. We think that a colonoscopy is highly effective for preventing colon cancer. It's an area where I think we'd like to see increased usage of colon cancer screening. Mammography and PSA testing are both more complicated conversations. In general, we refer patients to their doctors to discuss whether or not the appropriate person based on their age and risk, because those tests, they are effective at finding cancer, but they're also, sometimes we'll find indolent cancers that will not hurt the patient, and so can lead to over-diagnosis and overtreatment. How to use those tests appropriately in the community is where I think we need additional research.

What hope I have is just like precision oncology has helped us in the area of therapy, I think a better understanding of an individual's precise cancer risk will make prevention somewhat easier. A test like PSA testing, which may be more valuable in patients because of their family history, their age, and their genetic risk, one could have a sort of personalized approach to prevention that might make that kind of a general screening more useful where we maximize the chances of catching a cancer early and treating it effectively, and minimize the chances of finding unimportant cancer that leads to over-diagnosis and over-screening.

I think that personalized oncology is not just for therapy. It is also an important part of prevention and making sure we treat every patient appropriately based on their sort of lifetime risk of cancer. One thing that we're going to need and do more of, I think for this sort of personalized prevention, is more understanding of the genetics of individuals that predispose them to certain kinds of cancer or make them at less risk for cancer.

That is now just starting to happen. We're just starting to get in that topic of should we sequence individuals to sort of determine they

have certain cancers. That's a topic where we don't know the answer yet. We're still trying to do research in this area. In specific populations, [inaudible 00:13:08] assessment is very, very useful. Whether or not everybody should be getting that kind of testing, we don't think that's the case yet. Although one can imagine a time in the future where that may be something we do as we personalize rescreening based on genetic risk.

Mark Masselli: We're speaking today with Dr. Norman Sharpless, Director of the National Cancer Institute at the National Institutes of Health, the leading cancer research funder in the world.

Now, I'm not sure, Dr. Sharpless, that the public knows how large the research enterprise is. 3,500 researchers working at the National Cancer Institute, and I believe over 37,000 members of the American Association for Cancer Research. Beyond our borders, there's a global community that's engaged in research. I'm wondering if you could tell us a few things. How's the funding look? Also, what's the collaboration across borders look like for information that I think our listeners would be excited to know about?

Dr. Sharpless: Let's start with the funding. I think biomedical research in general and cancer research in particular have been well supported the last few years. We've seen increases to our budget. For the NCI, for example, our total budget now is on the order of $6 billion a year. A few years ago, it was $5 billion a year. We've had a nearly $1 billion increase to our budget. That represents a broad bipartisan support for cancer research in United States. I had the opportunity to speak to lots of people in Congress and just about everybody thinks we need to be doing cancer research, and thinks this is a good use of federal funds.

Mark Masselli: That's good to hear.

Margaret Flinter: Lucky you.

Dr. Sharpless: Yeah. The support for cancer has been pretty robust. You alluded to the ability to collaborate internationally and this is really important. As I mentioned, some of these entities that we're really interested in, some of these kinds of cancer, are just sort of too rare to study in any one hospital, or any one state, or even any one country. If we really want to make progress against the disease, like glioblastoma or pancreatic cancer, we really can benefit from international collaboration.

The NCI is a big supporter of that. We have ways of supporting international endeavors in cancer research. Then we also collaborate with other international funders of research in a variety of ways because we really believe that if progress against cancer is a benefit for all of humankind, cancer does not end at any certain border, and

we want to make progress as expeditiously as possible. We think that international collaboration and sharing of data is a key part of that.

In terms of the best practices of how you get good cancer care out in the community, so that it's used routinely, this turns out to be a more frustrating endeavor than I would've imagined. When I was a cancer center director, I had a more limited knowledge of how cancer care was done in a specific health system. Now as NCI director, I appreciate that while cancer care in the United States is in general quite good, it can be uneven. A real challenge for the NCI is to make sure, and this is a research question, by the way, is when there is an effective therapy, why doesn't it get used appropriately in the community at all times? Why doesn't it disseminate quickly enough?

Understanding how we use best practices of cancer care is identified and implement them through our practice is an interesting research question where the NCI is still funding. We have 70 NCI designated cancer centers that are supported by the NCI. For the most part, they all provide excellent care and are places where the science is great, where the cancer care is great. The problem is, or a problem is, that a lot of patients don't live near a cancer center. They don't want to drive five hours back and forth each time they have to get to see their doctor. We really need to take the care that is quite strong in many of the cancer centers and figure out how to get it out into the community, so that everybody gets great care.

Margaret Flinter: Well, over these years, we've had the Cancer Moonshot and the 21st Century Cures Act, and then the project that we're probably the most familiar with, the All of Us Precision Medicine Initiative that Dr. Khan's launched. In participating in that, what I've been really struck by is what a remarkable job they've done of engaging the public in this, speaking around the country, both at professional meetings, but also pushing this out to consumers to enroll people. It seems that their ability to engage people in thinking about this as an issue of concern to everybody is kind of fundamental to their success.

I'm curious at the NCI, what is the NCI doing in that realm of engaging the American community in thinking about your research and supporting your research?

Dr. Sharpless: Right. First off, the NCI is one of the NIH's. I'm on the same campus as Dr. Collins, for example. Because of that, we are a supporter and a user of an effort like all of us. We certainly expect that massive study to lead to a real wisdom and knowledge related to cancer, particularly the sorts of diet and exercise, and their relation to genetic risk, which are very hard to study by other means. All of us may be a very useful trial for the NCI. We have great hope for what that'll be able to teach us.

The community that cares about cancer is very large and vibrant. Everybody's either been personally touched with cancer, has a relative. There are people that have a lot of interest in what the NCI does. We vigorously embrace the advocacy community. I spend a lot of my time trying to meet with advocates and patients to make sure the NCI really keeps our eye on the ball, so to speak. The communication, I agree with you, is critical to the success of the endeavor, particularly in a very heterogeneous complex thing like cancer, where there are so many parts to it. We know we need to be making sure we address the issues of 100% of patients. It's why we spend a lot of time and effort on it. One of the reasons why I come on radio shows like this --

Mark Masselli: We appreciate it.

Dr. Sharpless: -- is to talk about the NCI and make sure everybody understands our goals.

Mark Masselli: We've been speaking today with Dr. Norman Sharpless, Director of the National Cancer Institute at the National Institute of Health, leader of the National Cancer Program, the world's leading cancer research funder. You can learn more about their work by going to cancer.gov or you can follow them on Twitter @theNCI, or you can follow them directly @NCIDirector.

Dr. Sharpless, thank you for your dedication and to your colleagues as well to advancing this critical area of science, and for joining us on Conversations on Health Care today.

Dr. Sharpless: Thank you for having me here, real pleasure today.

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Mark Masselli: At Conversations on Health Care, we want our audience to be truly in the know when it comes to the facts about health care reform and policy. Lori Robertson is an award-winning journalist and managing editor of FactCheck.org, a nonpartisan, nonprofit consumer advocate for voters that aim to reduce the level of deception in U.S. politics.

Lori, what have you got for us this week?

Lori Robertson: Representative Elect Alexandria Ocasio-Cortez tweeted that $21 trillion worth of Pentagon accounting errors could finance two-thirds of Medicare for All. It can't. The misguided tweet is based on a tally by university researchers, who found $21 trillion worth of untraceable transactions in the Department of Defense between 1998 and 2015. It's a legitimate problem the Pentagon says it's trying to fix. Transactions, which can be counted multiple times as they pass through accounts, are not the same as spending.

In fact, the U.S. actually spent a total of a little over $9 trillion on defense in those years. Even if the U.S. had eliminated the entire defense budget for those years, that wouldn't cover two-thirds of Medicare for All.

Ocasio-Cortez, an incoming Democratic representative, supports the expanded and improved Medicare for All Act, a house bill that would expand Medicare into a universal health care program. An Urban Institute analysis of a similar plan proposed by Senator Bernie Sanders in 2016 put the cost to the federal government at about $32 trillion over 10 years.

As for the $21 trillion in Pentagon accounting errors, as Ocasio-Cortez put it, that's a reference to research by Mark Skidmore, an economics professor at Michigan State University, and Catherine Austin Fitts. The two looked into trillions of dollars worth of unsupported journal voucher adjustment identified by the Office of the Comptroller at the Department of Defense.

In testimony before the House Armed Services Committee in January, David Norquist, the Pentagon's comptroller, acknowledged this was a problem, but he said characterizing it as lost money is inaccurate. This isn't missing or wasted money that could simply be reallocated to other government functions like health care. These are transactions. Every time the money is moved, it gets counted. The $21 trillion figure is double and triple counting the same funds.

That's my fact check for this week. I'm Lori Robertson, managing editor of FactCheck.org.

Margaret Flinter: FactCheck.org is committed to factual accuracy from the country's major political players and is a project of the Annenberg Public Policy Center at the University of Pennsylvania. If you have a fact that you'd like checked, email us at chcradio.com. We'll have FactCheck.org's Lori Robertson check it out for you here on Conversations on Health Care.

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Mark Masselli: Each week, Conversations highlights a bright idea about how to make wellness a part of our communities and everyday lives. Asthma is one of the leading causes of trips to the emergency room for children. There are often a correlation between high density, low income neighborhoods, and more trips to the hospital for treatment and intervention.

When officials at Boston Children's Hospital noticed a spike in asthma outbreaks in certain neighborhood clusters, they decided to do something about it. They launched the Community Asthma Initiative. They realize that if you could treat the environments in the patient's

home, that might reduce the need to treat the patient in the emergency room.

Dr. Elizabeth Woods: The home visiting efforts work with children and families that have been identified through their hospitalizations and emergency room visits as an identification of having poorly controlled asthma and also it's a teachable moment.

Mark Masselli: Dr. Elizabeth Woods heads the program and says, the first step is to identify the frequent flyers, those kids who make repeated trips to the emergency room. Then they match with the community health worker who visits their home several times and assesses the home for asthma triggers.

Dr. Elizabeth Woods: They work on three areas, understanding asthma itself, understanding the medications and the need for controlled medications, and then working on the environmental issues.

Mark Masselli: Families are given everything from HEPA filter vacuum cleaners to air purifiers. The homes are monitored for the presence of pest or rodents. The result says Dr. Woods has been pretty dramatic.

Dr. Elizabeth Woods: What's remarkable is that there was a 56% reduction in patients with any emergency department visits and 80% reduction in patients with any hospitalization.

Mark Masselli: The program has been so successful. It's being deployed in other hospital communities around the country. The Community Asthma Initiative, a simple re-shifting of resources, aimed at removing the cause of disease outbreaks in the community, leading to healthier patient populations, now that's a bright idea.

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Mark Masselli: You've been listening to Conversations on Health Care. I'm Mark Masselli.

Margaret Flinter: I'm Margaret Flinter.

Mark Masselli: Peace and health.

Margaret Flinter: Conversations on Health Care is recorded at WESU at Wesleyan University, streaming live at chcradio.com, iTunes, or wherever you listen to podcasts. If you have comments, please email us at chcradio@chc1.com, or find us on Facebook, or Twitter. We love hearing from you. This show is brought to you by the Community Health Center.

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