20241021-NAM Scientific Symposium Transcript

>> VICTOR J. DZAU: Good morning, everyone. Wow! Okay. Let's, you know, I like this. Let's do one good morning. Round of good morning. Good morning, everyone.

>> Good morning.

>> VICTOR J. DZAU: That's great. I'm so pleased to welcome all of you to the 2024 National Academy of Medicine Annual Meeting. You know we have an outstanding scientific program planned today on mental health and substance abuse disorder. Over the course of the day you will hear some amazing speakers and panelist. Because you're here on keynote the Vivek H. Murthy. As you know I'm doing the for rim and I have an outstanding group of people participating in the forum. Let me begin by conveying two he is in 1971.

[Applause] I didn't finish. He's 100 years old with us today.

[CHEERS AND APPLAUSE]

you can't see him. A lot of people are standing up and giving him a applause. You are a standing father. Thank you so much for your leadership. I do know that you come to the Annual Meeting regularly, so thank you. The second congratulations is to the members of NAM who received just recent awards for the recognition. I won't go through all the names. Suffice to say let's give them a round of applause. Every year we time the Annual Meeting just in time after the Noble announcement so that we can make brag about our members. All right. I think it is important and honor to introduce the Class of 2023, the members. You know the script says new members. They're not new members. They've been members for a year, but on Friday, on Saturday we formerly inducted them and we have a great class of distinguished individuals. I'm very proud of their -- this class and not only the excellence. I'm trying to move my slide forward, but also diversity, gender, and race. Could you turn off -- thank you very much. Here is what we're going to do. We're going to show a video and introduce the class to you. The video is about 11 minutes long. I know you all had coffee, but not only that, I think the members are so impressive. You will be so excited. At the end I'm going to ask them to stand and welcome them to our family.

If I can have video, pleas(Awards Announcement)

>> VICTOR J. DZAU: Now we're going to welcome the new fellows and emerging leaders.

[Applause]

2024 to 2026 NAM physical fellows.

2024 to 2025 NAM Scholar in had Diagnostic Excellence

2024 -2025 NAM State Health Policy Fellows

2024 -2027 NAM Emerging Leaders in Health and Medicine Scholars

>> VICTOR J. DZAU: So now, if I can ask the new members of Class of 2023, the fellows and emerging please stand and give you a warm welcome.

[Applause].

>> VICTOR J. DZAU: Really impressive Class of 2023 new fellows and scholars. We're excited to welcome all of you to our family. You know, now is a chance, in fact, to tell you about 2024, its new elected class. You will find them on this NAM.edu Class of 2024. We just announced them this morning.

Our members and fellows, yet you don't get to see the list. You have to go out -- or go online. (Laughs)

But our fellows are committed to health and making a better place for everyone. We're relying for them to share their expertise and guidelines with NAM and families. Without our members we certainly would not have made such a great impact over the last 50 years. Unfortunately this past year we lost several of our dear colleagues and members. You see all the names listed on the screen. Let's pause for a moment of silence to acknowledge and pay our respect for all those members and leaders who have passed away and left us, but they have really left a lasting legacy. A moment of silence please. Thank you.

So now I just want to turn to a awardees that yesterday we celebrated the a awardees. First is the Lienhard Award winner. Michael. He is been honored for transforming the way the U.S. medical community treats smoking by intrinsic element of health care. Next is the Sarnat a award de-Dr. Deanna M. Barch in Washington University of St. Lois. Treatment of mental health disorders. Addition to a devoted membership of early career investigators. Of course today's theme is mental health.

Then we have Dr. Gordon J. Freeman and Arlene H. Sharpe. Both from Harvard Medical School as the David and Beatrix medical award in pathways that control the activation and innovation of T cell immune responses leading to new effective immuno therapy and cancer and autoimmune disease. This weekend we also presented awards to NAM members and staff who service the admission of NAM and have been really exemplatory and award to awards to these members. Furthermore we're pleased to recognize our staff by giving CecilAwards to Jessica Covington and Elizabeth Bakrsdale Boyle. Last and not the least team award. This went to the team of the National Academy Librarians. Can you join me in giving sound round of applause to these awardees.

[Applause].

>> VICTOR J. DZAU: So now oops. Can you go back please. It is an important message to address and as President of your academy and to all of you members and to tell you where we are and how we are addressing challenges that are coming ahead in the future.

So -- oops. Sorry about that. All right. Good morning and welcome to NAM's 54th Annual Meeting. As we gather today we find ourselves at a pivotal moment for our nation. As you know the presidential election is only two weeks away. I know that many of you like me are feeling the weight of what's to come. The nation's decision this November will have impact on collective future. Including on health and health care spending, basic research, public health, pandemic prepairedness and more. As in the Jammer Paper health is on the balance with outcomes that can drastically depending on the election results. No matter who occupies White House or Congress, the NAM, all of us remain steadfast for science and health. From Nixon to Biden and Republican and Democratic we have pathway advances in health, science, and medicine. At National Academy of Medicine we recognize that political divides shouldn't matter when health of Americans is at stake. I can think of no better example than our work throughout COVID-19 pandemic. An unprecedented emergency that brought grief and loss to so many of us. Throughout the pandemic we collaborated with two administrations, breaking what matters most. Safeguarding the health and wellbeing of American people and especially the most marginalized communities. We will always uphold our independence and objectivity and science and medicine. We welcome the perspectives of diverse state member of global and political levels and from public and private sectors to inform our work. But make no mistake, to stay true to our mission, we do not hesitate to challenge policies that disregard or deny science. Create or exacerbate inequities that are detrimental to health care. In 2019, along with my fellow National Academy of Medicine released the statement. Affirming the scientific evidence of climate change. When UN -- during the pandemic strongly condemning that decision. In 2022, when Supreme Court overturned Roe vs. Wade and jeopardizing the health of women and populations that cannot speak up. You can count on this. The NAM will always defend science and work on ensuring health equity for all.

Now these examples are nothing new because since our inception we always followed the science to shape critical research and policy advisory, regardless of who is in the office. In 1980s, our landmark report on HIV and AIDS galvanized the nation, at times when Washington sought to downplay it. The good news is we worked with the administration. Thanks to bipartisan leadership it is now estimated to save 25 million lives across Africa. Support has grown strong in presidential administration. Today the future is less certain. With congress extending the authorization only through next year.

To me the message is very clear. We must continue our support, but at the same time reassessing our progress. Especially with the U.S. sustainable development goal of ending pandemic in 2023 in sight.

Without question NAM's contribution, your contribution, your leadership runs deep. Over the years we have provided crucial guidance to Democratic and lawmakers on the range of issues. From combatting use and food and nutrition standards, to closing health equity gap to addressing health implications to climate change.

I've been privileged to serve as your president. During my tenure, the NAM has worked with five congresses and three presidential administrations. Across all, you, our dedicated members have shared your expertise in really impactful ways. We have built strong bonds and many committed public servant leaders. Including Peggy and Freeman and Biden and Trump administration and across all these administrations. Among many others that we work with. So I will say that despite

being appointed by presidents with very different political views, these leaders, our friends are united to the commitment to the health and wellbeing of all Americans. Not just those who vote for a certain political party. We will continue to work closely with all administration to serve the nation.

Under the Obama Administration NAM was instrumental in had providing recommendations on how to define essential health benefits and under the Affordable Care Act. Many of you recall preventive women services, health services. All which remain covered today.

In 2017

In incense debate in congress on the future of NCA we visited congress and with administration leadership such as Secretary Tom Price we were joined by our members. Former senator and democrat to share the NAM Academies Report recommendation for follow up care and ensuring health coverage for the nation. We all know that ultimately bipartisan preveiled. We are positioned to rise above position and do work on behalf of all Americans.

For example, despite a times confusing and misleading messaging White House during the pandemic. The NAM worked closely with the agencies to deliver science based recommendations. As you can see at the request of CDC and NIH we looked how to allocate COVID-19 and informed policy and states and localities. The emergence and infectious disease and request the White House to provide rapid expectations from everything. From crisis and social distancing. Then as you can see, on the left-hand side we ravage the nation and launched action collaborative and then with the Trump Administration that served with us as co-chair. Then as FDA's request through Scott Godly we provided guidelines for opioid prescription. Certainly in the early days played an early role in shaping practices and federal policies.

We will continue to focus on the issues that matter to Americans, from making prescription drugs affordable to strengthen the medical supply chain. We are very grateful for variable connections and forth with the current administration. You're going to hear from Surgeon general Vivek H. Murthy. You can see we launched a national plan for workforce wellbeing in the campaign. Likewise, this is the Secretary of health Laveen has been a partner in decarbonizing the health care center and collaborator. Most recently we collaborate with the White House and health equity and emissions.

Then our strong relation with the science and policy have enabled important works to address issues as AI, emerging technologies, firearm violence, and climate change.

So as I reflect on lessons learned over past administrations I'm proud of this enduring truth, that the NAM stay true to our mission, by remaining nimble and adaptive. Even when facing seismic challenges and posed by pandemic, climate change and shifting of political landscape.

We have strengthened advance and recommendation. So we certainly believe in moving forward. More actions than just advice. We expanded and deepen collaborative partnerships. We learned to communicate our work even more broadly. We are providing and you are providing leadership and intersectional science and ethics and the law.

This letter issues particularly timely now as recent legislative and judicial decisions impact the practice of medicine of social contract in many areas of health and treatment and others.

As we look forward to a new administration and congress, the NAM will draw on the strength nights that we develop over the years. Each transition brings its own uncertainties but also opportunities to forth pathways and deepen our impact. The foundation we built positions us well to navigate these challenges. This is why our role advising the nation and our very reason for existence is so vital. Since 2016 the head of each presidential election, the NAM published vital direction for health and healthcare. This initiative has provided expert nonpartisan guidance on critical issues. For 2025, we're brought together by partisan experts and key areas to advice the administration. AI health care, medical research, climate & health, health systems, public health and women's health. These are the six papers published in vital directions that we will definitely share with the new administration and congress.

So for the remaining of my remarks I will lay out the five outcomes for the next administration as you can see in the slide. I'll go to every one of them to say what are we saying to the incoming administration to ensure health and wellbeing for our nation?

First, we urge the incoming administration to prioritize improving public health and reducing health disparities. You know this, U.S. health outcomes rank the lowest of all developing countries. Even though we spend far more than anybody else. At the same time we invest significantly less in addressing inequities and factors that impact health status and the so-called social health. For health outcomes for all Americans the next administration must integrate public health, and address social determinant. We think that they should incentivize community-based services to find coverage no in social intervention and pilot models for integration.

At the federal level health agencies should partner with departments that have significant impact on social determinants. Such as housing, transportation, and agriculture. We need much better access to data and linking public health and social care and care delivery. The government can play a role in defining technology standards for health and social data integration. Pay attention to data sharing, privacy, and security.

We can also learn from success and state level. In Indiana for example, the governor formed a statewide task force that brought together academy and officials and community leaders that move beyond and public health reforms. This is a solution that we should all strive for.

Second, it is really imperative that our next administration catalyze transformation towards a health system that is integrated, effective, efficient, equitable, affordable, and continues learning. We all know that our fragments health care system in piece coordination efforts for broad challenges and putting vulnerable populations at greater risk. Therefore we must integrate care delivery and breakdown silos and care in public health and social services.

Health and human services can advance this goal by developing incentives and requirements for health care organizations to prioritize and accelerate organizations. This also a big need for payment reform. Many problems inherent in our current health system stem from the traditional fee for service models. Often fail to align health outcomes and contribute high cost -- contribute to high cost to patients and systems. We think that CMS should accelerate the efficiency and patient

outcome. I mentioned this. Another important idea is data integration and improving the and bipartisan support. It could be tied to reimbursement and similar to the standard required and health record for CMS reimbursement. Treatment is critical for improving health outcomes and are cost effective. We call upon the next administration for accountability for measurement for preventive services and provide awarded and rewarded for delivering whole patient care.

Third area. Urge and address emerging critical challenges in health and medicine. Emerges critical issues and NAM is taking them on. We want to make sure that government also see this as ready to address critical emerging issues. Top priorities to improve infectious disease outbreak. The pandemic showed how devastating they can be and existing barriers and health care access, affordability and equity and outcomes. As we develop outcomes to the next administration must learn from those successes and failures of the approach of COVID-19 and to avoid those mistakes when new threats emerge. We must work with global partners and addressing global threats to the global health security.

Climate change. Also impose an urgent existential threat to humans and wellbeing. Health care community like us can play a critical role by communicating the next impact and decarbonizing our own health sector. We need to establish standardized sustainable metrics and emissions reporting. Next administration should continue substantial incentive provided by the inflation reduction act to pursue decarbonizing and improve the resilience of climate related events.

Finally we need a national comprehensive plan to urging issues that shorten lives to millions of Americans that live in rural communities. Violence and maternal mortality. We believe that to be ready to deal with emerging challenges we will call with the new administration within the first 100 days to convene views and experts to identify the most significant threats, health opportunities for policy intervention. A multidisciplinary converging science approach is crucial to addressing the threats and population health.

Fourth. AI. Next administration must advance using AI for health and health care by mitigating risk to patients and society.

We all know this. Data assigns, AI and digital tools of enormous potential for improving patient outcomes and enhancing operation efficiency and facilitate new drug discovery and position medicine. The future administration should leverage AI to promote data informed decision making for population health, equity, and wellbeing. To build capacity, the Federal Government would need to support last scale build out of data and computation capabilities as well as infrastructure to scale impact and benefit.

Now in recent years, the private sector is dominated because AI requires massive infrastructure investment and human capital. We call on the new administration for greater support in had AI research and academic sector for the need of resources and infrastructure and training programs to develop a future ready workforce. Certainly we need a lot more public and private collaborations.

While AI offers so much promise, it also we have to address the concerns. We have to ensure that AI implementation not only maximize benefits that mitigate risk such as bias algorithms and AI health care must be developed and used responsibly and equitable. Therefore, the administration

must lead the implementation of a comprehensive governance for AI. Such efforts should spend agencies and overseeing health care, research, information technology, and must cover the technology lifecycle. What do we recommend? Implementation of a unified targeted AI governance framework. Such as the AI code of conduct that is being developed here at NAM. We are now underdevelopment, which will provide guidelines for high-level principles and work of all stakeholders.

Next and the final of course is science innovation. Strengthen science innovation to improve health outcomes and provide evidence for policy and maintain global competitiveness and boost economy growth. As we look back in Bush 75 years ago and put the science endless frontier, I will argue and you will agree that we made impressive and groundbreaking human health and stem in U.S. leadership and biomedical science. Such investment fueled economic growth, job creation and technology development. That is really exciting. Despite the successes the U.S. research faces significant challenges. While the U.S. leads the world in overall spending, we risk losing our competitive edge. For the past 20 years China has driven nearly 30% of growth in RND compared to 23 in the U.S.

As you can see in this slide on the right corner picture is the percent of contribution growth of China versus U.S.

Other countries are emulating a success research model. They've increased a lot more in research facilities and top challenges and producing high quality research and challenging opposition in global leaders in science. Additionally we can claim success by saying look at HIV and cancer, it used to be a death sentence. We now see people living much longer and eliminating HIV. Despite significant investment in medical research, outcomes rank among the lowest in those countries. Then you can see on the left side our workforce we're falling short on scientific workforce. First black and Hispanic scientist remain underrepresented across the stem field. We have sizable pay gaps for our trainees and particularly related also to gender, race, and ethnicity.

And then if you look at this data, it shows that U.S. relies on international to meet workforce needs. Half of our biomedical scientist are non-U.S. citizens or naturalized citizens like me. Many wish to stay in the United States and face difficulties to continue temporary or permanent legal status.

The next administration must address these challenges through policies and actions. We cannot support a diverse talented competitive workforce. We failed to build decades long models of scientific progress and innovation. Early this month the NAM released a landmark report on state of biomedical and enterprise led by Reece the former dean of Maryland. With this committee our report recommends the administration the following. One is to be strategic versus fragmented. We say that convene an independent body of experts from diverse fields. Academia and government agencies and patient groups and philanthropy to take a look at the totality of the health needs and vision strategies for research foundation. This report also recommends the establishment of a national funding collaborative. Rather than funding for government industry private sector and philanthropy separately we can have a funding collaborator and share investment to be more strategic.

We also approved the federal coordination across the agencies and further invest in converging science and strengthen the competitiveness of the research workforce. These actions should ensure that the U.S. remain as global leaders in biomedical and innovation.

As I've discussed, even with progress that we have achieved not all patients benefit equally in advances in the biomedical research innovation. I see many of you who are major translational sciences and certainly we have traditional the value of death which has gaps in delay and funding and promising discovery and basic discovery to clinical applications. Let's face it, we have gene therapy, we have genome editing and AI and synthetic biology. We are all reaching clinical simulation and not everybody has the benefit to them. We call attention to the second value of death which we call the health equity value of death. You can see in this picture. This refers to the gap in access where disadvantaged populations are unable to benefit developmental and system and enclosing the last mile and care. This exacerbates research enterprise.

The reports final recommendation is to take action address and health equity value of death to ensure accurate outcomes from everyone in scientific innovation. Members of the NAM, taking policy action is never easy. Particularly today in the landscape. However the NAM will continue to work with the new administration and members of congress to champion the goals in the coming years irrespective of political differences. I remain optimistic of the future. Just as I was in 2014 when I first took this job and privilege to serve you as your president. Having been here ten more years of learning and experience, I can tell you that we have faced difficult times, but we have persevered to drive critical change. As a philosopher Goethe said. In the realm of idea and everything depends on enthusiasm. We know that real change won't happen overnight. Regardless of setback must be bold and remain enthusiastic and improve the wellbeing of every American and everyone globally. The state of NAM is strong and growing even stronger thanks to you and the enthusiasm and perseverance to our staff. No matter who leads the administration of our congress we will remain committed to the call and mission and values. Since 1970 NAM is driven to advance health and wellbeing for all. We're not motivated by politics, but our vision and commitment to health in the future. We will continue to serve in some foundation for health and scientific progress in the United States and elsewhere irrespective of who is in office. I know our member staff is by shared purpose and collective hope to the future.

As we move forward to 2025 we will continue to build on these efforts. I certainly look forward to working with all of you. Thank you very much for supporting the NAM and for your great guidance and leadership. Thank you.

[Applause].

>> VICTOR J. DZAU: I was worried my talk is too long and I finished early. I think what we should do is take a short break. We start our program at 10:15. I thought I would give you a long break. Thank you very much.

[BREAK].

>> VICTOR J. DZAU: Welcome back. I want to welcome back all of you. So we have a great turn out in person but also a lot of people online as well. So let's say that for those that just joined us, I want to welcome you to the Annual Meeting of national human medicine. So every October we

bring all of you together and the council with your advice select a theme. Today's program, bridging signs, practice and policy to advance mental health is really a timely important program topic. We have a fantastic line up of speakers and panelist that discuss social drivers, emerging science innovation and economic and policy considerations. Of course looking at equitable mental health care. I'm just looking forward to today's meeting.

I do want to thank the program committee to begin with and of course Huda Y. Zoghbi who chairs the committee. She has just been outstanding as a leader and of course thought leader, thinker and organizer. She is joined by and with export support by Yasmin Hurd, Cheryl King, John Krystal and STERL. Let's not forget our staff Aisha Simon. Please help us welcome them. On our website you will find today's program and speaker bio information and background. The meeting is life streamed on X using hash tag NAM meeting spelled mtg meeting. Please join the conversation.

Now I think it is my great, great pleasure and honor to ask Huda Y. Zoghbi to come up. Huda as you know is the distinguished service professor medicine and director of the institute of Texas Children's Hospital and I can go on and on but she is just outstanding. Huda please.

>> HUDA Y. ZOGHBI: Thank you, Victor. Good morning. Welcome to those of you that are here in the auditorium and online. The topic of this years program was conceived after the council considered the most pressing medical problems that need multidisciplinary engagement going beyond the traditional physician or scientist. With about win and five adults experiencing mental illness annually and those with mental disorder. It is sure that the mental illness is the cause of the U.S. and economic burden of about 225 billion annually. Mental disorders are complex and influenced by many factors and the cause is rarely one thing. While genetic factors might tend to be susceptible to mental disorders, environmental and social economic factors play a big role. For me personally the experience I've had had in Houston in the hospital eliminating and underscore the urgent need. I thought a couple of pictures are worth a thousand words. You see here the emergency room visits to Texas Children's Hospital, which is the largest hospital in the nation. I thought showing the data is helpful. Houston is the most diversity in the U.S. aid. We don't have a county hospital. The hospital sees all comers from all classes and backgrounds.

You will see in January 2020 the rate of visits to the emergency room about 80 per month. You will notice the bottom blue is suicide. Orange is self-deconstruction or harm. Gray and others. You will notice March 2020 when the COVID pandemic and lock downs began you notice and the rise in the visits and particularly suicide. What is alarming and after schools open this rate did not go down. If if we look now per year, if you see the numbers per year, a little about 800 visits to the emergency room per year. In 2020 that number went to 2000. 2021 close to 4,000. The data for 2023 close to 5,000 with 4,000 of these suicide. Requiring a sitter and requiring someone to watch these children. This clearly shows us that there are external factor environmental and social and other.

I'm sure that you will agree with they me that such data that only 40 to 45% of adults with mental disorders receive treatment and that health disparity are higher among underrepresented and low-income population. Of course stigma continues to be a deterrent for seeking help.

All of these together underscore the need for interventions on many levels. As depressing as these facts might be they highlight opportunities it is much harder to reverse a disorder that is genetic. In contrast we can address factors through a variety of approaches from highlightened awareness and education and ensure access to therapy and support to all. It was these considerations that inspired the program committee that you just showed the name to come up with today's meeting and you heard has three panels. The first one will address the key social drivers affecting mental health and substance abuse. This will help us understand what these factors are. The second panel, emerging panels and highlighting the broad and different disciplines and how do we get them for people that need them. We allowed ample room for questions for you and online. Before we kick off the meeting I would like to thank, in addition to the committee members all the people that make this possible. Victor, thank you for always being available to hear potential speakers and recruit the best of the best. I'm very grateful to that. Kim, Jessica Marks and Aisha Selma and Srishna. To kick off the meeting we're fortunate to have the U.S. general advice admiral Murthy. Dr. Murthy is the first U.S. Surgeon General second time by being appointed by President Biden and first by President Obama. Born to immigrant parents he grew up in many Miami Florida. Earned his bachelor's degree and MBA degree from Yale University. As an undergraduate Dr. Murthy co-founded visions and HIV AIDS and trial networks and company aimed at improving clinical trials. Surgeon general serves as public and best scientific information available to improve and health and wellbeing. Update crisis and promotional wellbeing and mental health and tackling misinformation and health care and emphasizing the importance of prevention and mental health. Emphasizes the importance of relationships in communities and maintaining good health. He has been a leading voice on issues as health impacts of loneliness and social isolation and youth mental health crisis and guiding the nation's response to COVID-19 pandemic. Today we will have a fireside chat on mental health. Please join me in welcoming Dr. Murthy.

[Applause]

Thank you again for joining us. I will start with a topic dear to your heart. Loneliness and a lack of connection have become a significant public health. Concern not only here but in the whole world. Last year your office issued a national advisory of loneliness and isolation. Why do you think this is a epidemic?

> VIVEK H. MURTHY: Thank you very much for giving me the opportunity to be here today. It has been a long time since I was a medical school. It feels like yesterday. If I was in medical school and told me I would have the opportunity with colleagues and friends and be able to share thoughts with such an incredible community I would be skeptical. Life works in interesting and unexpected ways. I'm grateful to be with so many people that I admired deeply and looked up to for so many years.

[Applause].

> VIVEK H. MURTHY: This issue, Huda of loneliness and isolation, this is one of the unexpected things that I found arrived in my doorstep if you will. When I was going for my first term as surgeon general I was asked what are your priorities going to be when you are in office. I laid out a series of priorities. What was not on that list was loneliness and isolation. I did not think of it as a health issue. I didn't know there was a problem. What happened is I started traveling the country and

meeting people and college campuses and senior citizens and, you know, in communities to parents and business leaders and many others I started to hear more and more of these stories about loneliness. A college student told me I am surrounded by thousands of college students. Nobody knows me and I find me by myself.

A CEO would tell me it doesn't feel safe to be and digital recording. I heard by parents and surrounded by other parents and others during the day. Felt like they are carrying the burden of life on their own. Hearing that again and again from people of all walks of life made me realize I need to look at this. That is when I realized, not only is loneliness is common and the height of pandemic and loneliness and the number is down it one in three. Extraordinary amounts. More people are struggling with loneliness than struggling with diabetes in our country. I started to realize the numbers are much higher with younger people. As much as we think are digitally connected. Young people in the U.S. and other countries are feeling more alone than the rest of the population.

The last piece that is striking is how consequential this was. That is what led me to put it as a health issue. The data was fairly consistent. People with social disconnection faced higher risk of anxiety, depression, and suicide. They also faced a higher rate of heart disease. 31% increase in cardiac disease, 50% of risk of and this effect is mediated and we can talk about those. What is interesting to me, Huda, of all the issues that I have worked on as surgeon general, there is no issue that is more universally recognized. By a show of hands how many people know in your life that struggle with loneliness? Yeah. You see it is nearly everyone. This is becoming a universal challenge. Finally there is this question that is driving it and alluding to. This is what I don't think is the simple answer. Over time what's happened is that there is dramatic shifts of how we live our life and digital environment. We have not compensated on the impact of those shifts on relationship and community. We move around a lot more now than we used to. We move and change jobs multiple times. Those involve leaving communities behind. It doesn't mean we should not move but mitigate for an impact with that we previously estimated. The other thing is the impact of technology in our lives. Incredible conveniences that come from technology. If you think about it and the fact that I no longer have to go to the grocery store and I'm seeing people less often those ties matter to us. When I think about tech I think of social media as well. Social media as been a challenge and real problem for many of us and young people. It is not to say that there aren't benefits for some people, but we all know in medicine and public health. Intervention has some benefits does not mean that it is an unalloyed good for society. We have to look at another side of the equation. Here is where I think we have, just to be blunt as a society we DROPT the ball. Social media has been around 20 years. We have done little to understand the impact more recently. I will tell you who has been aware of the negative impact. The young people themselves. They are the ones that tell me. I came back from India and spent time in Japan. I was in the UK. Everywhere you go you have a session with young people about mental health and they will bring up the impact of social media. How it is changing how they relate to people. Making them shift their relationships online and making them less comfortable with in person interactions. This is different from TV and other things. Those things came on the scene are we worried about them and are we worried too much about it? Young people were not complaining in large numbers that TV was ruining their life, right. That was many of us in the age of TV, right.

You look at the studies now. Nearly 50% of adolescents are making them feel worse of their body image. A third feel addicted to social media. A third of adolescents say that they're staying

up to midnight or later. Talking about the cultural comparisons and want to get off of it, but they can't. At the end of the day if we can't pay attention to those studies and what we're seeing in social media and harm, if we can't keep in mind in the many case examples of students that have been harmed by having content directed to them by the algorithm that has encouraged them to harm themselves and some cases take their own lives I've sat down and told me in painful conversations that they have in many surgeon general as their child and break up and disappointment went on media and only to find the algorithm and initially sending them content started feeding them content to harm themselves. A mom and a dad told me that their son had a I terrible break up and fed videos that the way to prove your love to the girl who you broke up with is to take your own life. That's the ultimate demonstration of love. Now that sounds absurd on its face. If you are a young person in crisis and getting this message again and again through videos, that should worry us. These aren't just one or two cases by the way. There are so many examples like this. I challenge you to put any case and new medication out on the market. Where five cases a child was fatally harmed we would pump the breaks and investigate. Why? Because there is no responsibility that is more important than protecting the wellbeing of our kids. It is in this respect that I feel as a society we have fundamentally failed in protecting our kids of the harm of social media. This is placed on the shoulders of parents and kids to manage. It ends up on the doorsteps of primary care doctors that see this and how on earth am I supposed to advice my patients and harms that feel bigger than me. The truth is what we need and called for on 2023 and issues a report on this topic is we need congress to step in and establish safety standards and data transparency requirements that don't exist right now in social media but put in place for cars 30 -40 years ago. When cars were in the scene and high related deaths we don't walk away from it. We didn't say we're going back to horses and buggies. What we said there is a third path, we have to make car safer. It wasn't easy to do. Industry did not want that to happen. We will manage it. Years and years went by. We seen literally a replay of the same things happened right now. I know that things and changes take a long time. It can take a really, really long time. This is a moment where we don't have the luxury of doing business as usual. One year the life of a child is a long time. When you see suicide rates that Huda illustrated on this slide, you realize that we have a full-blown possible from leveraging and building community to addressing the harms of technology to ultimately help our kids.

>> HUDA ZOGHBI: Thank you.

[Applause].

>> HUDA ZOGHBI: I think as you said, it is really clear when children could not connect anymore in school. That's when we saw the rates rise. That's all they had was the screen time. In addition to the children you really addressed the parents. Parents are at their wits ends. We thought about the regulation for the children, but what can we do for parents?

> VIVEK H. MURTHY: Parents having a hard time. Just out of curiosity anybody grandparents in the room? Any parents or grandparents shocked that parents are having a hard time? No. This is one of those interesting things that was not on my agenda to address. Most of the topics I found was that I have worked on most, not all. Most. They have come organically as a result of listening to what communities are talking about and trying to understand what is concerning them. By the way, this is something that I credit my mentors with. In medicine, as many of you know we're taught

early on about the importance of listening to a patient. I learned that the hard way. I remembered during the first year of medical school and a session of interviewing the school had hired model patients to come and prepared with a story and we had to interview them. I remember sitting in the room in the hope building in Yale medical school and being really worried. Do I have all the questions right and asked? I was so focused that I realized I wasn't listening to the patient. This is week three. Finally I had a mentor that came up to me. Dr. August at Yale. If you listen to the patient long enough they'll tell you what's wrong with them. It was actually a really profound piece of advice. It applied not just to patient care. It applied to marriage. It applies to friendship and work relationships. This point about trying to really listen and the importance of putting your agenda aside for a moment and let the patient direct you felt like medical really underscored for me. I did for so many of us in the room. Parents would never lead. They will usually talk about their kids and what they're worried. Parents do what parents do put the kids first.

Behind the mental health kids are going through is the parental mental crisis. Not just to manage the teenage years but to manage issues around kids independence and finance and safety. There are newer things that parents are have to contend and tech and social media and the top two reasons and parenting is so much harder now as a generation ago. The other thing that is interesting and a surprise to me when I looked into the data. Parents actually compared to a couple of decades ago they spend a lot more time at work. Not a surprise. What was a surprise to me was moms and data's are also spending more time with their kids than they did a few generations ago. That is not intuitive. They're spending more time at work and less time with kids. No. More time with both. Where is that coming from? Their time resting, recouping and resting and nourishing and parents are profound culture of comparison that some are sucked into the digital world that we live in. Just like young people are telling us that they're comparing themselves to young people online. Kids are seeing hundreds of images a day and comparing to themselves. From body to academic achievement et cetera. This is not just girls. When I was in Bangalore it was the boys that stood up first. We're seeing images with people with six packs and incredibly cut and athletic and we think that body image is it is rapidly catching up. Parents are caught in this culture of comparison. If you are not taking your kid after school to three sports and teaching them four languages and learning three other instruments, somehow you're failed as a parent and not preparing them for the futurement

It is absurd on the surface. We all know that. When everyone else seems to be doing that you worry that if even if it seems absurd you don't want your child to be left behind and unprepared and unattractive on college applications. These are things that we think about. These are series of factors that are contributed. The last piece is that there is interesting and concerningly it is shame that parents have taken on with regard to falling short on any of these measures. That is failing to manage social media with your kids and not doing enough with extracurricular activities or if your kids struggle with mental health, all of these feel like signs that you have failed as a parent and shame that prevents them from talking to each other is really profound.

We have like in my school. So I have two kids. My son is eight and my daughter is six. We have a text thread. It is blowing up all kinds of things. What and who is wearing for Halloween. In an average day 70 text messages on these threats. It is fun and interesting to watch. You know what is almost never talked about until just a few months ago? Is how we're managing technology for our kids. Even though we know that parents are struggling with it. We see at birthday parties. No

more iPad. In June I wrote an oped calling for a warning label to be placed on social media app as addition to all the other measures called to make social media safer. How are we thinking about managing technology in many our class? That was very rare. I think we keep all of this burden and shame inside as parents. That's part of what we have to change. We need to talk more openly about these challenges. We need to do a better job as a community in supporting parents and realizing that on the surface it seems like a lot of them are having a tough time. From a policy perspective there is a lot more to support parents and ensuring things like they can pay leave and be with a sick child. Common sense people do not have that. Making sure that we're investing in mental health care. If a child needs or you need you can get affordable care quickly. The wait times are long and even though we made historic investment in the workforce and improving access to services and we still have more work to do. I will say as a parent the worst feeling I think you can have as a mom or a dad is to know that your child is suffering and to be unable to get them help. You would much rather suffer yourself. To see your child suffering and I can't get them the help that they need. It causes them pain and chips away as self-efficacy and responsibility that they have. It is to take care of their kids. That is a situation that they find themselves in today. That is why I issue that advisory on parents and wellbeing. Fundamentally we cannot solve the youth mental health crisis if we don't also support the mental health and wellbeing of parents.

>> HUDA ZOGHBI: Very true.

[Applause].

>> HUDA ZOGHBI: You've been quite innovative educate the public and improve health. How can we integrate mental health care in other medical specialities particularly primary care because that is the first contact right between the patient, the patient and the youth with physicians.

> VIVEK H. MURTHY: The primary care doctors have a lot in common with teachers. Both have more to do on the to do list without additional resources that come along with that. It makes hard to execute. Primary care are seeing a lot of these challenges. I think one of the important contributes to burn out that we don't talk about often enough and glad that Victor and national academy is spearheading is that the lack of self-efficiency that the clinicians face contributes to that burn out. If you see a patient who has a problem and you can't address it, it doesn't feel good. When a patient comes in with a mental health crisis and you know the wait time is long and can't provide immediate health and don't know the resources in the community, that puts you in a difficult bind. If we weren't mental health care providers there are a few things to do. Number one, we have to invest in making sure that access to mental health care is easier. Telemedicine gives us a way to do that. It is not the only way. It is one way. The pandemic had a down size. The silver lining it accelerated the adoption and use of telemedicine. We have to make the authorities to provide virtual care across state lines. We have to make those authorities permanent. They haven't been made permanent yet.

[Applause].

> VIVEK H. MURTHY: Often I think in this town it seems like common place to kick the can down the road. One year. Two years. All of us know that without the security and certainty that those authorities are permanent it makes it harder for investment and building the systems that can ultimately provide the care across the country. We do have to train more mental health providers.

We know that. That is a subject of great discussion and investment in the last few years of the administration. We also have to broaden our view of who constitutes mental health provider. It is not just psychiatrist, thinking about peer support as well as really powerful way. Also adults with the support that they need. I've been so impressed with the peer support that they need. It is not early on in the sort of course of, you know, mental health illness if you will there are points that peer support can be vital and isn't available. Finally, what we have to do is build more partnerships between healthcare systems and communities. When we think about social connection and engaging with communities is very good for your mental health. When you realize someone is struggling with loneliness what are you supposed to do with that? In UK they're doing social prescribing model. They have a person to refer that to in the office or broader health care system and networking and what are the patient's interest and like to do. Connect them with the group. Maybe they're connected with arts or their faith is important. This helps guide them and follow up to ensure that they're integrating with those groups. These are the partnerships and resources we need to provide. If you want clinicians to be able to provide this kind of care. I will look. There is one intangible thing that makes its way to a coding sheet and billing for services and equally important. That is like the time, empathy and care that we provide to people. One of the things that I remember being taught early in medical school was that our tools for healing go beyond the prescriptions that we write and the procedures that we do. It is the empathy and presence and kindness and compassion and ability to be with them and stand with them so they're not alone on difficult times. That is therapeutic. We don't reward that as much. When was the last time you heard a clinician was awarded for being kind and compassionate and empathetic. The cues convey to action. When you see in most academic medical centers is people get published because of the research and money they bring in. We should not devalue those. If we think there is more to BB a clinician it should include and cover the kind of care that you provide to a patient and the way you mentor students. If we believe that compassion and kindness and empathy really do matter. Where is that reflected in our system and how are we sending signals to students and supporting and recognizing and promoting people because they demonstrate those values

These are pieces to the puzzle and compassion clinicians and resources available to get people the help they need for mental health.

>> HUDA ZOGHBI: Very true. Thank you.

[Applause].

>> HUDA ZOGHBI: So my last question because we have three minutes left. The role of mental health and substance use disorder?

> VIVEK H. MURTHY: I think everyone in this room I suspect in your own care of patients and public health. What an powerful overlap there is in 20 million people. If you go back to a couple of years in the data and look at young people who overdosed on opioid medications or on fentanyl. Very few were getting help for both in substance use and mental health issues. This is a place that if we recognize the overlap there should be a no wrong door approach here. If I come in and have a diagnoses substance abuse disorder I should be screened and get care for both. While we made progress, this is a place to do more work and ensuring that people get care. I know this is our time wraps up that, one of the things that I've been also giving a lot of thought to are these conversations I keep having with young people and their parents and grandparents all across the country. I want

to tell you one thread of them, which has been on my mind a lot. Whenever I travel to schools or universities I usually ask students, can you tell me how you define success? Success is important to them and a big drive of what driving their parents. And really what I'm asking them is how society define success for them. What they tell me is combination of the following, fame, fortune, and power. If you have all three you really made it. People will write books about you, documentaries about you and press will cover you nonstop. They fell compelled to follow the model of success. It seems like the dominant model of success. They and their parents don't want them left behind. That triad of success is leading us further and further away from our goals for our children and for ourselves, which is fundamentally as we think about it as parents or grandparents. We may not know the field or anything about their lives in the future and one thing we want for them is to be healthy, happy, and fulfilled. How many want their children to be healthy, happy, and fulfilled. If you didn't raise your hand come see me afterwards.

In that quest for fulfillment there is a different triad. Relationship, purpose, and service. These three elements have been long standing fixtures of the fulfilled life. The reason I suspect many of us know this in this room is because many of you like me spend times with patients to the end of their life. Have had conversations with them about what really mattered to them as they look back at the long or short expanse in their life. What patients talk to me about in those moments when only the most meaningful strands of life remain is they talk about the people they loved. They talk about the people who love them. They talk about the lives that they impacted, whether it is one life or many. The things that gave them meaning and a sense of belonging. Meaning and belonging are the keys to fulfillment. If we want our children to be fulfilled, the question that I find myself asking is how do we orient in our society and schools and workplaces and culture more broadly we're giving people the tools and foundation to develop relationships, to focus on purpose and rooted to the lives of others and building a culture of service where we help one another. That I think is the most pressing question if we want to address so many of the issues we talk about today. This is fundamentally rebuilding the foundation for society. Society where people are disconnected and it is not a culture of helping one another and our purpose is anchored in these other elements on fame, fortunate fortune and power and the way of physical and mental illness and seeing in many countries in the world. It is a society that is less prosperous economically and people work together less and look at things as a zero sum game. That is not a society we want to live with. My son is eight years old as a mentioned. When we found out we were pregnant with him I just remember sitting down with my wife in disbelieve. I can't believe we're going to be parents. Oh, my God I can't believe we're going to be parents. This is really scary. One of the things I thought about is what our life would be with this precious baby. A world where people care less about one another than themselves. It felt more important to be right than kind and powerful than to be just. I knew that as over protective as a parent that I thought I would be, that has been confirmed by the way. I won't be around all the time. They'll be around people that won't judge them and give them the benefit of the doubt what they make a mistake. Who reach out to them when they're lonely. My hope is is that they do the same. Creating that kind of world is a culture movement. In terms of how we shape and treat others and speak up on and kind of leaders we cultivate in our organizations more broadly. All of that matters in terms of the message we send our children about what fundamentally matters in life.

I say that to all of you. Not only because you're an extraordinary group of leaders that are thoughtful and influential in our own spheres. Because as a body that carries deeply about health and wellbeing, there is no more important foundation for our health and wellbeing that we build and values that we cultivate. This is a time to talk about value. If we care about generosity and compassion and kindness we have to cultivate that with our kids and schools and society at large.

[Applause].

>> HUDA ZOGHBI: Dr. Murthy I know I speak on behalf of everyone in this room and online and the nation thank you for taking time and all that you do and for your help leading us with this cultural change. It is very precious. Thank you.

> VIVEK H. MURTHY: Thank you, Huda. Thank you all so much.

[Applause].

>> HUDA ZOGHBI: As everybody stretches and allows the great insight and ideas to sink in, I hope you agree with me that we couldn't have had a more inspiring opening to this meeting. I truly feel that each of us will leave this meeting armed with information that they can help with their own community and scientific reach and medical reach.

Now I would like to introduce the first panel of our scientific program key social drivers affecting mental health and substance use. The panel will be moderated by Margarita Alegria who is the chief DPARTS research unit, JR and Lucillle F. Chair endowed and MGH research institute chair in Massachusetts General Hospital. I welcome you to take your seat at this stage. Good to see you.

[Applause]

>> MARGARITA ALEGRIA: Okay. We're going to start this first panel. This is one of the hardest jobs to follow Dr. Vivek after this incredible conversation. This panel is going to be about social determinant of health and concentrate on social determinant for youth. You will hear many things. This is a terrific panel. Please don't leave. It is just amazing.

Let me start with the unequal treatment report. I want to touch on the policy fail short and we have an attack now on prevention. Failure to pursue research and failure to invest in progressing solutions. Over emphasis on treatment sickness. There was not much prevention that we saw. Complex and fragmented health care systems that we heard today and pervasive racism in health care. I wish that the leaders that are hear have the opportunity to change the trajectory that we have and the 20 next years we don't find what we found in this report. Next.

Let me go to tell you why to we need a new agenda. I think we need a new agenda because it is critical to complement what we have in terms of a dominant model of really individualized pharmaceutical treatment in mental health. We have been using it too long. We need to focus on structural factors. We know that issues that have to do with education, wealth, poverty are really central in our communities and affect the chances of youth to have good mental health. Finally I'm going to vouch for many of what people have said today. We need to have community-based approaches. Ones that really breakdown the barriers to get to care early enough so that we have more equitable and accessible care. Next.

Let me quickly say and this has been said by not only Victor, but by many. We have need to have a public health approach. There is no way that with the few visits to mental health care there is going to be a change. Next.

In 2022 I wrote a paper about making sure that we optimize the opportunities for community mental health and reducing disparities. That includes focusing social determinants and school based services. CHL most of our population of color receive care in schools. We need to move out of the clinic and into the community. That might require a way to reduce stigma. We know that stigma is a big emphasis in today's people not going to care and youth not going to care. Then community-based approaches. Issues that have to do with incorporating mental health in after school programs. We need to move mental health outside the clinic to the community to make sure. Like Vivek said including more for our professionals.

I'm going to skip this in the effort to make sure that we present the four incredible panelist that we have today. Social determinant are really transducers of the biological aging that we have today.

Let me tell you about the panelist that you'll BER hearing. First is Tami Benton. She is the Frederick H. Allen Chair in child psychiatry. Next we have Joshua Gordon. He is the Chair of the department of psychiatry at Columbia University. Next we have Douglas A. Gentile. Please read their bios because I'm chopping them. He is the distinguished professor of psychology at Iowa State University. Next we have Yasmin Hurd that is the ward Coleman Chair.

Please give them a round of applause because you will see what a wonderful presentation we have today. We're going to start with Tami. Everyone is going to speak for 8 minutes and then we're going to open and have a discussion and then finally at the end we are going to open it to the group for questions. Tami.

>> TAMI BENTON: Thank you. Could we advance. Thank you. Thank you for this opportunity to share with you some information about the state of where we are with children's mental health. I want to start by saying that this crisis is not over. Next slide, please.

Next slide. Next slide please. I thought it would be helpful to start by giving you substance of the scope of the problem. Thank you. It is very important we learn with technology that young people like to engage in their own mental health when they want it.

[Laughter]

>> TAMI BENTON: I just thought I wanted to provide you with the scope of the problem. We talk about children as special populations. They actually make up about 22% of the U.S. population. That is over 77 million children in the United States. A fair percentage of those young people are impacted by mental health conditions. We know that there are an estimate of 15 million children through 2023 that have experiencing some mental health condition and treatable. Less than half of them receive the care that they need. We also know that a significant portion of these young people are experiencing severe disabilities from their disabilities. These are not just kids that are anxious of the next exam. These are children that are struggling to function at school, home, and their communities. We know that poor kids are overrepresented among this group. Kids who are living at the level of 100% below the poverty level are at the greatest risk more mental health

disorders. I just want to give you a brief background prior to the pandemic we were saying pretty significant challenges for children with mental health. I am still a clinician and work in the emergency department. We were struggling with children and pediatric prior to the pandemic. During the pandemic we saw more kids coming in more severe conditions. Increased rates for suicide in the emergency room. They were younger ages and kids were seeking emergency and hospital based services. We could not provide them. Children were language and we saw significant trends and higher rates of suicide attempts and greater severity and death by handgun sides suicide.

These factors was by the children's hospital association and the American academy of child adolescent psychiatry to declare a state of emergency. Timing wise, it was timely that the surgeon general released the advisory around the same time. The purpose of this declaration was to have national attention by health care providers and our nation of this crisis of children with mental health. It was an effective intervention.

One thing that the pandemic did for us, it generated a lot of distress and motivated us to find new ways to provide care. It also provided an opportunity for us to focus on the disparity that existed in health care for marginalized populations. When I refer to marginalized populations are those individuals that are affected by factors that are far beyond their controls. Economic and social and communities. We know that the factors that derail healthy, emotional development are impacting marginalized populations. We know what those things are. We know about poverty and poor living conditions and exposing to trauma and adversity and children are much more likely to experience and interfere and bullying and stress to parents. Stress to parents that are harsh parents that engage on neglect and abuse. Loss of caregivers and impacting minoritized youth. What we've been seeing with marginalized populations and specifically LGBTQ+ youth and other minorities that have really escalated since the pandemic. Of course as mentioned earlier we were able to see highlights related to racism.

The impact of the events of the pandemic were not proportionally distributed. For Black Latino AAPI youth and narrative youth and those identified as exactly and gender minorities they experienced significantly worse effect across multiple areas. The impact that we've seen recently on the mental health of girl that are disproportionally impacted. Girls overall are doing worse in every area. Increase in sexual violence. Increase sadness and hopeless among girl. Increase in suicide attempts and marginalized groups and forced sexual violence and physical aggression. What we're seeing is the continuation of the trends we're seeing before. We noticed the significantly increase in black girls between 2001 and 2017. The rates increased about 182%. We have hundreds of psychosocial intervention and helping young people struggling in intervention. We know what the community and moderators are. We focus on what we can do to promote and promote mental health and prevent mental health conditions. We know that supportive families and institutions and good school relationships and peer support. Having a sense of belonging innocence. Healthy communities and being able to get out into green space. Those are not things that cost health care dollars. The enablers are the community where kids live. In schools and recreational activities and things we can do in the environment to promote mental health.

I want to highlight a few things that we learned during the pandemic to support the capacity to expand access to kids that need help and engage in health promotion. We learned that having the

continuum of care is important. We learned that integrated care and able to expand captain make a huge difference. We learned about echo and enables to move knowledge without moving people. Telehealth was an enabler that allowed us to reach more kids. 9-1-1 access line expanded the capacity for young people to access care very quickly.

I wanted to highlight opportunities and benefit from focusing on the following the pandemic. Really opportunities to expand access and capacity through digital health and technology. I don't want to read this whole slide. I want to say the enablers that we should pay attention to. Digital health and technology allowed us to reach more families. Children I saw with their dogs, parents, and siblings. That is how treatment should be provided. We should have the capacity. 70% of counties in the United States do not have a child and adolescent psychiatrist. I think we need to use the technology for clinical care and learning about the patients and developing techniques and being able to do research and learning more about our patients. I will end my comments there.

[Applause]

>> MARGARITA ALEGRIA: Douglas please.

>> DOUGLAS A. GENTILE: I was asked to not bore you with statistics when I could do it with thought experiments.

We are behind the rest of the world in looking at things like gaming disorder and social media addiction and internet addiction and whatever aspect we want to focus on. The World Health Organization included the gaming disorder in the ICD 11 as bona fide disorder. Sample population and tools we use and clinical cut offs we get different rates. The meta analysis seem to suggest somewhere between 4% and 8% of adolescents are suffering with gaming disorder. Is that a big number? 90 some percent of kids can play games, be on social media without causing dysfunction in their lives. If we limit it to daily gamers 66% would count with that. We take the lower prevalence, that is 1.5 million children taking damage to the area of their lives today because of the way they're gaming. They're not getting help because the DSM 6 is not out yet.

I'm hoping it will include gaming disorder. If we took the approach of estimates of social media disorder and still over a million children taking harm in their lives. Why is that? Why are we far behind on the rest of the world? One analogy is that we're kind of stuck in the 1960s. Back in the 1960s the early research showed a medical model for alcoholism made sense. There were certain particular risk factors that we could predict and protector factors. People did not just seem to get out of it on their own. In the 60s, the country did not want to look at it as a medical problem. They wanted to say it is a moral failing. You are not strong enough. That is where we are in technology addiction. We're still saying -- and the research seems very similar. It doesn't seem to run in families and although there isn't enough research on that and there are predictable risk factors and not a lot of well-known projective factors yet. It doesn't seem to go away on its own with a lot of kids. It looks like a medical model would be appropriate here. The culture is still stuck saying it is a moral failing. It is a little different. It is the failing of the parents. They're the problem.

I don't want to have to wait 50 years to get where we got with alcoholism and everyone agrees this is a disease or the disease model makes sense for a way of working with it. Let's look at a further medical analogy. We can have a couple of different ways this goes. One is the patient is

compliant and takes the medication as intended and that cures the bacterial information. This is a beneficial effect for the patient. It could be that the patient starts to feel better and I don't need to take the rest of these. Many of the bacteria are dead and the strong ones aren't. They can regain strength and become resistant to antibiotics or spreads as a bacterial resistant strain of bacteria and harmful to society. If we think about these technology disorders and similar to an infectious disease the treatment would look like this. All the parents and teachers in an area and provide information in a useful and patient friendly way and convince the children that it is in their best interest. They're on your side participating and compliant with their health care. Treatment would be that we target a few people who seem to be the problem. We provide information to them the way that academics like me usually do and we just try to tell children, this is the right way to do it. There is obviously no scientific evidence at this point to support the hypothesis that partial treatment is helpful for society. It is an interesting question for us to consider. What would a complete treatment look like? How do we get the culture to agree that this is a problem worth facing head on and providing resources for trying to help these children that are having these problems. It is not just children. I'm a child psychologist. You came for the dad jokes. These technology addictions aren't only harming children. With that I will pass it on to you.

[Applause]

>> JOSHUA GORDON: Thank you for inviting me here and thank you to my esteemed colleagues on the stage. I want to focus on one particular aspect of the mental health crisis that has been already discussed. I think looking at the data we can get a sense of some of the specifics that I think was helpful. This is a chart that I hope you've seen and outstanding and this is a chart of suicide death rates for all ages over the last 20 some odd years. It is the CDA and the last data shown on the slide is 2021. 2022 data continued to uptick a little bit so that is the data. It has been rising until 2019 and 2020. We can talk about why that happened. I will focus on 2020 in a little bit. Overall the message is quite stark. In the United States people have been dying by suicide at higher, higher rates despite the recognition of the problem.

If you look at youth though, these numbers are even starker. There are several features that I want to point out. On the bottom is the suicide death rates for 10 to 14-year old kids. They are low, which is I suppose some good news but more than doubled in the same time period. Teenagers and young adults have also seen increases. If we go back to that dip in 2020. Everybody predicted, and I apologize if you are one of the everybody that didn't that suicide death rates would increase during the pandemic. When actually they fell further. Its not that because there wasn't suedality there was. There is also supports in our society. If you look at the data, although you can't really link it to suicide deaths to say because they're such rare events. When you look at the effects of societal interventions. Like eviction moratoria and extended welfare benefits without requiring complex requalifications. Look at the effects of when these policies went into place on indicators of mental health. A lot can be dealt with as Tami mentioned on a structural basis. Those things didn't help our young adults. There is no dip in 2020. There is a dip in 2019. It went back up in 2020 and skyrocketed thereafter. There is a crisis in youth mental health, but the other thing is that this crisis did not start in 2020 as was also eluded to. These rates have been climbing for at least a decade at alarming rates. Looking at these other factors beyond the acute increase in loneliness and isolation we have to look at these things with suicide and youth and we have to look

beyond societal supports and understand why those things didn't correspond in decreases in youth suicide rates.

The good news is that there are evidence-based approaches to suicide prevention. In suicide we tend to think about prevention as more what we might call secondary prevention. Trying to reduce suicides in individuals who are at risk. This is a schema at intervening and put out with my colleagues at Columbia. The thing that I want to focus first and foremost is on the right side of this graph. I'm sorry the left side. Screening for high risk individuals. It turns out that screening is really, really important and needs to be applied universally in health care settings and over the half that people do die by suicide have seen a doctor in the proceeding. In fact over a quarter have seen a doctor in the proceeding in a month. Suicide is most often not a super impulsive act without a period of time before people are contemplating beforehand. Most people will answer yes if you ask them about suicide. There are screeners that have been developed at the Institute. The National Institute of Mental Health. These screeners are available and equipped and improved by the application of technology. This is a study that institutes a adaptor and specificity and with very high specificity and improve and identifying individuals at risk with suicide and youth and individuals and health care settings. Then finally to add a note of hope, technology really does afford us the ability to reach children on a broad scale, but also find temporal resolution. Even the risk of suicide is evident over weeks or months, the act of suicide attempts are more impulsive. Are in the moment. Chances are the youth is not sitting in a classroom or a health system when they're in these moments and we need to be able to reach them and help deliver treatment to them in that moment. Studies showing that ecologically momentary assessment and delivery of intervention can reduce those risks with a much finer time frame.

For suicide as its component of youth mental health crisis you have to recognize No. 1, these rates have been going up at least a decade. Number two, that we can reach them by identifying individuals at risk and number 3, that we can harness technology to reduce that risk and requires a concerted effort and requires more research and resources. Thank you.

[Applause]

>> YASMIN HURD: Thank you for inviting me for this panel and for me it was ending with substance use disorders. The impact of problematic substance use and substance use disorders. We know from the numbers discussed earlier it is a huge economic burden in our country and throughout the world. In the U.S. trillions of dollars are spend yearly on substance use disorder related illsness for those that are treatments for many are not used or perhaps not suitable. We talk about overdose, especially when it comes to opioids. That is a substance use related death and people die yearly. A lot of the stigma as discussed earlier many people don't treat and seek treatment and many people blame that, the individuals that suffer from these disorders that it is a choice. Over 30 million people in the U.S. suffer from a substance use disorder. Diagnosed and problem use is much more. We talk about the individuals and the families, communities, and the country itself and beyond are really so critical for how the impact of substance use disorders have. Importantly we know that there is a high comorbidity between substance use disorders and mental disorders. In fact we know it can up to 60%. We treat these as separate brain disorders. Even the treatment from individuals that suffer from both disorders, the practices that are done are very separated. So when we think about psychiatric risk and addiction we have to think with the adult. Absolutely we

know that early life stress, the trauma, abuse and the environment make a huge difference to this risk. The earlier the higher the risk that we are seeing. Many substances contribute to this risk. I'm going to focus today because lack of time on cannabis. I focus today because we know the developmental effects of alcohol and tobacco and cannabis has a high comorbidity with psychiatric disorders. The daily use of cannabis is higher than alcohol. We don't know that much about cannabis, but one thing that we know is critical at every step of neuro development. In the early stages it is important for hard wiring of the brain. When you get to late adolescent and adulthood it is important for that fine tuning of the prefrontal cortex. We know that during these developmental stages that people, especially during pregnancy women are using cannabis more. A lot of young people with reproductive age are using cannabis. Breast feeding and women continue to use cannabis. Adolescent and time period when people experiment, those -- what are the long-term impacts. The reason cannabis is a big issue to consider is the component THC is increasing over time. THC now, the plants that are being raised or I should say manufactured and then grown, they are very, very potent. Over 500 chemicals in these plants. Most of them we don't know their psycho active properties. They're now highly concentrated strains and potency products and large products in the cornucopia and kids and adults have access to in roots of administration. We also have synthetic and semi synthetic products that are highly potent that are not being understood and researched and yet this is being consumed.

What do we know in regards to the development affects of cannabis? For us, one of the things that we wanted to get a sense of, I'm a neuroscientist. One of the things that we decided to do is take a look at the third brain. The placenta. As most of you know and tell you that one of the critical temporary organ that provides life developing fetus. One thing that we do know is that the programming of the placenta is essential not only for development but the psychiatric risk later in life. In woman that use cannabis when pregnant the endocannabinoid systems. The immune is profound. We showed the male sexes and the male placenta showed changes in the disregulation and looked at another cohort as well. My research will do translational studies. We recognize this by giving the pregnant ban CHT. It was the male placenta that those a greater regulation in the immune system. Still trying to figure out why. The thing that was also interesting is that we followed the children after birth. One of the things that are behavioral changes we could see significant increases and anxiety and aggression for the kids and four years old and associated with prenatal cannabis exposure. The placental predicted their anxiety behavior later. We could see the stress measures and really important this study was actually Yoko Nermours started to look at prenatal stress and we could see the huge anxiety in their kids. Adolescents is critical. 90% of adults with substance use began with adolescents. 25% of teens have cannabis use disorder. In 9-1-1 mark we're looking at ore the fast two decades there is an increase in schizophrenia and more THC products, higher products in their society. And there is a sex difference where more males were showing this cannabis use SDORTD and higher schizophrenia. Hi stress hormonal levels and isolated stress. They have their COVID isolation too. Much more stressed in regards to decreased social interaction and look in their brains. We see a number of changes in behavior and important for emotional regulation and stress and subpopulations of a particular cell and astrocytes change and those cells correlate to the decision making and impulsivity. Cannabis because we don't know a lot but the biological sex differences that exist from early and immune and metabolic function is critical.

We're going to talk about what are strategies and the education programs we heard a bunch of them. National illustration are essential. Studying the brains are the epigentic changes are critical. So we must catch up. Thank you.

>> MARGARITA ALEGRIA: We're going to go to 12:15 because we started later. We're going to start with some questions. I'm going to start with the questions for each of the speakers and open it up quickly. Let me start with Tami. Tami, we hear a lot of youth what do you think we can do to make sure that youth are able to communicate to their parents about what's happening to them early enough so that we can intervene?

>> TAMI BENTON: That is a really excellent question. Excuse me. I think it is important that when we think about youth mental health and youth mental health treatment that we recognize that youth exists in the context of families. Their primary ecological environment is their family. When we work with children, we work with children and families. I think because of billing structures and other barriers that impact providers we find ourselves focusing on treatment that is focused on the child without the family. We kind of got away from the recognition that you can effectively treat children without treating the primary environment. My work in suicide prevention you rely on the children to keep family safe. Any child that has mental health conditions or prevention focused intervention that your primary interventions are around finding supports for families. Part of that requires you to build communities for families. What we're starting to see is that kids that are presenting anxiety with depression. We're seeing kids that are five or six and factors that are impacting the behaviors that are result in those stressors. As child and adolescent psychiatrist in that work. Our work requires us to work with families. I think all providers, all clinicians need to engage families about thinking about treatment. I think we do that a lot less with adults. It is a key driver for mental health outcomes for young people.

>> MARGARITA ALEGRIA: Douglas, I want to ask you a question. There are commercial interest in addictions. We've seen that in gaming for example, that you talked about. Does the fact that the profits from addictions are now legal because there is a lot of legalization of this change the landscape? Do you think it is going to change the landscape?

>> DOUGLAS A. GENTILE: I think certainly there is just a report in the New York Times and internal data from Tik Tok how they recognize how quickly addiction can happen on their platform and doesn't seem that they're doing a whole lot to change that. We have to look at the financial incentives. As long as everyone is making lots of money off of more time spent then that attention economy is going to be hard to change it. We need to have perhaps regulations in place. We should certainly be getting more information out to the public about the actual addictive potential of these types of issues. I think that's where the biggest, I see the biggest problems been is that right now the culture doesn't believe this is a real issue. Until we've got people saying no, we want changes here and we want companies to be more responsible and we will reward them for being more responsible. It is going to be very hard to change.

>> MARGARITA ALEGRIA: Thank you. Josh, you were director of NIMH for a while. I'm going to ask you about whether you think the research on the availability of guns have contributed to the increase in suicide and is that a fact that we know for sure or not? If we don't, why didn't -- why haven't we focused enough attention on that?

>> JOSHUA GORDON: That's a great question. I'm glad to be able to answer it in my current capacity. There is a couple of issues there. First and foremost you alluded to and to make explicit half of those deaths are from guns. Half of the suicide deaths are from guns. I'm not going to homicide deaths. Half of those deaths are from guns. We know that means restriction, particularly done on a nation level scale can be an effective way to drive down suicide rates. We've seen this in countries like India which used to have suicide deaths from ingestion of fertilizers. They put controls on distribution of fertilizer and that drove it down. If we say in the United States half the deaths are from firearms, we could put some controls on access to firearms. Do we have the research? In some ways we do and some ways we don't. As you know the National Institute of Health and other federal agencies are prohibited by law from studying the effects of gun control policies. That doesn't mean that some of that research doesn't happen any way and indirectly funded by these agencies. One study that I remember particularly looked at death rates and I apologize, I don't remember if it is suicide or homicide by guns in countries like California that are adjacent to Nevada. California and California's gun access laws are different at the time and may still be. What they did is look at the rates by death by guns. I can't remember if suicide or homicide. Related to the occurrence of gun sale events that were legal in Nevada. These were punk take moments in time. They found that immediately in the weeks after these large events. It happened in fares and things like that. Death by guns went up in the adjacent county in California. Yes, there is no question we have compelling data to suggest the easier it is. Of course these gun sales don't require the background checks. Maybe they do now. I don't think so. The easy availability of guns results in more deaths.

>> MARGARITA ALEGRIA: Thank you so much. Yasmin, some of your work focuses on the impact of cannabis exposure. How does this evidence relate to the current policy debate such as ones regarding the legalization of marijuana? What's your view?

>> YASMIN HURD: The national academy on cannabis. The report came out. I privileged to serve on the committee. The current policies are statewide. That has created a number of loopholes that some of the data that I showed and the products that are there and farm bill of 2018 that created and hemp was legal and that now people could make new products that are intoxicating products or CBD is not intoxicating and you can change chemical structured and Delta 8 and delta 10-THC and synthetically make other products from the plant that are not quote unquote illegal. I think that the problem with the lack of federal leadership in this is really challenging and I think that legalization, as I said, I don't think we should criminalize and how things are made legal has consequences and we see significant mental health consequences of these high potent products that are now nowhere close to the original plant that people consumed. Even two decades ago and was 4% THY and now you have products that are 60% THC and even make 90% THC and that is what kids are using and we see more mental health challenges.

>> MARGARITA ALEGRIA: We want to make sure that we have a lot of questions. The only thing that I'm going to ask is please refrain from comments. Sometimes we get so much comments that we don't have enough of a chance to give everyone to get an opportunity for questions. We love your questions and please try to be brief so we can invite more people to ask questions.

>> Child adolescent psychiatrist from Washington university. Building on what the panelist have to say and the escalating mental health crisis, I'm thinking that there is two things that the medical professional has not paid enough attention to. One is the greater income disparities in our society and the fundamental resources that people need to be able to thrive and be mentally healthy. Which we could make recommendations about and are not well-defined by the current poverty line. The question is what the panelist think about that.

[Laughter]

>> MARGARITA ALEGRIA: Agree.

>> MARGARITA ALEGRIA: You want to talk.

>> TAMI BENTON: Can you repeat the question because --

>> MARGARITA ALEGRIA: The question was that the poverty line, should we extent the poverty level. A lot of people do have mental health problems because of issues of poverty and hardship and whether we should do that. It

>> TAMI BENTON: Poverty exposes kids to things that we know and pose risks for mental health. The stress related to parents and parents not having resources to support young people, the problems with community schools and schools that are under resource and can't provide support and supervision to communities and exposure to community violence impacts young people in ways that we don't imagine. We have kids that show up in the emergency department and parents report that they're not sleeping in the primary problem. When you talk to the children is they're fearful because they hear gunshots at night. They drive health outcomes and access to care. We know that for mental health care we're struggling to support preventive services for families. Those services aren't reimbursed. For most young kids uninsured and amount of Medicaid that they're willing to provide. All of those things limit access. The other thing that we don't think very much when we think about poverty is, what are the messages that children pick up when they look around them and all they see is decay and despair? You don't see green space. You don't see parks. When I tell families go out and exercise. Where am I suppose do that? Where is it safe?

Those are the factors. All of the things in the environment and economics and surroundings and employment are for poor families. It has impacted the mental health and adverse ones.

>> JOSHUA GORDON: Incomes matter. My colleagues are running a program to study the health benefits of various structural interventions including green space, including economics, including community center, including availability ofG quality and groceries.

>> I'm going to ask you why we in the medical profession have not done anything to improve school health. School health in the United States is in total disrepair. In New York City there are 144 certified health educators for 1819 public schools. Our pediatric residency dense as Columbia rotate through school. School health clinics but are nowhere near. Why none of you have raised health education as a critical issue that we and everyone in this room can do something about?

>> MARGARITA ALEGRIA: I did raise it in my comments. When you look at where kids are receiving care and mostly youth of color, they're mostly getting it in school. It is so minimal and I agree with you. Part of the problem with schools, if you think about it schools are underfunded and a lot of the

pressure of school is to make sure that they pass the exams. The effort has moved to the academic domain at the expense of the psychological emotional domain. I've been working in certain schools. If you go the resources for mental health are dismal. We are all probably in your vote on increasing school benefits. Actually in this for years there has been an increase, but not enough to really get it to the next level.

>> Forgive me but that is accusing the system of failing when we ourselves are not taking any initiative.

>> MARGARITA ALEGRIA: No. We definitely are. Thank you.

>> When you consider the 30 to 40% of children, and adults, presenting to primary care practices, whether they be family medicine and practices and family doc they're presenting with behavioral health problems. What we're doing is separated how we pay for mental health and behavioral health conditions versus other chronic diseases. What we have done is we have limited the way to reimburse these types of services. I wonder there is any action now at the federal level, state level to try to reconnect management of chronic illnesses that are behavioral health chronic illsnesses with medical chronic illsnesses because we would never say if you have diabetes you have eight visits and then the money is gone. We would never expect to cure diabetes with eight minutes. We limited the amount of coverage for mental health services and behavioral health services and an unusual fashion as result limited resources. Any ideas on that?

>> JOSHUA GORDON: It is not just that the care is segregated and the payments are integrated segregated. Even though we're all paying for it, the health care insurance companies are covered mental health have no incentive to spend more, even though it will save the health care companies that pay for physical health tremendous amounts of money because of individuals with comorbidities cost the system a tremendous amount of money. It is not setup to incentivize investments in mental health care cost. The limits you mention are now illegal. They're happening for sure. You cannot limit mental health coverage in the way that you don't limit any health coverage anymore. It is illegal. There are other ways that insurance companies found to limit access. That is not what they say they're doing. Parity for health care -- one of the candidate is working hard on mental health parity while the other candidate is not continuing that.

Part of what you implied is the integration of care. There there has been a lot of work. CMS and most insurance companies will reimburse for mental health care delivered in the context of collaborate care models and delivering them in health care settings. That is an advancement and we need to uniformly covered.

>> I would say that that is something that the academy -- committee that I was privileged to co-chair. Get them collaborative care and we will get better outcomes.

>> TAMI BENTON: There actually has been a lot of focused work in this area. There are multiple factors that impact the capacity to integrate the services in the primary care. Some of them is billing. Some of them is provider comfort. There is a large focus to expanding access to that knowledge. I mentioned project ECHO. Used in multiple specialities to educate providers in subspecialty care. In 50 states now, except Idaho or Iowa, there are mental health access programs and primary care providers can get immediate consultation to provide care the moment

the patient is in the office. There is a lot of work happening in the efforts supported by the federal and local governments. I think that we should try to utilize a lot of those interventions more.

>> MARGARITA ALEGRIA: Could you speak a little louder.

>> John Hopkins university. I was struck by the data and human modeleds known with mental health disorders and social drivers of health. I'm wondering if there is going to be any longitudinal studies. A lot of mental health disorders are linked to diabetes and cardiovascular disease. I'm curious if you're looking at the human animal studies longitudinally.

>> YASMIN HURD: A number and including the ABCD NIH and adolescent and prenatal now that started in terms of HBCD. The second panel or later we're going to have more discussions about the stress hormones. We have to ourselves stop siloing. There are amazing physicians and scientist here who may not consider themselves to be mental health investigators yet they still are. Why? Endocrine changes and immune changes and metabolics that we seen are profound. We know the substances do that and the development impact is critical for that risk. Why are we not all educating ourselves and working together because I am actually not a placental expert. I'm a neuroscientist. These are the things that are very important. The later panels will give you more insights on that.

>> Jessica from NAM. We have questions from the virtual colleagues. Then we will turn back to the gentleman behind me.

>> Recognizing that part of the disparities from the war on drug. How do we change the narratives that cannabis expansion in communities of colors may not be promote cannabis legalization.

>> YASMIN HURD: For me I do think education is critical that, you know, the war on drugs did criminalize and lock up a lot of black and brown people and whites used the drugs in the same amount. States that legalized cannabis and seen a reduction in arrest. That is mainly for whites. Interesting the levels for black and brown people are still the same. Education is really critical. As I said, locking people up for substance use and criminal is one thing. We have to realize this is about mental health. This is about wellness. There are different aspects of cannabis and in terms of using in terms of on the medical and potential medicines and treatment. It is not just for us THC but cannabinoids. This cannabis is not what their mothers and fathers and grandfathers cannabis. Yeah.

>> I'm Steven Parker. Unlike many of you I'm an architect. My focus is mental health. I'm a member for the academy of neuroscience for architecture. I'm in the mention of green space. My focus is the environment of care. I'm curious with what experiences out there in the systems around environment of care. We seen a lot of number of different models of care to address it through the environment and the quality of the environment impacting your mental health. I'm curious if there are any thoughts on the panel on that? Thank you.

>> JOSHUA GORDON: What I would say is we need to study it more. There are a number of good examples of understanding how that environment interacts with care. The most obvious one for kids is around making sure that the care is delivered in a system that is accessible to them and reduces the stigma associated to them. Especially Latino kids are likely to engage in therapy and benefit from that therapy if delivered in the context of schools. It is true of all kids in general and

happens to be in that study and especially true with Latina kids in Southern California area. Another set of studies is around reaching teenagers and although it wasn't super carefully controlled the study and effects locating care in the setting of malls and other community centers as opposed to health care settings and they found kids are more likely to access it and engage in care where they didn't have to be seen walk into a clinic, right. As opposes to walking into another setting. Access for sure is one way that the environment care matters. I'm sure there are lots of others.

>> MARGARITA ALEGRIA: I'm sorry we're only going to have two more questions. Go ahead, please.

>> I'm Olivia Merchant. You're talking about how you're treating the child and including the family as well. What is the plan for children that don't have families or unsafe families or like children in foster care and all these different situations where the family is not going to be the best mode of support for them.

>> TAMI BENTON: That is a great excellent question and increasingly important problem. Kids don't exist alone. They all exist with adult caretakers of some sort. Whomever those identified people are is the system that you have to work with with children. Harm reduction with kids with foster care will not be done if they're not placed in foster care. Minority populations are disproportionately and strengthening communities and providing them. Belonging were brilliant and that is where families struggle. Spiritual communities and whatever exists for families you have to engage them to provide that support. We have to support two systems where lots of children are placed. Foster care and juvenile justice. Those are systems that all of us together as partners have to work together that supports the children and families need.

>> MARGARITA ALEGRIA: Ally you have the last question.

>> I direct the mental health and substance use disorders in our academies. What is the role that the National Academies can play in moving the needle towards solution and social drivers of health and other determinants of health. Thank you.

>> JOSHUA GORDON: I've always found the academy valuable in sin think sizing availability evidence and pointing out the gaps that they exist and taking the conclusion from those synthesis and bringing it forward to policymakers. I don't think there is anything different here. I think gaps is probably the biggest factor to help identify them. There has been space done here.

>> YASMIN HURD: I think the network that is the National Academies and educating and from here everybody goes out. That is critical. It is the communication within the community and NAM community and impact that it has in this town and policy. Really it is about the nationwide strategies that are needed. That is what the NAM does have the ability do.

>> MARGARITA ALEGRIA: I'll finalize by saying the convening. I think the academies has the chance on bringing policymakers, patients, advocates, clinicians and put them all together in the same room. Even people from different pieces of government to talk to each of what needs to be done and do it in a coordinated fashion. Thank you everyone for being such a great audience.

[Applause].

>> HUDA ZOGHBI: Thank you so much Dr. Alegria for leading the panel. Now we will have about a 70-minute break for lunch. Those of you in person are welcome to join. In edition the students that participated in the DC Public Health Case Challenge are displaying their poster in the Rotunda.

The topic for this year was a public health approach to address substance use among emerging adults in the DC and Maryland area. Please stop by and talk with them. The program will start again at 1:30. Please be here on time. Thank you. Thanks again.

[BREAK]

>> HUDA ZOGHBI: Okay. Good afternoon. I think we're going to get started again. I want to welcome, everyone whose joining us to the for the NAM Annual Meeting and particularly those running from lunch as well as those online.

I'm very pleased to introduce the next panel in our program emerging science and innovation forever therapies. We've got a team that comes from various disciplines, different ways to study the brain and the mind and it is really exciting what you're going to hear about. This panel will be moderated by Dr. Kaf Dzirasa at Duke University. Dr. Dzirasa I welcome you and the panel to welcome us on this stage.

[Applause]

>> KAF DZIRASA: Afternoon. It is certainly an honor and pleasure to be here. Before we get started I will gently ask you all to please silence your phone, at least until the start of the next panel.

[Laughter]

>> KAF DZIRASA: It has been tremendous to be here. As we're talk about the story today, there is discussion among the planning committee. We talk about loneliness and the importance that Joshua mentioned and and there was back and forth on the committee on whether it is important to talk about the brain and neuroscience and all. Whether there is a role or need or investing our time and resources and what could neuroscience actually teach us about combatting these problems when the social determinants are clear and present and so important.

Today we hope to explore that. I hope by the end we will convince you that understanding neuroscience, particularly for its goal in helping us understand mental health illness is check point inhibitors and smoking or understanding cancer or GLP 1 and exercise and diet and thinking about cardio metabolic disease. When I say brain, it is the supporting infrastructure. The blood, lungs, kidney. The brain helps us do that. We hope it works and in the environment to keep us healthy. We have a group of panelist to explore that art. We will talk about the brain and both on how it is built and formed. We will talk about how the brain develops and how it is influenced by environment and how it develops both through life and adolescents into adulthood. Then we will explore innovated new therapeutics coming online and what that teaches about the brain and the organ. Without further ado let me introduce my colleagues. Matthew State and family and distinguished professor and chair it is USFF. Huda Akil the Gardner and distinguished university professor at neuroscience institute. Damien Fair the University of Minnesota School of Medicine. John Krystal who is the professor and psychiatry and chair at the Yale School of Medicine. Then Helen S. Mayberg. If you look at the program, that bio is not hers. Because Helen is a fantastic

scientist and mentor and friend of mine I will take the privilege of reading her full bio so that you all have it. I will read most of it. Half of it Helen. Helen is a Professor of neurology and neuro surgery and psychiatry at mountain Sinai School of Medicine. She played a fundamental role in neuro images studies in brain circuits and translation to the development of deep brain stimulation and novel therapeutic and leads a patient focused research team with the shared mission to advance precision and the American Academy of Arts & Sciences where she participates in a wide variety of advisory and scientific activities across multiple fields of neuroscience. Without further ado I will turn it over to Matthew.

>> MATTHEW STATE: I will talk to you about spectrum disorder and thinking forward. Start by reminding you that the diagnoses of autism is fundamental impairments of interaction and the population prevalent in the U.S. is about 3%. That is a consequence in part of a kind of continually broadly diagnostic and this leads to a broad spectrum. An autism that ranges from an individual that requires 24-hour care and dramatically expectancy and diagnostic category from many individuals that do not experience it at the core symptoms of autism as a disability. I would obviously to some of the language that I'm going to be using in this talk around mutation, disorder, cure, and address that on subset of individuals on the severe end of the spectrum and diagnostic category profound autism but generally capture a group of individuals that have autism, cooccurring intellectual disability and who require 24-hour care are minimally verbal or nonverbal. Also in that category our remarkably and rich causes and severe neuro developmental phenotypes and epilepsy.

What we learned over the last 15 years or so has taught us that there is a distinctive architecture and common adult psychiatric disorders. I hope that we discovered about 250 genes through the study of rare and and a single event and increasing risk. The vertical axis on the left side is affect size and what you can see, I hope, yeah, it didn't show up there. Is that the top part of that graph is orders of magnitude larger than what we're used to thinking about for common complex and psychiatric disorder and architecture is a conspiracy of code that care very small effects. This selects and each individual can carry large effects can given us a window into biology. We have consistent themes that these genes impact synaptic function and chromotrope modification and transcriptional modification. What they do and when and where they're having an impact. We can intersect a growing list and increasingly high resolution map of molecular landscape. What we put together is we find is an important nexus of risk and neurons.

That sort of sense of resolution now can be advanced further through the study of proteomics. This is a product of a number of labs that engage in psychiatric cell maps initiative that we took the 100 top autism genes and did AP mass spec to identify the proteomic interactome. I will point out that one of the most dramatic advances that enable this study at scale was the development of alphafold and interactions and autism genes and what they're interacting with and down to be able to predict with high confidence what those look like and importantly when we introduce mutations that lead to autism we can begin to predict the structural changes and great accuracy. That lays the foundation to think at a level of resolution where we can begin to talk about things like small molecule development et cetera and in a way that has been difficult previously. This kind of distinctive genetic architecture led to an emergence important and distinctive clinical translational psychiatry. For most disorders we lament that we don't have biomarkers to subset our samples. In had autism 20 to 25% of our population is identifiable based on a known mutation and a known

gene and has quite severe phenotype and dramatic overlap particularly with developmental epilepsies. What that led to is really consolidation research and echo system that is driven in great measure by family groups and advocates who have organized around the identification of genes and collaborated with academia and bio tech and Pharma to advance both research and therapeutics. What you're beginning to see is the development of plausable and therapeutic level and things like nucleic acid and molecule development based on understanding and protein interactions and even because of the overlap with severe epilepsy that you will hear in our panel.

I've taken you to the focus of the subset and I wish it was linear to go to the understanding of the genes and cells and treatment. The brain and the developing brain is quite a difficult place to work. We have to deal with a number of challenges. One is Pleiotropy at the molecular level and we see the diversity in pleitropy in the phenotypic and we extraordinary dyanism and brain and think about a therapeutic, if you look at the bottom of this figure here you pull on a gene and you very quickly end up in sort of an infinite search space in trying to diverse that path. One of the ways that I described in dealing with that is to think about convergence and taking multiple genes on simultaneously and leveraging this coming forward and identify the area at the cellular and circuit level that there may be opportunities for intervention. What is important now and over laid here is a human clinical translational research enterprise that can go from nucleic acid therapy and small molecule and began to traction intercranially. The development of and severe forms of autism. With luck that will extend the broad autism spectrum and bringing new treatments to those individuals that experience that and seeking somatic treatment. I will pass it on to my esteemed colleague.

[Applause]

>> HUDA AKIL: Thank you for inviting me to participate in this panel Kaf and this panel to highlight this topic. I will talk about affective disorders, depression, anxiety, stress related disorder. I see it as a second pandemic that has expanded after the COVID-19 pandemic. It is really global in nature, not only in the United States. As a scientist my question is what can science do? I'm a neuroscientist. As it affects how we feel, think, as individuals and how we interact socially and live in an environment community and globally and the importance of thinking both bottom up and top down. In thinking of -- my goal today is to focus specifically on the idea of resilience to stress. What we can begin to do to understand that and promote that as part of thinking about how combat the pandemic. How we can predict is a susceptibility and in an individual and how we can then use potentially the knowledge to prevent mal adaptive behavior. In thinking about affective neuroscience and affective disorders to think about multiple times domains. We're angry, sad, happy, in this moment. There are longer affective states that are moods, depression, sustained and a certain style responding to the world in an affective way and emotional way that constitute our personality. It really kind of shapes then the kind of responses we're going to have with the world around us. And we have over the years created animal models for various levels of animals. One of them is an animal model of temperament. Are you the kind of person who would love to go skydiving or would you rather stay at home and be knitting. That is the simple kind of questions and temper mental tendencies and risk taking behaviors and the types of disorders that people suffer through and externalizing disorders and substance abuse and depression and anxiety. We have created a rat model of internalizing disorders and knitting and skydiving using the paradigm. We've done genetic and neuro biological studies. It maps on to the human phenotype of temperament.

The two lessons that I'm going to give to you from are these studies is that it is very genetic. Very predictable what animal and temperament and animal is going to have based on the parentage. We know on the genetic expression and synaptic structure. The other thing is that it is modulatable. You can change that phenotype, especially in many adolescence in the environment that you put it in and enrich environment. It induces resilience. Whether social enrichment and physical enrichment or both. Even if you control for genetics there is also the way we react to the world in a given instance and how that builds on. For that we've used an animal model for the Nestler Lab had a created a repeated social stress and animals emerge resilient or susceptible to stress in the way that they interact socially. We asked, is there something in the brain the first time they encounter the social stress that carves a path to resilience or is a susceptibility? To do that we used a technique called fast trap that allows the animals to stay alive and under go the repeated stress. What is active and can it predict the future? And the answer is yes. The way the brain responds the first time actually sets the path to different neuro networks that then emerge as determining resilience or is a susceptibility in these animals. The combination of these animal studies told us that it is a really genes and development and environments and experiences shape the behavior adaptive or maladaptive. In animals we can predict and modulate and knowing the genetics and biology and brain function. We did the study of the Michigan Freshmen Study and we take young healthy 18 -19-year-old. We know they're going to undergo stress because it is stressful. We ask who is going to emerge resilient or susceptible as a freshmen this year. We do a whole bunch of test at the beginning of the year and assess anxiety and they have wearables and the question is can we predict?

We happen to capture right before the pandemic and then since then we have a cohort during the pandemic. As we heard today, the rate of depression in blue has increased dramatically and during the pandemic. Baseline these are higher rating of depression. Notably the females are much more affected. Now the rate of female is four times more likely to be depressed than the males during the freshmen year.

Is it genetic? And before the pandemic there was some signal that polygenic risk score was important. That completely disappeared during the pandemic. A lot of people with low polygenic score were affected. In contrast people with polygenic -- what is highly predicted is a score that we developed called the affect score that it turns out is we can get it from a variety of questionnaires. We use much learning to develop it and highly predictive before the pandemic. The first two years of the pandemic and continues to be extremely highly predictable. In other words a kid can come in and by the first day we can predict with very high clarity whether they're vulnerable or not to be a freshmen or not. It capture chronicity and how long it sticks into the future. I think we can show that we can use tools to predict is a susceptibility. The question is I showed you that resilience does not have to be genetic. The question is where trying to learn and broadly to see if we can target kids who have highly susceptible and see if we can change their risk. This is a collaboration with colleagues in While Cornell. I want to emphasize that resilience is not just simply the absence of vulnerability. It is not just genetic. It can be learned and acquired and our job is to figure out what happens in the brain and what we can do to endo you see that. This resonates with what you're saying. We can rise to the occasion. Understanding the biology of stress and how to reduce resilience is one of them. Focusing on prevention is important. There is bad plasticity and better knowledge to develop better treatment. Thank you.

>> DAMIEN FAIR: I started graduate school exactly 20 years ago. I was coming off a brief career as a physician assistant in school at Yale New Haven Hospital. I was fascinated on how you can put someone in a scanner and look at how their brain is functioning without even touching it. I immediately went back to school. I need to do a neuroscience degree. I website went to Washington university. Allowed us to make new discoveries that today can slip off the tongue. We identified new systems that can show up here and the salience network and default network frontal parietal systems and coalescing from ten thousand foot up and involved with rumination and tension and anxiety and things of this nature.

At the same time as this was going on and we started learning more about these systems we started collecting more and more data and big data across the individuals. One of the large studies, that wasn't the first to kick off was the adolescent brain and child development study wore going to collect these types of data. 12,000 kids starting at 9, 10 years and follow for the next 10 years. We've been following them for a very long time. The brain and healthy brain and child development study. Another aspect of big data we started to collect a lot of data. Precision information just in one individual that was kicked off on the bottom left of one of my colleagues by the name of account Russ Poldrac and puss himself in the MRI scanner twice a week for 10 months collecting 14 hours of data. New discovery in 2024. Large population studies from A, B, C, D and small N on one participant. If you are interested on this there are a couple of good papers that describe a little bit of where the field is changing. Let's talk about large population studies. It gives you an idea and thought of why this kind of work is so incredibly important.

All right. This is the distribution of all the sites across the U.S. It is a similar map exist for A, B, C 2. This provided information for us. Now instead of doing studies in my lab and get a bunch of paper from my local city. I measure their brain. I measure a bunch of cognitive measures. This is a child like opportunity index that measures which extensions of socioeconomics and things of that nature of our youth. Scott Merrick was looking at in my lab. Instead of doing it in my lab doing 649 measures across and determine which things, which aspects of the brain are most highly correlated with what parts of the behavior? The gist and bottom left are in the blue that soaks up. It is not cognition. The biggest factor to brain variation is where we come from. Okay. It is not just that. It is related to things and Vivek H. Murthy set me up nicely. If you look at the datas that you can select is sleep, screen time, and fascinating result and research and policy and things of that nature that will last for one time. My used case one. Here is my used case two. How about the high SNR? In this case I'm showing you. This is 200 participants in the A, B, C study and networks are in everybody and highly personalized and specific from person to person. Okay.

That variability from person to person matters. It means something and trying to knowing who my next speakers were trying to set them up a little bit. A paper that just came out three weeks ago by Chuck Luynch and Conor Listan that side is from depression. These largest salient systems. On the bottom and the bottom shows you initial data set and highly replicated and on the bottom right, what it shows is even on the onset of symptoms, and this is the case of adolescent brain that this is a risk factor for developing major depression. While this study was going on I was in the background working with win of my colleagues and several others of the University of Minnesota and cases that were going to do modulation for depression. We immediately identified these salient system is massive. Patient had multiple hospitalization and three rounds of cognitive

decline. Tried to commit suicide. This massive, massive problems in this patient for the majority of his adult life.

If you have a large expansive salient number it means it is encroaching on other systems. There is other systems that we discovered 20 years ago. Default network and frontal pride network. They were atypically because of this. Because we can collect the massive amounts of data and personalize the specific systems allows us the opportunity to target the specific networks that I'm showing you all here on the left.

The long story short by having knowing the function of these systems and being able to target this specific systems in this specific patient we're able to reduce now within seven weeks his suicidal ideations were completely gone within six months. The systems were 50% down. Within nine months he was in remission. I saw him three weeks ago. 21 months where he has been in remission. The longest period of the entire adult life. It is fascinating. Not only that, also targeting the systems showed something else, which may be related to the system he went up even higher after the treatment. It is an amazing case. It gives you an idea of where we've come.

I'm going to end there and say these were -- it is a new age. We have these large samples like A, B, C and HBCD and changing the landscape of how we view factors that affect brain development in youth. We have efficacy and interventions and targeting the neuro modulation and specific parameters of how to do this well it is a major advance and what I call, we have lift off. I'm done. Thank you.

>> JOHN KRYSTAL: I'm going to talk about medication. We have a large number of medication for the treatment of depression. A large number of antipsychotic medication and treatment for psychosis and the wide range of drugs to try, depression and psychosis and schizophrenia remain the medical conditions that we have in all medicine.

That story could be very bleak. We know that part of the issue, as we heard about this morning are the difficult that people have in accessing effective treatments. A part that rest in neuroscience is the limitations of the effectiveness of our medications for treating the symptoms of these disorders. What I'm going to be talking about in my six minutes and 56 seconds is the advances that are making that are transforming and came off of work related to a drug called ketamine and S ketamine and approved in 50 years. Following that B xang was the the first that doesn't block the -- neuroscience is now transforming what the future of pharmacotherapy. The first quality is the action. With the standard Prozac you see clinical improvement over several weeks. It may take several months for those people who are going to respond to remitt from the depression. It can produce remission within a day and often within the first dose. If you have treatment resistance symptoms, which is a very common half or more patients with depression, the chances of responding to one of these standard medications is very low. Double or even more the chance of responding if you get S ketamine. As ketamine seems the most effective for treatment resistant treatment of depression and effectiveness to what had been the gold standard which was electro compulsive therapy. If you have treatment resistant symptoms of depression and treated with antidepressant and fortunate to respond the chances of relapse are very high. Over 50%. That risk has or reduced further when S ketamine is used as an antidepressant. A surprising issue and distinctive future of ketamine and S ketamine people are concerned that there would be tolerable issues and compared to antipsychotic you see people continuing the antipsychotic medication due

to side effects than K ketamine. It is limited to intermittent sessions as taking a medication every day and live with the side effects. The long-term effects of these new treatments can be profound.

There is 42-month data that were analyzed by Johnson and Johnson and compared it to historical large scale data set. It is over a thousand people treated with S ketamine. Almost four years of treatment they show the odds ratio of suicide attempt. Fivefold reduction for death by suicide and perhaps for this audience most importantly a three followed reduction in all cause mortality relative to standard treatment. It worsens the outcome for nearly every medical condition and standard antidepressants help there and these new medications have a broader effect. I don't think we have time for this so I'm going to skip to the next slide.

One of the important things to appreciate with these new medications is emerging from new ideas of the biology of depression. For the first 20 or so 30 years of antidepressants people thought that the effectiveness of serotonin and was a shift in focus to think about the intrinsic signal and leading to the testing of ketamine as a glutamate blocker. Ketamine can restore function, structure, in the glutamate in the brain. It can restore synaptic density and restore synaptic effectiveness and reduce the detrimental effect of neuro inflammation that is a part of the biology of the depression in the brain.

You thought I would just show you a little bit about what I mean by this structural effect of these rapid acting antidepressants. What you see on the left I hope for you is the farthest left is a dendrite. An input to a nerve cell and you see that there are a certain number off those dendrite. We call those places that glutamate neurons make synapses with each other. You see from the stressed animal 24 hours after ketamine is the remarkable from the work of Connor regrowth of dendritic spines. You see a study where we can label glutamate synapses in the brain using a tracer for -- what you see is the degree of improvement. In other words you have to take my word for it. The degree of improvement in depression, which is going to the right on the X axis for me is associated with the level of the increase in synapses that is going on in the right and X axis and the degree of the improvement and lowering of the score. We can measure the synapses and low with patients of depression and the 24 hours of single dose and every evidence that these number of synapses in the brain are restored.

What about psychedelics. They may be another form of novel antidepressants. Some people describe the response to drugs and appears to have a robust sustained antidepressant effect that periodically with repeated dosing can be sustained. While the initial target in the brain of psychedelic drugs than the initial target for ketamine they have some convergent effects on the brain and engaging certain common signaling mechanisms and stimulating glutamate release and triggering the regrowth of these dendritic spines. The subjective effects can be overwhelming and trigger suicidal thoughts in people and overwhelmed by the content that comes up. This is triggering innovation in neuroscience as various groups are pursuing drugs that may engage the same signaling mechanisms as the psychedelic drugs without producing hallucinations. This is the implicated with novel treatment for depression. As I mentioned with schizophrenia as well with the FDA approval of CARXT Cobenfe. First the enormous hetero -- and the second the need to translate from the complex genomic that he talked about to the novel therapeutics. With that I will pass it. Thank you.

[Applause]

>> HELEN S. MAYBERG: I want to tell you a bit about taking the knowledge from neuroscience and experiments that you can do in people and actually use it to build on the the technology advances over the last twenty years. I'm going to talk and I think it kind of speaks to the fact that all of this is about community. The teams that do this work are totally dependent on a team of expert clinicians. Not just as a psychiatrist but a neuro surgeon. Someone that can do therapy. Then in concert with imaging experts. Computational experts, neuroscience experts and leveraging everything about technology from rodents to AI to actually accomplish this work. I think I want to reiterate. I want to build a little bit, not as a poke but the idea that even with the advances and these novel pharmacological influences and if people stay well we have all the problems and put bricks into the wall and they fall on the other side. What do we do? What is our strategy if we fail ketamine and ECT if they've had remarkable progress. When I train and it just makes me release how old I am. Damien20 years is the first time we implanted our first patient. It was 15 years of work and without basic tools of imaging and everything that I'm going to talk about the next five or 45 seconds is about wiring diagrams of the brain, and then the chem has informed not just the advances of treatments of depression but other disorders. This is all off the backs of thinking about moving disorders. Parkinson's and Maylalnd Long. It didn't come out of the air T came from understanding the wiring diagram, the sociology and chemistry and generation and basic biology of Parkinson's Disease. By being brave and clever and into the brain when pharmacology fell. If we can define the wiring diagrams and have for OCD and for addiction and for seizures and moving disorder and also in depression. Then we can ask the question, where do you stimulate and who you should deliver to. That template is the field of focalal nuromodulation you can go back to a 1994 image of a healthy person and a depressed person with a PET scan. You can see the frontal lobe is marked and abnormally load. That was the best replicated finding and expanded in the default form network and as you started to look at people as they weren't responding you start to see that it is a contagion. Other areas that come to play. This area and the subcolosal Cingulate. It is not a member of either. We start to build these kind of line and dot wiring diagrams and actually leveraging the technology that had been done for Parkinson's. Knowing that you can precisely place a wire into the brain. Apply a duty cycle of high frequency stimulation and block the activity where you put it. We wanted to block area 25 and figured if we affected that node it would affect everything that area 25 was connected to. You can see it it on an MRI. You can plan with a surgeon to put these small wires and deepen the brain into that spot and hook it up into a battery pack and turn it on and you get an effect on the operating room table of the intense pain and inability to move away from it resolves immediately. Even though there is this first effect you are not well in over. Within continued simulation people stay better. Now 19 years. Again, the other people have had different logic. This is still not available as the general public. What we've been able to do is to learn that the despite the complexity of the brain it is not a spot it is a network. You can start to reverse engineer. It is a convergence of a set of connections to a set of these networks. That one can once one knows where the in this morass you are you can put the electrode. What happens despite this precision and projection and how people recover over time. Recovery is not linear and having a very different experience. Experience is expressed to their therapist and psychiatrist. They try to decide every time you see a patient, are you needing to have an adjustment or change something in your environment. How do we look at that? We need read outs. Technology has been essential. The device companies have built tracking sensors. You can track the activity in the brain on the device where you are stimulating and have a beacon of what is

happening. You can put people back in scanners and use a patient as the collaborator and let them explain what is going on. We have patients recording from their brain and doing video diaries and explosion of machine learning and natural language processing model we can dissect how people talk to themselves about their experience at home and use that as a tracker.

We can get fancy and build things in the lab and utilize other machine learning triggers to look at and other aspects of behavior and have fun while we're doing this work. Because we know we can get people well, we can actually have these tools that we can track over time. We can listen to what the brain is doing and use machine learning. At the end when they're well compared to the beginning when they're just different and device tracker signals. Maybe we can do that without the tracker signal in the brain by the kind of information that patients can do. This is the most exciting thing and I want to say it because it goes back to the idea of plasticity and knowing the network and what is wrong in the brain and knowing how it got there. We're dealing with patients that are at the end of the road. The absolute end of the road.

As people get well, people get better at different rates. The rate in which I get well is dependent on how damaged the connector cables are in the brain and collects this connection of neurons to each other. We have scans and we can monitor that. Now that the tools in their brain we can actually put them safely in the scanner. We can actually see the areas that are damaged over time are actually repairing. While John talked about plasticity in the neuron we're rebuilding the broken cables that connect these systems together. While it was just a scan and people say that is not really real, that is an inference we can take animal models and we can simulate even in healthy macaques and see how the brain remodels and the period of stimulation and we can measure microscopy and reconnect the broken brain. I want to end with the idea that we reverse engineered the idea and deconstructed what the signal in and how to personalize an individual. The game is not over. As we repair the brain now we need rehab. I think I need to substitute rehab with one of a broken leg. Nobody says to somebody that has a skiing accident and graduated rehab and surgeon fix your leg and maybe you're lucky to be on an Olympic team. Patients are getting better over time. Probably based on remodeling their brain is due to the fact that they're practicing and seeing therapist and getting activity dependent plasticity. We're actually kind of all in this together. People say you're dealing with a small sample of patients and this doesn't scale. If we understand in our most ill patients and what is going wrong and put it to treatments and including to what we can do in community and actually help people retrain their brain.

[Applause].

>> KAF DZIRASA: I thought we would have a brief discussion. This has been mentioned by several of the speakers. We've had themes around large data sets and what they allowed us to do and genomics data sets and space and local environments. I would love to explore the idea of how to process and manage big data and the theme of artificial intelligence. In the last few years all of us have been taken by storm and chat CHAT GPT and what it can do and the health sciences. The noble prize in physics was awarded and the noble prize in chemistry was modeling protein. I'm curious about how managing and processing the big data sets plays role in the work that you are all doing. You can jump on in.

>> MATTHEW STATE: I have a brief example and mapping cell initiative for seven or eight years. The real challenges is taking autism genes and cloning them and doing affinity purification and

spectroscopy. You GENT the data and something called the crapome and what people did to try to figure out what was real and not real by subtracting out the crapome. We were struggling with that for many years and have a tremendous good fortunate of doing the experiment at the right time. It is better to be lucky than to be good. We had alpha fold ENLabled us to take 30,000 potential interactions, with a small fraction being the direct interaction between autism related molecules that we wanted to look at and sort through all of that. With rapidity. Not just to see how the proteins are fitting together but atomic resolution on the changes that are leading to disease and what that does to the structures of those molecules. That threw open the door and massive amount of noise to get it signaled in a very rapid way. It really did transform and you can see the setting the stage for a quantum leap and scale of data sets that will no longer be overwhelming because of the ability to leverage Alpha Fold.

>> HUDA AKIL: I thought about this a lot and think about individual differences and how each brain is unique even though as neuroscience we're looking for commonalities and everyone is different. I think the opportunity to recognize both of those commonalities and differences and translate that into something meaningful about maintaining our own mental health and mental health for our kids and community can profit immensely from the ability to integrate data and possibly as time goes on based on both evidence, biological evidence and response to treatment strategies and app or game or whatever. Do that in an informed way and actually and potentially personalized. What I do for myself is different from what I do for you. I see this potential and I feel it is potential and scaling in disorders that are not rare and common and where we can't do that individually. We have to put it in the hands of something. All of that. I think that is the hope and that is why this idea there is hope to move and not transported. We just need to pull together the right players in the right way to help the person in the right moment. When they're young and before the problem gets huge and I think AI can help with that.

>> KAF DZIRASA: You mentioned the FREFRMs coming in which ones would do we will. Would it work in high school freshmen?

>> HUDA AKIL: They will tell you what is wrong with them. These kids with a bunch of specific they're telling us what is wrong with them. People have some insights on better than others. We have not gone back to tell you definitely. 18-year-old is telling you where they're at. I think we should not throw that information away in our rush to be technical and biological. It is the information is there and it is actually continuous. It is not whether depressed people are not one way. They're people who are slightly there and closer to the edge and even closer to the edge. That information is there. We can get it and I think we can see where they veer off closer to something catastrophic and where we can pull them back.

>> DAMIEN FAIR: The opportunity to your question is immensely high. Being kind of a lead in some of these large data sets and learning that there is, you know, no way that any given lab and person can really recognize or realize potential of a lot of these data. Working with like informatics and I'm doing more informatics than neuroscience in these data sets. We got to breakout of the cognitive boxes and spaces and understand harness the power of all this data. Requires a big culture shift and do things and do it and really build and the capabilities of all this data and standardized and made more shareable and generalizable and that is hard to do. It requires huge shifts in the way that we do things and changing culture. In the last part is it is related is the quality. None of these

seem to work in the data. And so like how do you -- the only way then to colate and groups and teams. It is a big change and the power is there. You can feel it and taste it in the world every day. You see it arising. In our space there is a little bit of extra -- it is a new world of getting into informatics and other spaces that we're not used to.

>> JOHN KRYSTAL: I think I will take a clinicians perspective on your question and come back to the enormous challenge of heterogeneity. I don't think any branch of medicine has a manual that just defines the diagnoses. In psychiatry we have a manual. You can meet that diagnoses in 227 different ways. Often with symptoms that are opposing each other. Too much sleep. Too little sleep. Eating too much. Too little. Being agitated and no energy. Being upset and being unreactive. One of the challenges that we face when we try to choose treatment for a patient is that we don't know how all of these individual variables predict the response to the treatments that we're prescribing. One area that seems to be very enormously promising is to use machine learning to process all of these variables at the same time. A graduate student that I supervise and did a series of studies looking at the item level from enormous clinical trials and showed that you could do using these machine learning approaches in ways that were across clinical trials predict about twice as well the average clinician how well a person was going to respond to medication. Not only that, but the predictive models were defined by mechanism and did a better job by predicting antidepressant treatments and within a class and predictive response. I think this idea and parse heterogeneity is a promising approach.

>> HELEN S. MAYBERG: To add to my colleagues and machine learning set us free. Part of it is the culture shift. As scientist you have a hypothesis and you test it and you have a null hypothesis. It is very slow and it turns out it is biased in a very different kind of way. So to combine a hypothesis, which in turns you have good data going in and with then agnostic approach and changed our work and I think you let the machine tell you that actually despite what you know is absolute heterogeneity. Everybody has the same signal that attract and you would not have predicted and the data reveals. As Huda said I need to get the predictor for the college. Machine learning has told us through the patients of diaries we can now predict the ones that actually have trouble using being well. I'm now getting to where in a way I don't think depression is heterogenous. People are all different and their environment is different and we're back to what Huda is saying. At risk I'm taking care of and trying to reverse the thing that has happened to the vulnerable brain. Once it is repaired and stable you're back to how to train the person in their temperament they have and the environment that they live in and that introduces a lot of the variability that Damien is seeing and have Russ Pulrak scan himself every day is not the same every day. The biggest source is what patients say themselves. Their willingness to share. The fact that we hear that people go on chat boxes and using a chat bot as their source of therapy because they don't have access that's a problem. A chat bot can feed you that it is better to kill yourself that we need to actually train these devices as if we're going to use them in a responsible way. I think the other thing that we have to deal with in the culture shift is I cannot share the videos that my patients have generously recorded for my team to use. I'm not able to share them with other experts that might be able to apply the deep learning algorithms in a clever way because they are patient health information. So again, if we're going to have that and you're going to be spied on in the culture by a machine with your kid in the bedroom at night, that I should be able to share their data that can help them be better and

develop new treatment with others that are have a like-minded treatment and need a cultural shift with science.

>> KAF DZIRASA: We would like to get you all involved in the conversation. Step up to the microphone and put your hand up and someone will bring the microphone around to you.

>> Thank you for -- statement that there is potential for prevention at scale to build resiliency to depression. I would be interested from hearing from each of you and where you think prevention could be effective at scale in communities and families out at a policy level even.

>> KAF DZIRASA: In the interest from the 13 minutes we have left you will hear from two of us.

>> HUDA AKIL: I'm not a policy expert by any stretch. I feel that it is what I try to say earlier. First you have to predict and the other is what we talked about. We have the tools. It should be possible to identify people at risk and take the knowledge that we have and combine and begin to figure out theoretically the pathways to doing better. There are a lot of therapies that are turning into apps. They don't fit everybody. You can tell systems whether it is my University of Michigan which has been wonderfully supportive of my effort and whether it is university and workplaces or states and schools that has questioned about schools. We need to take it seriously. As scientist we need to begin to offer workable solutions that can be scaled and communicate with partners whether local community government systems and do real life tests for what is workable and whether it is rehab or prevention. We need success stories before it can be recommended. The last thing we should do is, it is too hard and complicated and we need to do more science and mean while people don't suffer. That's why I don't want. That's why I'm pushing the message that science can do something now if we partner correctly. Not exactly an answer.

>> HELEN S. MAYBERG: Even at the first step of depression, with imaging you can get good separation in the same circuit on who will get better on drug and fail therapy and who will get better on therapy and fail on drug. It is not like we're going to scan people to decide on treatment. I don't want to waste more time on the idea like say that to a car diologist before they put a stint. Take the scans and the information correlates. We don't abandon the neuroscience. We use it as a bridge. The same thing goes by identifying nodes or systems or cells or chemical systems where there is failure and that with whatever tool we have that isn't scalable we look for ways in which we can scale it. I think that is how we will really bridge these -- we can't keep up scientifically with what is happening in the private sector to use these technologies but we can figure out and cherry pick when they can serve us and that is how we can form collaboration and get to the question that you say and could be screening and early and high school and not intrusive. It doesn't require the resources and evidence-based.

>> DAMIEN FAIR: It goes back to the idea of scientist. We're not good as handing off the baton to the policy maker and do something with it. It is a huge hole in the thinking. We need -- that is a huge part of it and discover stuff. It doesn't mean anything until you apply it. It only gets applied and hand it off in efficient ways to people that can actually do that.

>> Huda got me started in her lab as an undergraduate. The beauty of what you present today is the complexity of pathway biology to neuroscience and to major neuro logical disease processes. I think there are 350 pathways on which can result the same outcome of uncontrolled growth in

adenocarcinoma. The beauty here is that you're doing this from different perspectives and the treatments could be tracked perhaps by a neuro pathways. The neuro pathways and signaling process is a way of tracking which of these complex molecular pathways are interacting and then stimulate it and more specifically.

>> Keith Martin consortium of Universities of global health. What you said is profound from a policymakers perspective. I plea to you a that I hope your presentations can be shared can state officials and educators. What you said can have profound implications for children and future trajectories in their lives. You you made a comment about engagement in high school level. Can you give a sense of what can be done from the prenatal stage and the first five years of life that can dramatically affect the temperament and adaptability of the individual in terms of their ability to affect and deal with stresses later on.

>> DAMIEN FAIR: One of the key periods is the first one thousand days in the early years. I think there are basic things that can be done. Most of our investment in our kids starts at school age. Most of the policy investments then when things like just nutrition, access to early care, very basic elements of like interactions with our kids at these very early ages is probably the place where we can start. It is one of the things that we're working on actually with our govern Tim Watz in Minnesota right now. We're learning a lot about the prenatal environment and I think there is much much more more to invest in the early stages of our kids.

>> HUDA AKIL: It is true that the earlier the better. My perspective as an old person, very old person is that it is possible to maintain neurorow plasticity in many decades. I think there is an art to it and inherit some money and keep it going and multiplying instead of spending it down. Your earning power may be higher but you have the art of creating more. So I really think that while there are windows of time where plasticity is, you know, highly available and you can use it, I don't think it ends. I think that is fantastic news. By plasticity I mean good and bad. Learning the right things and learning how to getting stuck into a rut or bad behavior or coping. The reason I want to focus on experience you can see you react on one way and build on it and build on it. Adolescents I see the times where the gonadal hormones and rewiring and a fantastic time and genetic animal models we can really flip the phenotypes during adolescents in the way that is much harder to do than adulthood. We can use it in experience and growth factors and artificially as well as environmentally. It is just one time window and the earlier the better and the more we put this idea that neuro remoding is an ongoing process that would work into old age I think the better it is for all of us.

[Applause]

>> HUDA AKIL: All the old people love me. Thank you. All this crowd.

>> KAF DZIRASA: Let me just check if there are any live audience questions before I take Al.

>> First of all, thank you very much for very, very spirited discussion. This is very enlightening. I am a physician scientist in maternal fetal medicine. Since the brain there is plasticity. Obviously the sooner you can make the diagnoses in theory, the better you can make an intervention that is effective in theory. Are there sufficient risk factors that you can begin to do early screening?

Number 2, whether there are utero opportunities for diagnostic purposes so you can truly make reversal utero.

>> MATTHEW STATE: That is a very early identification of phenotypes. Things emerge early and autism emerges in the first three years of life. There are a variety of tools and leveraging variety of a new quantitative phenotype measures to move back from about three years of age and 18 months of age. There are clear opportunities in the broad group of autism to be identified in the first year of life that they're suggesting early indicators that are captured by new method. Whether it is ADHD and early onset depression it is reasonable to assess that we have to use the kinds of things that people are learning about it and heard about it all day today and quite early in development.

With regard to utero and the distinct genetic architecture of some of the more severe early neurodevelopment and ethical challenges to think about how to manage that. Acceptance and very extremely cases when we see a mutation and associated with autism, there is not a guarantee that that is the phenotypic outcome and we see a such broad range that risk benefit of thinking about prenatal intervention in order to try to address and identify genetic abnormalities and risk is fraught and quite far away.

>> KAF DZIRASA: It was a tremendous honor to be with all of you as we close out. I love the question to take this to the state houses. I was talking to my colleague earlier that is one of the NAM policy fellows who is in the Colorado State House I think it highlights the image that Huda put out. At the bottom it is gene and combining and genomics and brain images and socioeconomic status and the complexity of the brain and thinking about how we can advance pharmaceutical approaches. It is not neuroscience or the rest or early childhood education. It is neuroscience and those things. Thank you all for having here this afternoon. It has been such a pleasure.

[Applause].

>> HUDA ZOGHBI: This is a fantastic panel. Many people are emailing and enjoying it. I think the science is the great platform to leave off how we're going do make this available to all in the future and we will come back in 10 minutes to hear from our last panel. Thank you again.

[BREAK]

>> HUDA ZOGHBI: All right. We are now going into our third panel. Thank you, all, for coming back. I'm really excited to introduce this panel that is going to discuss delivery of service and access to equitable health care. This is moderated by Dakotah Lane. Chief medical officer from.

>> DAKOTAH LANE: That is an exciting and robust discussion. I'm excited to be with the panelist today and learn today about drivers and services and innovation and what are the policy implications and how do we engage communities. As I reflect on today I do want to thank our planning committee and Victor for our the national academy can come around the crisis in mental health in our country. When I look at the different sectors and sections that are here it is really inspiring because we need all of us. Whether it is clinical medicine and social science and allied health, we have a significant roll today and take what we're learning in these sessions and take them back in our practices. I want to highlight in the role in CDC there is a role of prevention and public health and health care. With a lot of the funding that CDC has put out we see suicide and overdose and I am optimistic and plateauing our slowing and suicide death. Certainly those

numbers are staggering and we have the panels today to tell us what we can do about it. We're going to have Dr. Dakotah Lane chief medical officer of the Lummi national health center. Dr. Kenneth Wells in the School of Medicine and psychiatrist in the greater rural area and talk about the community-based partnerships. And then Dr. Ann Marie T. Sullivan New York State Office of Mental Health. Then Dr. Frank will bring it over for policy in economicses.

>> DAKOTAH LANE: Thank you. My name is. I'm the tribal member of the Lummi Nation health center. Most of you all are from the East Coast and don't know very much about tribes, reservations. You probably heard about them in high school. We're actually a very sophisticated entity. We provide a lot of health care. Lummi is one of 25 tribes in Washington State. We are located on this small little bit closer to Vancouver Canada than Seattle. We're pretty culturally diverse. Many think of tribes as a group of people that the Federal Government dealt with. As you progress you get more development of tribes with treaties and the Federal Government made a choice to treat every tribe as a sovereign nation. Within that treaty the Federal Government agreed to provide health care. I can give a whole lecture of tribal healthcare. Our tribe is about 6500 enrolled travel members. 2,000 are children ages zero to 21. We have a tribal government. Provides the same services as state and cities and to an extent the Federal Government. We're culturally diverse. That's me right there. 20 years ago. That is me we finished and my little brother. To the lower right is the war canoe. We do rich tribe. The water is our way of life. That is Lummi people in one slide. Moving fast. I got a timer here. Lummi Nation Health Center. It is a 50,000-square foot facility and houses multidisciplinary teams. Because we're a tribe and the tribe manages our health care dollars we have a lot of opportunity for innovation. As my eldest remind me and grandma remind me we provide health care to all federally enrolled tribal member within the nation. We cover any referred care to specialist. They go to a specialist we make sure that is covered. If we don't, I hear it from the aunties.

This is a quick list of services. We do have adult psychiatry. We are building a child and adolescent psychiatry. We do have school based health center and harm reduction and social work and physical therapy and dental. We have our own pharmacy. It is comprehensive and everyone can get their services. Like the rest of the nation we suffer from the opioid crisis. You see on the graph in the blue is the numbers indicating nonfatal overdoses. Lummi made a decision in early 2000 to distribute narcan for free. We give it to tribal members. Every time a community member report they use Narcan we mark it down. It is not verified and under reported. The smaller graph in the red is known overdoses. This year we have had six overdoses. It is difficult small community. Many of these are family and we have no choice. We just have to keep and everything we can. This is a breakdown male/female. The majority are ages 30 to 69. It is the middle age overdose crisis. Not necessarily the younger kids.

In our clinic, if you have a crisis you have to have a treatment. Within the last -- over the last three years roughly 673 community members have opioid use disorders. 763, out of 614 have received some sort of it. 150 patients are current active receiving office space o opioid.

Switching gears. A couple of years ago the CDC gave us a grant to focus on the opioid crisis. This is a model from the opioid team. You can see the blue is the medical problem. In the yellow/other/reddish circle is the social problem. If you can design one drug to disrupt the civilization opioid are it. Notice that it usually starts with some adverse childhood event. You go to

high school and leave high school and then you get pregnant and drug related crime. Then circled back the child is removed and continues cycle. I'm moving fast. My time is running out. The opioid used crisis has significant impact in our community. In 2023 we have 53 children with a birth date of 2023. A quarter of them have been substance composed. Then there is some more details. 19% with developmental day and 35% of premature with 64% of those related to substance exposure. Overall for the last 10 years about a third of our children are born with substance use. A lot of people take opportunity when they can. We have a development pediatrician that has excellence in autism diagnoses. 82 children screened and she diagnosed 59 of those with diagnosed with Autism Spectrum Disorder. 14 which are related to level three diagnoses. 800 are active mental health patients. We have 50 to 60 mental health appointments a day and sake same day crisis outreach. We will continue to improve care. We linked with Seattle Children's. In the common future we will offer that to community members. Here is my contact info. I got 7 seconds left.

[Applause]

>> KENNETH WELLS: Good afternoon. I'm glad that we can talk about community engagement and what are the models that can be used in behavioral health and community-based participatory research and evidence base and beyond. I acknowledge several people who are community partners and colleagues that gave input into the slides. Why community-based participatory and research partnered research? This has been discussed. Quality outcomes and the same communities often have little voice in service and research or underrepresented. Community-based participatory research is recommend for program design and research by multiple federal agency is listed there from the CDC, NAM, and what are there for behavioral enhancement. This is the NAM model that was recently provided around ACE and addressing mental health. You see the green in the middle. That is the core principles of community engagement that are similar across multiple models to engage and have a fair process and fair time to engage the community and fair resources. Coequal partnership. This is the Wallerstein model. It is famous and used. It focus about the context that we're talking about today and the quality of the partnership and leading to actions, interventions and research and relevant to the community and then to have health, social justice outcomes that have tracked as well as the partnership models. This is an example of the Pcori model and organize similar principles and activities that are recommended for the partnerships. The model that we have followed in our work community partners and participatory research. This is a picture of me and Loretta Jones. You see the core principles in the top similar to the NAM model, transparency, respect, equity, power sharing. Especially two way knowledge exchange. It is not the academic partner saying what input do you have to give me. Two way agreeing on the and the council that represents the community academic partners. Loretta would say no more than three and community forums and you do go into it and inviting the community to say, have we got it right? In phases victory is planning and victory is the celebration and research and so forth community partners and care use this model with 95 agencies in Los Angeles County to address depression. This is a model that community artist gave. In that the bottom is -- there it goes. Agencies were randomized. That is the coin toss to either agencies that the community recommended in both arms, churches, homeless shelters and so forth to work with health care agencies and they were individually given collaborative care for depression evidence-based models and adaptive collaborative care under the CEP arm in community engagement and planning. And

this is. . . the moral of the story is we all came together around the part of depression. We all have something to give. We all have something to contribute to the pot to address the depression. Does anybody have some screening to put it in the pot?

>> KENNETH WELLS: That gives you a sense. The minister came up and said we need love. We found that the engagement approach led to more participation by staff in collaborative care training in all aspects of collaborative care. Patients were recruited from all these sites. There was improved quality of life and physical activity and it was a prediction of the community and why we measured it. There was reduced homelessness and a major thing that the community asked us to ask and fewer behavioral health hospitalization. Longer term outcomes and subgroups. At 12 months there was improved mental health again and fewer hospitalization again. At three years the community said there is improved physical health. If my mental health gets better and there were still fewer hospitalizations and then at four year follow up there was more community defined and traditional remission. There was for women reduced homelessness and financial difficulties. Justice involved and fewer arrest and substance abuse and less hazardous drinking and added value of community health and services in health in the world. They were thinking of doing it later another review and they said no, there has been no change. It has been applied to post disasters, digital health tools in California during COVID and community partnered input and the community learning institute to really train community partners to be coequal with academics and the care partners which is applying a similar model to the elderly showing 50% in the reduced oppression.

The key is it takes all of us working together. I think really bringing community engagement. Now NAM has that for some of its panels and so forth. They could be in a meeting like this too to engage in the goals of achieving equity and so thank you very much.

[Applause]

>> ANN MARIE T. SULLIVAN: I can't emphasis enough how important that is that policymakers we can come forward. When the administration governor is on the side to give you the dollars to do the work you have quite an opportunity. The vision includes stakeholders and service and spoke to lots of people and lived experience. Nothing about us without us is an important saying that we always have to keep in mind. It is very important to get the input into what are the gaps and what is it working and what do we need. In terms of holistic and medical and substance abuse and mental health and development disabilities which is an interesting issue in the New York State. You have an accessible system of care and want all those values to be embedded in the system of care. We came up with three big buckets. I'm going to take more time with prevention. That is the topic today. Three big things you have to do. One with schools. We made a commitment to put a school based clinic in every school across New York State. We're not there yet. We have 1200 clinics. We have 4,000 schools that need them. We have a commitment to do it. What do they do? They provide services in the school but they are a sat satellite and it is exciting. Where is the important place? Pediatrician. Health steps put mental health workers and the pediatrician that have 1500 or more values. Seem simple. Have someone there that work with the pediatrician and work with stresses especially early that focus on 0 to 5. It is the early, early prevention and looking for the things and hoping they don't get to a diagnoses. We are supporting that and 300,000 families. I would love to get it embedded and it is pennies on the Medicaid benefit that will help a pediatrician to have that. That will work on the aces and research told us to deal with and never

implemented. That is one thing. Get those guys. Then the third is special populations. This is where grass roots organizations teach us something. For the Latina adolescents very sad data about suicide. Where they work with teenage Latina girls who have suicidal ideation. They're not doing that therapy. They're doing after schoolwork and helping them to become young women and help empower them and choices in life. Funding that is funded just as much. They did the research to prove it was evidence-based and now expanding it across space. Putting it together and now paying for it in general funds and eventually will put it on Medicaid.

The second big bucket is community access and FQHCs of psychiatry. They are terrific and cost based. We tripled those in the New York State. The third big bucket is to work with the most vulnerable population. I will talk about one particular population that we forget about, we don't forget but walk passed. It is the unsheltered homeless throughout our state. How do you do that? It is in the RPFs and fund and choose the way to get to the money and follow the data to make sure that it is being followed. That's where I talk about the data dashboard quickly. The data dashboard. I know it is a bad slide. You take Medicaid data. This is all in Medicaid data. Every plan have data on outcomes. Clinical outcomes, medical outcomes, and psych outcomes. You take from ethnicity and race and look at it from across the state. Then make it available from the clinics that provide the services. This is the data that is across New York State. Here is psychotropics. It shows if you take your antidepressants regularly and medical data. This is by race, ethnicity, and who is getting colonoscopies. Women get them and men don't. For Hispanic men, way on the bottom. How much in the clinic are paying attention to this kind of data. They don't know. We need to get it out of them and see. Are all their populations getting treated equally on the important issue. The only way to know that is to get people data. It is mining them and getting it out to them.

CCBHCs. The data and why they're good? Decrease hospitalization and get new people in. They're also cost based. Basically at the end of the year you add up what it cost to do the work and you get paid versus struggling to try to make it work. The CCBHCs have made things work nationally. The homeless population, we did this with 25,000 individuals that live in subways in and around New York City. To think what they are capable of. That was said earlier too. Everybody has hopes and aspirations. So do individuals living on the street. If you work with them you are able to get 700 individuals and houses and been on the street more than two years. You can do it and need teams of people that follow up and need an approach that says individuals can think beyond where they are and work with them in a way that we had not in the past.

Lastly a quick word about the crisis system and across the country. Someone said earlier it, how do you begin with prevention. I think 988 is super prevention. It is a number that you can call early. You don't have to wait until you're in a suicidal crisis. You can call because you're concerned that your son or daughter is not doing well in school. It is a counseling line. The average time that people are on is 20 minutes. You can call back and get the follow up and get referrals if you need it. 988 offers people the opportunity to begin to access services. People don't come for service early enough. It is the same thing as getting your screenings for help. If you don't get the mammograms you don't know that you have breast cancer. That is one huge preventions in mental health is having easy access. You have to build around a system of care with the rest of the slide and now I'm out of time. Thank you.

(Applause)

>> RICHARD FRANK: The second one is accountability and access to care system wide. The third concern is how we spend money on care and support for people with serious mental illness that might be pursued to improve matters in each of these three areas. Let's start with need and the matching of people with treatment. The Venn diagram is the survey with people of various indications for needs of mental health care. First it is people with a diagnosable mental illness that is 21% of the population. That is a very well-known number. The second is people with functional impairments with mental illness. 17.5% of the population. Finally the people who receive treatment for mental health problems. That is 19% of the population. What you will see in the Venn diagram is the overlap is relatively modest. That suggest both a potential challenge and how we think about need and also a potential allocation problem. That is true given the following. First of all, half of the people with a diagnosable disorder get treatment in a particular year. Second, 30% of those experiencing a functional impairment due to a mental health problem get treatment in a year. About 29% of the people that get treated have neither of the other two.

Let that sink in for a moment. Here it is important to remember. I think this has been brought up repeatedly today. Within each of these categories there is a tremendous amount of their level of disability and impact the treatment will have on them and the economic resources that they have available. All of these challenges make linking people to the right care challenging. Let me now turn to accountability. Let me go with health plans first. Continue to make a process and adapting practices that avoid enrolling people with mental illnesses and substance abuse disorders. Enrolling these people is seen as disadvantaged so they don't do it. There is very limited use of behavioral health quality and access metrics in assessing and rewarding performance. Medicare Advantage does not include behavioral health performance metrics in the quality bonus programs. Basically attach money to performance. On the commercial side, commercial payers make limited use of the metrics that are out there in the rewarding performance of commercial health insurance plans. Finally in many cases obsolete in a world of telehealth. Now let me turn to providers. While clinical science has continued to march ahead, the use of evidence-based treatment has declined over the last 15 years. Reviews of training programs have shown a very week relationship between training in a major profession, social work, psychiatry, psychology, and evidence-based treatment. Finally clinical activity is very poorly measured infrequently subject to quality related oversight. Let me turn to the way I spend my money. The U.S. devoted about 1.1% of growth domestic product on mental health care in 2020 and 2021. In 1975 they spent 1%. Inclusion we don't have a cost problem in mental health. Let's take a contrast on the overall health care side. 1975 we spend 6.5% on our gross domestic product on health care. In 2021 it was about 18.2%. They have a cost problem. That's different.

Looking inside the mental health spending we spent about 28% of our dollars on supports for people with mental illness. Mostly serious mental illness. What I mean by that is housing, employment support, income support, and human services. Australia spend about 65% of their health dollars on support. The crude evidence suggest outcomes with people with mental illness will likely improve to the adjustment of that mix moving towards our OECD partners. So what do we do? Oops.

In the words of Reinhardt that was a pro my intent member economics is common sense made difficult. What I'm going to do is give you five simple ideas that are going to be hard to implement.

First one is pay health plans for enrolling people with mental illnesses, especially ones who are really sick. Pay them more. That means taking risk adjustments seriously that we haven't done ever on a mental health setting. Second is attach financial consequences for quality of care and health plans and reward for plans that arrange. Third hold health plans accountable for access to care outcomes. Not measures such as network adequacy. Standards for what you think population based access should minimally be and then hold them to them. Measure provider quality and provider level and provide good quality and steer them away from those that don't. Finally drive public programs and budgets towards greater he have emphasis on housing, employment, support is and other social supports and I will stop there.

[Applause].

>> DEBRA HOURY: Thank you all. I wanted to ask a brief question and open it up to the audience. Dakotah I wanted to ask you. One of the things that stood out to me and looking at evidence-based practices we want to meet people where they're ought. Tell us how you bring cultural practices and meet people where they're at and the programs are showing effective results to where THAER.

>> DAKOTAH LANE: Great question. I ask myself that every day. One of the struggles that I have when I first arrived as a primary care provider you can make the diagnoses. Knowing what to do after is actually harder. Our clinic has grown from 80 employees to 200 employees. What I was really brief on the slides but probably the most beneficial things that we have done is we have hired a lot of community members who have lived experiences and now in recovery and stable. For example, to mental health care and traveling members. A couple of them are my cousins and then we have the behavioral health crisis counseling. We have about 80 crisis outreaches per month. A lot of them are repeat patients. As a physician and a travel member trying to encapsulate the demands and culture is I can make the diagnoses and this person now has some big social housing. There are a few that have no water and no electricity and no heat. When I was in medicine school, one of the things that I remember hearing is insulin. Why aren't they taking their insulin. It turns out they did not have a fridge. Or they had a fridge but no electricity. That also means reaching out to the electricity, water, heat. We reach out to the tribal arms and government arms for paying for electricity. Just for the winter. When COVID was around we got this huge influx of air filters. We just gave air filters to all the families so that we can help reduce the spread of COVID. A lot of times communities, I'm speaking both from my community or any community and marginalized community, there are people who want to help. As professionals, all of us here we should listen to them. We should hire them. Use them and use the connections and I'll just finish with this last comment. I have a friend that is a paramedic. Every time when he passed by with people that have a sign. He mentioned it probably takes 20 people just to get that person to go into recovery. I agree with that. I have 20 people in various capacities. From a nutritionist and will go out into the community. We know where everybody is. We know where they live and homeless encampment they're at and the amount of social resources and social capital that we have to invest. That's how we have oriented my clinic. I would like to be the one to take credit for all this but I'll be honest. A lot of this comes from the council. It comes from our elders and cultural

expectations and then navigating that. Long answer to your question I hope that answers some of it.

>> DEBRA HOURY: It does. I'm going to go out of around. That is the state level approaches and the slides is that it is not a single intervention. It is not just a medication or cognitive based therapy. Tell us a little bit about how you are able to bring the wrap around services and how that helps for turned on investment.

>> ANN MARIE T. SULLIVAN: Especially with high need individuals they need a lot. They need social support and environmental health. They need housing. A huge part of that budget was to put housing out. You need housing and housing first team that helps individuals that haven't been in housing for years and come in directly from a crisis situation from a street. Then you need teams that work with people and stay connected with people. Relationships, when we break relationships and move on to something, you know, how hard it is when you move to a new location. We have a system from an individual that have to step down from one relationship to the next. The key thing is to make sure those relationships are intact and people go through them through their journey. Our success of people leaving hospitals or coming into housing from the streets is having those intensive wrap around services. They get a meal more than anything else. It may not be the first thing that you talk about anybody about when trying to engage them. Manpower and social influence. It is intensive work and hard work. Those wrap around services are critical. You need a basic one is housing. If somebody is in a safe place to put their head at night and go home, then a lot of the things that we try to do are not successful. Housing is critical. Connecting with a provider. Connecting is critical and health care services and connecting is critical. We have have people that disconnect from the system it is critical to have those services available. They should have the ability to have someone to talk to if they have a mental health problem or social worker. We aren't always successful with it. It is critical, critical work. It needs to be funded. From what you were saying, often these kinds of services fall in the question mark area of funding from Medicaid or other sources. Sustainable sources is critical.

>> KENNETH WELLS: In the collaborative models we did if you can imagine the faith based providers being trained in the depression care along with the primary care. The primary care has the patient they say down the block in the parks and req they will train you to exercise and know what to do with people with this condition. The or the minister is someone they trust to reveal it with or the barber shop. Bringing them together and training them together is what allowed for those kinds of outcomes that we talked about and homelessness reducing. The shelter is there and they could work together. I'm building on what you're saying and there are models of that and free online. The modules from community partners and care about how you do that. It is like training peers and there are people out there in the community that are already relating to these people.

>> DEBRA HOURY: I'm going to turn around what you're saying and tell Richard. You are saying training people to do things differently.

>> KENNETH WELLS: To do that and cotraining and all that requires funds. Hospitalization the cost is not hire. Ken you should say that is cost effectiveness. If it reduces the cost of health care, the overall cost are not greater.

>> DEBRA HOURY: Thank you. We know it is not just about the money. Tell us about the workforce and other issues.

>> RICHARD FRANK: Dakotah is the exception here. He has a completely separate financing world and everybody else in this room. If I address my comments to everybody else. The first thing that people who work with can think about people who work in New York State is how are we going to get Medicaid to pay for this thing, right? We have a very distorted funding theme. You don't want Medicaid doing housing. You like housing people doing housing. And so until we start to sort of align our funding where the payoffs are and approving the health outcomes we're always going to have trouble and when you do the day-to-day job and trying to get your budget to go somewhere you're going to go to Medicaid. You're not going to go to housing because the 202 program and Section 8 program haven't grown very much in the last 20 years.

We have to start thinking differently about how we align our funding particularly for these populations that are so sensitive to the impact of those services.

>> ANN MARIE T. SULLIVAN: Recently Medicaid has agreed to pay for the supports for housing. We understand that the housing per say is probably not going to be paid for my health care but the supports that we wrap around should be. That recently Medicaid has made significant steps to go forward with. Which is good. I agree with you the housing nationally is huge. Those have dried up.

>> RICHARD FRANK: First thing you do is the homeless people saying how are we going to get the Medicaid to pay for it. We distorted the rules of the game.

>> DEBRA HOURY: I saw Dakotah wanted to add.

>> DAKOTAH LANE: My business model is different than the majority of the health care here. Half of the funding is the Indian Health Services. The other half we have to make up by billing private insurance. 40% of our tribal members are Medicaid eligible and the rest are by tribal insurance.

Then with regard to housing, I'm speaking purely for Lummi. A lot of homeless people are in the same boat. A lot of them in Lummi, you can get because of the travel government and housing that we have and expectation. You can get housing if you choose to be sober. The ones who are homeless are making a choice to not be sober. Using feels good. There is a reason why they keep using. Particularly in our community and talk to people who use they want to do two things. One they want to suppress some mental health depression. Some trauma they faced that they don't want to deal with. They take, because they are homeless and it is really hard for them to get out of it. So for me and our clinic we focus primarily on treating the substance use disorder. If we can get that substance use disorder we can move them up to housing. I know Lummi was thinking about low bearing housing. We get a lot of grants from HUD and require us to do drug screening. If you don't get those you are not passing. The government is offering to have low bearing housing to get people at least housing and then get them treatment. It is a transient population. It is a super complex. Our team strives to, as best we can meet them where they're at and at the same time holding them accountable. It is really uncomfortable. It is dealing with people who choose to use is uncomfortable.

>> DEBRA HOURY: Thank for that. We're going to engage the rest of our colleagues on a discussion.

>> Dakotah, are you saying I am not in the substance use disorder. I'm not even mental health. I'm not. Okay. I do know that many years ago now there has been kind of a housing first housing approach. It sounds like the Lummi council strategy is other than that. If I hear you -- that they have housing if they choose to be sober. Have you guys ever discussed changing that or something? I think there is evidence. I'm not sure, but I think there is evidence that you have if people unhoused then you can deal with the mental health challenges or substance use disorder challenges. It is more stable. I'm not in the field, but I just have heard the housing first works and I heard what you said. I'm interested in your response.

>> DAKOTAH LANE: A lot of our housing grants comes from the Federal Hut. Anything you take from the Federal Government they attach a lot of requirements. One of the things is you must be sober.

>> They do it.

>> DAKOTAH LANE: Yes. The Federal Government.

>> The Federal Government. Am I wrong, haven't people demonstrated that a housing first approach works?

>> DAKOTAH LANE: I'm with you.

>> DEBRA HOURY: Ann is going to jump in. There is so many people.

>> Often that housing is paid through other mechanism. We have a model housing in New York but money paid by the state. You do get into convoluted issues when dealing with the Federal Government. It depends on your source of funding for the housing on whether you can use that or not.

>> DAKOTAH LANE: I agree with you. If we can give people housing that will help the recovery. The operationalizing it and working with the grants and requirements of grants is what we're navigating.

>> KENNETH WELLS: LA County has housing for health. It is Medicaid.

>> ANN MARIE T. SULLIVAN: It is where you're getting your money from. The HUD is another funding source. They have certain rules.

>> DEBRA HOURY: The only thing I will say in defense of the Federal Government --

[Laughter].

>> DEBRA HOURY: Is that it is not always up to us, it is how congress my appropriate our matters. We work across agencies

Point taken. I just want to RIMD everybody there is a lot of people lined up for questions. Focus on the question.

>> I'm Larry Green in the University of Colorado. I have really enjoyed today. I wanted to say thanks to the program committee and the staff about this. This has been a coherent and stimulating series of panels.

What I'm going to take home is two things. Over and over again we have heard our speakers say, we need to work together. I think the word together must have been spoken at least 100 times. Yet, we're selected by our disciplines and our tribes and all this sort of stuff. The second stuff is that there is a proven research method that is called community-based participatory research. You guys are exhibiting it again. It works. It shares power. The room is full of power. The people with the problems we're talking about are not here. Participatory based research, we would have them in the room with us right now. I want to make a request for the consideration of our NAM Council, our Senior Leadership, next year's program committee. Think about getting people that are experiencing, suffering, have needs for the problems that we're talking in the room.

>> DEBRA HOURY: Thank you.

>> Jeffrey Colombia university. I have a quick comment.

>> DEBRA HOURY: Let's go with one question.

>> They're both going to come to Richard. First, a problem is -- we hear great research panel about the verified southbound research that is years of translation and application. It is not a criticism. We need more funding for research. We don't use what we already know. That is the comment. Question: Governments responsibility towards this population and population and variety of things and protect the people and provide health care. We don't do a perfect job of providing health care but a reasonable job of providing health care. For mental health care is abysmal. We don't have a continuum of care and trained workforce. There is not accountability and we don't have a reimbursement systems. We have a great prospect. Lummi, I never heard and very interesting. Ken. These are one offs. The process of trying to scale them up is a challenge. It would obviously be more efficient to have a top down macro approach that we don't have. My question is, we run a panel several years ago that you shot had he down with this. Should this be a national priority that the research are required and allocated for mental health since now its on the radar. You mentioned PCORI. What are they supposed to do? I thought they were supposed to have comparative effectiveness studies. You probably heard of the new drug Cofemi. It has an action and was purchased for $14 billion. Nobody knows how to use it. Mono therapy and combined and that data of how it would be used in the real world is going to cost $20,000 a year. Should PCORI be mandated and if not PCORI some other agencies?

>> DEBRA HOURY: Big questions and I know you're going to be brief.

>> KENNETH WELLS: Just appealing to our prior speaker.

>> RICHARD FRANK: We're in this together but also on the policy side. It would be good if clinicians would stop opposing to getting measures. It would be good if taxpayers would be a little bit more willing to support mental health care. Politicians need to be more aware of issues and we need to have kind of good simple ideas. I think that there is plenty of room for innovation elsewhere. What is striking about today is that in the prior panels we got to see what Michelin star, three star restaurant. In this session we get everybody whose hungry.

>> DEBRA HOURY: We will go to this microphone.

>> I want to thank the panel for a great discussion. A couple of you mentioned the importance of add verse childhood events. The personal cost and the cost of the health care systems. Can you talk to the questions that are there way TOZ prevent ACE and is there other treatments that can be effective for the trauma of ACES and we see the consequences for decades in terms of what the patients present for.

>> DAKOTAH LANE: Great question. In my opinion this took generations to create. The adverse child events. Boarding schools taking away kids from their parents is never a good thing. Then to make them speak different languages is never a good thing. My grandma Dora refused to speak our Lummi language. Stopped giving her traditional names. I got my Indian name from my grandma. Now we're trying to rebuild it. I've been wrestling with ACE scores ever since I started to work with my clinic. It is great to tell you you're going to be depressed and downstream mental health disorders. It is not good at telling us how do we stop it. It goes back to the model that I had earlier with the circle with the medical model to the social construct. This is talked about the previous discussion and right at conception. For us 30% of our babies are exposed not all of them are on MAT treatment. It is all the other things that come with it. More likely if you're addressing housing, which is important. Food and all those other things is just trying to demonstrate to the child that they're valued in a community. That they can take and receive the right nutrients. What we chose in this particular case is the getting better services to those children who have been exposed with the developmental pediatric programs and getting those diagnoses early. The next step is getting ABA therapy to all those families that have those children with developmental delay. Autism. If we can get help to those families we're one step closer. I've come to the conclusion that it took generations to get here. It is going to take another couple of generations to fix it. I'm just trying to put in place the things that will allow my kids, my grandkids to and my cousins grandkids to exceed and have success in today's society. It is a long answer. There is no silver bullet.

>> DEBRA HOURY: I think Ann wants to add quickly to it.

>> ANN MARIE T. SULLIVAN: I don't think there is a bullet but going towards looking at screening in a way and pediatrician's offices. They're going to say it is too much work or what to do and find these things. For example, 1115 waiver that is coming from the fed to New York State. The Department of Health is going to encourage certain kinds of screening in pediatrician's office that identify the problems that lead to the ACE. Now you have to decide what you're going to do about them. It is not easy to decide what you're going to do about them. If there is alcoholism in the home or dad lost their job or mom is depressed. We know that kids are more likely to be depressed. If a mom is depressed. Help her and get her less depressed so that her kid ten years from now won't be depressed. Those kinds of things are starting. If you do it you have to have a plan to find and then you have to work.

What is often there are more served sometimes there are services available that people don't know about and then you need to help them get to them. I think we're beginning to move towards it. Our pediatrician is an enormous amount of time to check what is going on with a kid. They need to look at the world that is happening in the child as well. You got to help somebody. That's why I say put somebody in the office with them to help them do it. That is what we're going towards is paying attention to early methods of screening. You have to pay attention to the screenings that you do is acceptable and tell you what is going on in the community.

>> DEBRA HOURY: We have a resource and can be done in make crow level and policy earned and income tax credit. Paid family leaves RUS ACE and community level mentorship. Curricula and also looking at things like nurse family and home visitation program. Those have been used to reduce ACE. We will go to this microphone and time for one more question after that. We have a hard stop for the President's forum.

>> My name is Claire Wong. I'm a policy center and the division of substance abuse and mental health. My question is for Dr. Sullivan and Dr. Frank. I'm interested in holding payers accountable and holding health plans accountable and also attaching financials incentives for high quality mental health care. What is effective in the feasible levels at the federal and state level.

>> ANN MARIE T. SULLIVAN: First of all, you want to enforce your parity legislation. We're skirted by ensurers for a long time. You go got to work on that. We have a legal force in New York that fights parity violation. We have to put into legislation that pays for school based services. Of commercial and Medicaid. Now you may seem odd that you have to put that in legislation. We found that working with the ensurers didn't get us anymore. That has become real. We forced them to pay the commercial payers for the clinic and paid for two-thirds by commercial payers. Lastly the insurance regulation that you can use. Next year you have to have an appointment for ten days for a mental health visit. There will be sanctions. That is for general visit. Ten days. We all know about waiting list and phantom directors. If you can get your insurance regulators. If you don't follow the rules you have sanctions. We like to negotiate with the insurers. If your negotiations don't work, those are tools that you can use.

>> DEBRA HOURY: We will do one more final question and continue the conversation later at the representation with the panelist. Final question.

>> Thank you Dr. Lane for doing an excellent job. I'm a Navajo nurse midwife. How did you get to design your organization to support your staff to be trauma informed. Often times I found that my coworkers had experienced anxiety and depression and PTSD and don't show signs or having a hard time to get feedback. You talked about hiring the community and people that are in the recovery and further along in the healing. What I found in the type of space is the organizational structures are setup to take care of people that experience trauma and technically we all have. As an organization, often times as a health care providers we look at as taking care of the community but how is the organization taking care of us? Is the organization setup by directional at healing? I would find that to be equitable.

>> DAKOTAH LANE: The short answer is I do training and meeting with them privately if they're having concerns. Both non-tribal and tribal. Of we also have an annual informative training. We go into the community and meet with people. I also developed a long kind of briefly touched on my presentation. You have to start from the founding of this nation and transgressed. We have a long oral history. Not everyone has that. The flip side of that story is my mom is life. I'm a pure product. I have two different stories. I have a story of my grandparents on my dad's side who lost our language because of the boarding schools. I have the boarding story of my mom who immigrated and had all kinds of economic success and having my dad's side to move on to the reservation. I ed this weird. That is my short answer.

>> DEBRA HOURY: Thank you all.

>> HUDA ZOGHBI: It was a great session from the questions. This concludes the program that we have today before the presidential panel. I hope everybody likes the breath of knowledge that we acquired today and starting from the inspiring talk with Dr. Vivek H. Murthy and leave thinking of what culture change we will implement in our little micro environment and build relationships through really environmental and social and economic stressors that do predispose and add to mental illness and through great science and today with about the challenges. What comes from the meeting and everybody that we heard from today and together with the stakeholders and people affected with these disorders must be together more and more to come up with solutions. I think the worse day idea from solutions, this is what I would like to introduce you to now. The final session of today's program is the president's forum. Transformative solution in mental health forthing a future of access and equity, which will be facilitated by the president and the national academy of medicine Dr. Victor J. Dzau and welcome you and turn it over to you Victor.

>> VICTOR J. DZAU: Good afternoon, everyone. All right. Good afternoon. First let me thank Huda Y. Zoghbi. She's put together a wonderful meeting and the three sessions that covered federal surgeon general Vivek H. Murthy wasn't he terrific? Such compassion and sincerity and gave human touch to this whole issue. We're followed by discussion and social drivers and then technology and signs are the emerging advances in the last panel which is terrific on care delivery. I think we recognize this is a big problem. The stats says four of five experience mental health challenges some time in their life. Many of us here can resonate on this. There is a really big unmet need. When you think about the whole scope of things and as you covered today I feel like we need to find and have a group to talk about what are the problems, what are the solutions and how do we move forward. That's what I put together this panel. This forum we started ten years ago. Every single meeting, the theme which we discussed we have an expert leading panel to help us wrap this all up to say where we need to go and what is in the future. In that regard we have six outstanding panelist who is going to tell us about what they do, and what are the challenges or solutions. On the left is Daniel Gillison. CEO of The National Alliance Mental Illness. We have lived experience to tell us the issues that they face.

We have Ann Garland. Professor University of California, San Diego. She is really someone who has the clinical experience and issues of workforce. We are lucky to have Anita Everett director of the Center for Health Services and SAMHSA Administration. Thank you very much for being here Anita. Then we have the representative Congressman Donald Beyer 8th District of Virginia U.S. house representative. Then we have our friend Kathleen Sebelius former governor of Kansas and last K. Ranga Krishnan and former CEO of medical center and former dean of Duke University.

I'm going to do three rounds of education. I'm going to ask the panelist a question and give them three to five minutes and talk about their own point of view and experience to tee up the interview. How to fix this probable and then end with the third round with secretary and what are the big ideas for the future. Then you will let me start with you first. We are so glad you can be here because the voice is so important and telling us other challenges. We heard loot of issues about social drivers. That session on technology and innovation is really exciting. I saw star restaurant. How do you give to everybody the need is needed. The third one is what we tried to talk about what needs to be done and there we are. Tell us about your experience and what your organization does and really what are the challenges facing patients.

>> DANIEL GILLISON: Thank you Dr. Dzau and to everyone that chose a discipline that you're in. You have a why. That is who NAMI is. Who is NAMI? The National Alliance and Mental Illness. Like the National Academy of Medicine that is a 54 years young we are 45 years young. So we advocate, educate, we listen, we lead and we learn and support. We are the largest grass roots in over 650 communities across the country. The U.S. general ended his presentation with love. What love has to do with our work and every one of the people that does the work with us in lived experience is about love. It is about pain into purpose. Across the 650 organizations we provide support groups and programming to communities. We are the D and A in the communities. When you talk about the end point and the justice system and the front end and early intervention and NAMI interacts with that in terms of support services and trying to move the equation forward. In last year it has been 49 thousands deaths by suicide. That is 163 a day. I want to thank congressman Beyer on that. We know that one in two will experience some type of mental health condition during their lifetime. Dr. Vivek H. Murthy talked about the experience of anxiety with parents. 48.1%. We are invested in the body of work to address that. It is difficult to go first. You're looking at your colleagues. You don't want to take more time than you have. Hopefully I'm staying within my time frame. We heard in some of the presentations about the faith based community. It is important because as you think about first responders, in many communities the trusted person that first responder is that faith based leader. Be there Iman or rabbi, it doesn't matter. They are looked at is a the trusted voice. Families go there first to see what is my family navigating and what should I do about it? We know that about 50% of the United States and folks living with mental illness will get care. In communities of color is about 33%. 66% won't get care. How do we change that narrative. That is the body of work that we're involved with. We're involved with face based communities and involved on the front end in early intervention. Youth and young adults. If you look at our demographic we know that we have to get more youth involved in mental health. Dr. Garland with talk about that. NAMI as generated the advocates and leaders. They form and frame our work going form forward. We have a young adult counsel that work with us to do additional work to move the needle forward in terms of what are they seeing and what do they hear and how can we go upstream and do services sooner on them. That is about who we are. In these 650 communities, many of the leaders are volunteers. When I say that I wanted to resonate, it is their pain that they turn into purpose and they are doing the work every day to try and move the needle to make sure that the people that are living in mental illness know the service and connect the dots and dot work for them. Our youth and young adults are doing that as well. That is what NAMI is and doing it in an intentional way and execute where we need to move this needle.

>> VICTOR J. DZAU: Thank you.

[Applause].

>> VICTOR J. DZAU: So thank you for what you do. This is so important. Particularly having a voice and giving patients voices and being able to help the best you can organize this. I happen to know, I talked this morning about a fragmented healthcare system. I happen to know that mental health is facing tons of challenges, right. What I would like and maybe you are a clinical psychologist. You've worked in school and directly with clinical patients. The way I look at it is that its been really a challenge to get access, to get quality of care. We don't have enough in the workforce. People say psychologist. You need lots of others and community health workers you name it. Talk about what you do and how you see the challenge we face.

>> ANN GARLAND: In addition to being a practicing clinical psychologist I've been leading and training programs for providers across different disciplines. Psychology, counseling, marital families. I'm here to talk about the workforce challenges. We do face a very significant workforce shortage. That workforce shortage contributes of course to the unmet need and the difficulties with access that we hear so much about. Our workforce is aging. That is another problem. It is geographically skewed. We know that physicians represent a tiny fraction of the behavioral health workforce. In fact psychologist represent a pretty small fraction of the workforce marital and family therapist and those with a bachelor's degree and mental health workers. There are different name. Community health workers and increasingly as we heard and community health workers and paraprofessionals. We have a vast workforce of different levels of trainings and different disciplines and we really need to expand and diversify cross all those levels of education. I think we need to do a much better job. This is a slightly different and related way and previous panel. Doctor frank talked about matching or need to service deliver. We need to think about workforce resources. We need better triaging. We need to do a much better job of figuring out how to utilize the resources that we have at the level of workforce training and expertise. We know for example, that we have increasing evidence that peer support workers and family support workers and paraprofessional can do absolutely excellent job at encouraging engagement. Engagement and continued engagement in participation. That is distinct from treatment for severe mental illness. That's what I need by triaging and matching workforce skills and workforce training. We need to recruit and retain a new and different workforce. By that I mean. I'm going to speak primarily about the front line workers. Leave psychiatrist and psychology aside and talk about the vast majority of people on the front lines doing the work in community-based clinics where most patients are seen. People are motivated by compassion and empathy and I know this because I read their essays for graduate schools. They rarely mention excitement about scientific discovery. About the use of digital technology and AI and neuroscience. We need to reach out to a new potential workforce. Get them in the pipeline. Students who are interested and STEM and its applications to mental health. You are interested in climate changes and interaction with intersection with mental health. The use of AI et cetera, et cetera.

I feel that -- I'm going to talk more about this in later rounds. We need to scanned expand the petition and people that would not consider a career in mental health before. That one of my goals.

>> VICTOR J. DZAU: Thank you.

[Applause].

>> VICTOR J. DZAU: Anita. You play such an important role. SAMHSA is a government federal agency that help us with many issues talked about. Can you tell everybody a little bit about the high priorities?

>> ANITA EVERETT: Yep. Thank you for selecting this as a problem for you to focus on. It is important and very timely right now. I'm Anita Everett. I am a community psychiatrist. I have a long standing history of working in those spaces. I currently work as the director of mental health services within SAMHSA. It is the lead federal association with the -- we use strategies in public health and services delivery in what we do. The examples of the kinds of ways and services and grants and funding in state mental health authorities and discretionary grants and projects and school based mental health and range of services and start with congress as I'm sure Congressman

Beyer nose and they will allocate to address that problem. One example of a recent product was an arrangement through a national academy and we as a nation can do is make recommendations for us to expanding the number of providers that participate in public payer sources. That is not going to solve the whole problem of the workforce shortage but part of the problem. How we get the full range of providers to function and accept payment in Medicaid and Medicare. We do in the spirit of 3.0 and focus and through Secretaries time with us. It has strategies that were intended to highlight and race up the level in attention to public health itself in entity and advancing public health at large. One of the ways to work is the series of convening that we do. One of the way that it manifest is the policy academies that include gathering groups of people in certain areas. Typically with teens and states in community that want to address certain things. In an example of that is focusing on the rising concerns that we have about black use suicide. It was a fairly stable now and now has been rising. That is an example of the kind of problem that we convene folks addressing. Those are the ways that we do our work.

We were upfunded quite a bit during the COVID era. A lot of our programs got extra funding. That is the nation's concern and recognition particularly among youth.

Some of the problems that I see and think about in SAMHSA. One of the problem of pervasive stigma. Some people describe it as passe. We are aware that stigma is an extreme problem and barrier. When you look at the information that Dr. Frank presented from the national survey of drug use and health. You get the next one and one of the main reasons that people don't seek treatment that are in in need of treatment is stigma. Self-stigma and structural stigma and social that they might experience in tribes or families or family members. One of the significant ways that we look at stigma at SAMHSA is to really have a strong emphasis on the presence people who are living well in recovery. I think it is important to have it known out and about. That is an important aspect and ways that we highlight that problem of stigma. The second problem is the people and matching people. I think we mentioned that. I resonate quite a bit of the concept of matching people what they need when they need it. We still do not have a good system in the United States for that matching at the time of need and during a time of maintenance or during a time of when things are fairly stable in people's lives. We know that they have flair up periods and also long periods of stability when things are going well for a person.

The third thing I want to say a bucket list of problems is lack of a common vision for what things should look like. We've had a history over the last 100 years in the public mental health systems in America itself of incrementalism. We have big sweeps of things years ago and deinstitutionalized people. We have not had a common vision. The term of fragmentation I very resonate with that and used in the new freedom commission which reported one of the main outcomes was the fragmentation that it happened. If you have a person with schizophrenia and you lived in one community you have no guarantee that when you move to a different community that you're going to get the same range of services. Both the entry way to the clinic or whatever entry way and the social determinant related thing. A common vision is not something that we have. I would assert the last thing in my mind is 193 community mental health center services act. I will talk about it later. I think we have two things that are posed to reinforce the concept of a national vision. Both are things that Dr. Sullivan mentioned today. One is the CCBH model and full range of mental illnesses and all age groups and what they can access. It has access requirements and what you have access to and then recovery support service. The other one is related crisis 988 crisis

services system. A call line. That is going to be a game changer in the future. It also has related services. The way we frame that is across three services. What is the person in crisis need? They need someone to talk to or someone to respond. Preferably that is not law enforcement. Third is a place to go. Anyone can do to an emergency room. Like when you call 9-1-1 we prefer individuals to be able to have a place that is crisis receiving centers. As a result of the set aside in the block grants and territories we have related crisis. Those are a good shot of being a game changer. We move forward with a common vision so we can get people what they need when they need it.

>> VICTOR J. DZAU: Thank you.

[Applause].

>> VICTOR J. DZAU: I think you get an idea where these great people are up here. We really talk about underground experience on workforce issues and then of course lived experience and SAMHSA is trying to look at how to drive changes, right in the community. Now of course we are so glad that you are here representative. Congressman Donald Beyer co-chairs the caucus. He security funding for 988 but also help us pass the peer to peer. It is Called Mental Health Support Act. We want to get from you and great from a friend in congress or other friends. How do you see congress and Washington being able to address this issue?

>> CONGRESSMAN DONALD BEYER: Thank you so much to be here and humbled by mental health professionals and and to let slums of congress come along is very nice of you. I wish I could say I was optimistic. Let me retreat to things I'm deeply interested. First is the suicide prevention.

Back in 2015 we were having a sit in the house protesting the gun safety measures. The secretary may remember that. It was my turn to speak at 4:30 in the morning. Everything had been said. People were reciting the names of people who had been killed in recent gun shootings. I thought a meaningful thing is to recite people I known that died by suicide. People were fleeing the house and I realized that once again the incredible stigma about talking about something that takes the lives of almost 50,000 people and moving the wrong direction. Wrong direction at every age category. I tried to make a center piece that I can make on the hill and working with NAMI and suicide groups and suicide prevention and every idea to make a difference on this. My youngest is a gun violence at the Brady campaign. The only one that talks about suicide all day long without being depressed. We worthy about guns in assault weapons in school shootings. The 67% is the suicide that we don't talk. Talking about stigma is so important to get rid of that. In the newspaper they don't tell you why people die. They know it is a suicide and people don't want to talk about it. Later we talk about solutions. I think it is a very important place to go. The second big thing that concerns me is the epidemic of anxiety and depression. Suicide and ideation of young people. Many causes from the COVID crisis to the flux in the world and social media. I don't know about causes. I do know that we're sorely equipped to deal about it. You talked about health care professionals. We will have groups of high school counselors begging to help. They have 800 to 1 to 1200 type ratios. SAMHSA or CDC. 2021, 22% of high school kids thought about dying by suicide. In the same suicide 60% of high school girls had intense hopelessness of despair and made a suicide plan. There is lots of things that we can do and not doing them yet. The third thing is talk about stigma. My oldest got hit with schizophrenia. Now 30 years ago. One of the things that I have seen is how incredibly broken our system is. Our jail population is down a lot. We have little serious crimes. Two-thirds of our inmates are there with mental illness. Two-thirds. 600,000

schizophrenias in jail and 600,000 on the street. The last -- ened park is all fenced off. The last time was with the gate patrol and salvation army in Christmas. I guarantee you that almost everyone of them has mental health crisis. My son has been evicted in every hotel and motel in Virginia. He goes to the state and says what do you have in terms of institutional care. Only for forensic patients. Unless he has killed patients or violent we have no room and overcrowded. You probably saw the Washington Post in these last couple of days. Or go to private pay for 200 a month. As a society we're not close to dealing with the millions of people with serious organic mental illness and we don't know what to do with them. He is now the court appointed attorney and primary goal is that he is as free as quickly as possible. They will make sure that he goes voluntarily. I'm sorry to be personal about it. If we're talking about mental health this is a deep issue. With that I yield back.

>> VICTOR J. DZAU: Thank you very much.

[Applause].

>> VICTOR J. DZAU: Part of the reason that we have you here and others is to think about solutions. We're counting on you. Secretary Kathleen Sebelius. You work with HHS and Obama Administration. If we look at your extensive experience from state to federal and looking at the ACA just give us how we achieve that balance from the levels of decision making and policy making and legislation that can help us get there.

>> KATHLEEN SEBELIUS: First of all, thank you Dr. Dzau for making this the president's forum. I have to give a shout out to some HHS folks present. Some great leaders and alums. Spectacular work is being done every day. I want to mention some things that you didn't mention. I was in the state legislature in the late 80s in Kansas. Like legislatures all over the country we had a mental health reform movement led by a governor at that time whose goal was to shut town the major state institutes and have people in the least restrictive environment. That was seen as the advancement and way that was really important for states to go. Kansas passed laws and bills and the money would follow the patient. That second part never happened, right. The state institutions were all closed down. That was Chapter 1. Chapter 2 was then hospitals and others who were running emergency care facilities you could at least particularly parents who had a child in crisis could find an emergency department within mental health bed. Those are all gone. I think we at the -- in that course of time from the mid to late 80s until today had a series of what were supposed to be reforms that are miserable failures. So people were living under bridges and jails and various places that really the core issue is serious mental illness or temporary crisis that could be solved if there was appropriate intervention. I think in some ways to deal with today we really have to deal with that arch that has not been a great arc in America. While COVID exaggerated some of the trends. The trends that congressman has talked about, about you know youth and children's mental health. The trends were going in the wrong direction well before COVID. COVID super charged it and accelerated what was already in place. What I think we still haven't dealt with accurately and emotionally is the trauma that came from COVID itself and particularly the trauma of children. When we talk about a million deaths, those are caregivers and grandmothers and neighbors and friends and children didn't have an opportunity to say goodbye and didn't have an opportunity to grief and often created even more instability in lives. I think we're going to be a good generation dealing with some of that. I don't hear a lot of conversation about that and really an

attempt to address that additional stress. Clearly equity is a key factor in all of this. I'm struck by the fact that a lot of conversation of whether it is Ann or the NAMI folks that do incredibly work on the ground or SAMHSA is doing, the language is similar to physical health conditions. We know that those in the least resource areas have the most likelihood to be affected with social drivers on health. We know that low-income folks have less access to physical health providers. The same is exactly true with mental health and accelerated with the facts that folks in those neighborhoods are subject to more risk and violence and gun violence and suicide and whatever that I think we have to deal with. Another part of my life Dr. Dzau, I don't know, I'm old enough had a lot of the chapters. I was an insurance commissioner. We have to call them out to enforce the law. Parity. The government doesn't enforce the law. If they are not enforcing the law they should be sued by the attorney general or a citizens group or others. Parity was passed in 2008 and updated in 2020. Their new rules put together in 2023 that are able to be viewed and supposed to be implemented in 2025. I will tell you that is a starting gun. 2025, which is just around the corner, those new rules, if they are not put in place you need to go after insurance commissioners in after state in this country. There is an association that you should be familiar with. The national Association of Insurance Commissioners. They need to get a whole lot more attention than they have gotten. It is a simply immoral and illegal that the parity law is not enforced. That is the group that is charged with enforcement. An insurance company is not following the law, they can pull their license. They have the authority to do that. The federal does not. If they don't have adequate networks in a state the insurance license can be pulled. It is a group that has been under the radar screen on parity for a long time. I got to tell you a big spotlight has to shine on them and with the new rules that are supposed to come into effect on January 2025 is a great type bring them to task. We talked about workforce and I look forward to the rest of the discussions. I think that lots of things that the Federal Government can drive to the state level. The state has to be responsible for and one of them is the Parity Law.

>> VICTOR J. DZAU: Thank you very much.

[Applause].

>> VICTOR J. DZAU: So Ranga you are a psychiatrist. You ran a psychiatry service. You ran a medical center. You've been involved with many different ways about mental health and wellbeing. You are a scientist. I hear different perspectives of providers from governments. Give us little kind of perspective how you would want to see challenges -- how you would want them to run.

>> K. RANGA KRISHNAN: I actually had a chance to work on one side and other side in more than one location. When you are hands-on and you're responsible and accountable it makes you think very, very differently. It is different from a theoretical construct. So I started off working in a state hospital in community health centers at a time when state hospitals were funded. Community health centers were funded and never properly funded and always struggled. I was in a academic place and interested in the clinical and research side. We could fund the research well in NIH, but the clinical side was always a struggle. The struggle had to do with payment systems. The struggle had to do with the fact that mental health is not really in tune to just having services paid for piecemeal. It is a transactional based system, which is our entire healthcare system. As it current stands, a major of it, it is changing. As you're trying to figure out, how do I bill, collect, who can I see, who can I not see and the group of patients can be in my system and which insurance will pay

me? Which one will pay me. By the way, it is an infinite number of subplans and insurance companies. We will spend $0.25 on the dollar and $0.25 on the dollar just getting your insurance. Literally it made more sense to do it for free. It did not make much sense. That is something I learned on the service side back in Duke. We partnered with the state system and figured out ways to deliver services which worked. Think about this as trying to solve problems. It wasn't like solving upfront. We deinstitutionalized. We said we will do X and didn't do X. What is the net result? We got what we said we would not pay for. That is exactly what happened. This is almost 50 years since that movement started in the 60s, 70s. That is one issue. There is another perspective. I'm going to go divergent periodically. I will go back to Dr. Frank's presentation. You were coming in on clear issues that we have to deal with as a society. The statistics are grim. We don't hear the stories as much. It is only when you hear the stories that it resonates. Statistics and big numbers they fade. That is now a human brains are designed not to focus so much on numbers. Big number, yes. It is a big number. It is when stories visually seem it resonates really well. A single story resonates a lot more than these numbers. One of the things that we touched on and don't remember. It is part jet lag. One of the things that we really don't talk about, but we have to. It is what happened in the last 15 years? What's happened in the last 15 years is everyone one of us has this device in our hand. We cannot live without it. We spend more time on it than talking to anybody in the world. We look at it even when we don't have to look at it. We feel that if it doesn't give us something new something is wrong. We are in the stage where we are now adapting to a system that has changed how we think. We are a collective thinking and a collective behavioral has changed. By the way, not a new term. Herbert Simon talked about it. It consumes most of our time and attention, which means most of our money. Which means it is a bad investment. Why does it get us engaged? It is personalizing your engagement every single second. We don't do it. You want patients to come back and see you regularly? It is hard work. The attrition rates for patient is very high. Something to keep in mind is engagement to scale. Those companies that run the attention economy know how to engage you. Without that we are continuously going to have a problem. The last space that I want to say is that we have made enormous advancement of how the brain works and enormous understanding of social factors that play a role in this. We also have experimental done in certain circumstances things that work. We optimized this.

If you are a provider system, you are wanting to make sure that you don't go under. You have to balance your books. If you are a provider you are under a lot of stress and manage the volume of patients and amounts of records that you are to keep. Everything else and everything is increased, but the workload is increased and the productivity has not changed. Something has to be addressed.

I just want to make one more comment. The attention economy is something that we have to look at. I think it is going to accelerate in the next year or two. I don't think it is going not going to be legislation. It is us. It is not not U.S. phenomenon. I work for the government of Singapore. It is there. Something that we have to address globally. We have to talk about it fast. We talk about AI. Generative AI these are chatbots with a face and image on it. These are building relationships with Avatars. With most connected time in the history and most isolated in our entire history as a human species. We're adapting at a pace that we are not designed to do. We have issues to deal with but I will stop.

>> VICTOR J. DZAU: Okay. Okay.

[Applause].

>> VICTOR J. DZAU: All right. Listening to all of you got me depressed. The whole meaning of this session is transformative solutions. The next round I would like for each one of you say what would you want to do in your domain to change and, you know, either you talk about a national mission. I say we need a national plan. I said earlier this morning in my remark as presidency our research needs a coordinated plan together. We have to survive and do the best we can and missing the whole system together. Why don't we start with Daniel, what are your thoughts?

>> DANIEL GILLISON: One of our dreams and visions is working in collaboration. We have to come together. It is that African proverb if you want to go fast go alone. If you want to go far go together. We have to do the work in terms of health and mental health. An example of that is 988. We have an initiative within 988 and started called reimagine crisis response. We brought together over 54 different partners that are part of that quilt to work with us and reimagining crisis response. We've had 10,000 calls. I give you a lived experience. You gave me the floor and tell a little bit about yourself. Those three letters don't mean anything. Being a parent, being an uncle, being a son. As a parent I get calls frequently. A dad was on the airport for a meeting and desperate. His wife was going to call 9-1-1. She was having a crisis. He had been a part of ask the expert event that we had. A Webinar. He called me and said help. We called and he called 988. His daughter stayed on that call with the crisis certified crisis counselor for an hour and circumvented what could be the outcome. That is the reality and in terms of working together.

The other part of what Secretary Sebelius said. Parity. We have to insuspect what we expect. I would love to be more aggressive to what we need to happen. We have people going out of network three and a half times more frequently. When they can get the service they have to pay out of pocket. Once they exhaust their funding, they stop treatment. I would like to see the work on that as well.

The other thing that I would say is that there is a tsunami of trauma during COVID with our young people. If we don't step up to that shame on us from a standpoint. We did a survey of teens. 12 to 17. One in six experienced negative emotions. They do not start the conversation because of stigma. We have to address that stigma. This right here helps with that. We need to keep these conversations going.

>> VICTOR J. DZAU: Thank you. All right. Your point is collaboration.

>> DANIEL GILLISON: Collaboration. When COVID started myself and a colleague decided that we would convene a group of CEOs in a mental health space on a Saturday. We now have 15 of those CEOs since the start of COVID and meet every two weeks to change the outcome. We are constructing that quilt. It is called a CEO alliance.

>> VICTOR J. DZAU: Got it. Daniel, I can't help thinking about those who are not CEOs, those who don't have access easily and marginalized population earlier structural racism. How do we make sure that those are collaboration available to everyone.

>> DANIEL GILLISON: We say nothing without you. You are not alone. We have to go to where the community is. We are going to HBCU and black colleges in university. We're working with the Divine Nine. Black African American sororities and fraternities. Some of them are going work on campuses. I was as a faith based initiative at Georgia Tech. They're doing incredible work there. As a result of a grant that we gave them through that work. We're trying to get the word out and go to where the people are with a standpoint of communities and understand who we are and what we do. The fact that we need to reduce the stigma and start talking about the neck up and down. From that standpoint we will talk about diabetes. We will talk about high blood pressure. We need to try and spread.

>> VICTOR J. DZAU: You certainly make a really compelling case at behavioral health workforce is much broader. I even think about in high schools and in schools counselors and people were needed to be part of this whole thing, right. Talk to us to make sure that people enter the field and appropriately compensated and supported and have the spectrum of skill sets, including the use of digital technology and you name it.

>> ANN GARLAND: Thank you. In terms of competition, there is no getting around the fact that unfortunately we need to increase competition for all disciplines and all levels of training in the mental health workforce. In my county, in San Diego county the average wage for a fast food worker is higher than the average wage for a community mental health worker. That is demoralizing. I'm not talking about licensed providers, but I am talking about the front line workers. These are workers that have great responsibility in taking care of kids in particular. My world is kids. I think in that world. These are people to help kids learn to manage conflict and helping kids to learn how to regulate their emotions. These are the front line people and their wages are lower than fast food workers. That's a tragedy in my opinion. We know that burn out is a huge problem in terms of retaining those that are invested in training. Burn out rates for a mental health positions are 30 and 50% higher. That is compared to 10% in other professions. That is a huge discrepancy there. We know that we need to invest more in training. Educational cost are high in graduate school to become a professional. I think that the part that sometimes gets lost and where we lose some people in the pipeline is they're actually significant cost after graduation. Across all the disciplines and social work and counseling and psychology et cetera, students need, even when they get their degree they need to get supervised hours of practice in the community and pass exams and so forth to become licensed. In that period of time it could be very expensive and expensive for organizations, for nonprofit clinics in communities. They want to bring those people in. They're not supported for the cost of supervision. CMS pays for MD resident and interns to provide care but not for nonphysicians. There is a big gap there in the post-graduate training that we need to invest in for the workforce.

It is a major limiting factors. Agencies can only have a few trainees because they don't have the resources to provide supervision. This theme of collaboration and quilt making, I love it. It is so important too in terms of your question about how do we inspire a new generation of health workers. How do we -- your theme of your meeting bridging science, practice, policy. How do we bring in providers that want to research and advocates and life experience. Dr. Wells talked about models and research practice partnership and communities. There are amazing examples like he highlighted. That is more rare than many of us would hope. It is historically in mental health in particular, the silos between those who are doing the research and those who are delivering care,

never the twain shall meet. We have expectations. Too often there is no cross communication. There is some antagonism. We need to breakdown those barriers and the examples were so great from Dr. Wells and others who are doing this work. It needs to happen so much earlier. Kids in high school need to be motivated even if they don't want to become researchers that is fine. We need for them to be the translators of research to practice. We need for them to be the bridge builders to really breakdown these silos that have been created and are being reinforced sometimes unfortunately.

>> VICTOR J. DZAU: Thank you very much.

Anita you talk about a national mission. Is it time? How do we do this?

>> ANITA EVERETT: Yes. It is time. Stigma is part of the problem historical. We talk sometimes in my agency about we remembering days past in would it be in the dialogue at all with medicines and talks and conversation of what happened there. Now it feels like progressively we're in the room and at the tame. Yes. I think now is the time. I do think we had a problem with creating a national vision. We've been to advancements. As Secretary Sebelius mentioned, without understanding all the public mental health financing is really important because the states have a key role. It is not the same for health provision. It is different because of the association with Medicaid funding and the way and key role that Medicaid plays what types of services are delivered, particularly at the part of spectrum and that is really important. This notion of a common vision is something I don't believe we have. Over year you see the state that is forming community treatment and state of homelessness and working on supportive housing and housing first models. The state that is identified in services. This is part of the fragmentation happens years and years. This notion that I love so much is a common vision. We saw and or seen in New York is a great example. You have access requirement and time of first call within ten days. That is a standard for a accreditation services and crisis receiving services and required component. That means individuals that identify. You are to be seen immediately within several hours. Quality standards. Once you're in the box of treatment. My friend calls it the black box of treatment. Once you are there it has quality standards. It does say you have to have therapist and treatment planning and coordinated across and continuity. It also required service to veterans, which is interesting because we prefer our veterans to be seen at a VA or live far enough away that it is not accessible for them to receive ongoing care as a part of the VA.

Once you're in that box of treatment it requires and has a number of those kinds of requirements. It has a set of recovery support services. For those who need it and typically the more severe end of the spectrum has recovery support services and housing for instance. All those parts are there in that design of CCBHC and proactive components. If an individual gets to a point where they don't need services or engage in services the CCBHC model goes after them and say it has been a while since you've come into treatment. It is not a perfect system and is a design that creates a national standard. It has 10 now and 20 states the payment model that Dr. Sullivan talks about. Not all CCBH has that cost payment. A lot of states are resistant to that. It does cost more but makesed services much more accessible. One of my favorite quotes is a service system that became a cost payment arrangement. The woman that was in charge because of the CCBH payment we can pay our providers, we're not restricted to provide services only based what we can

afford or based on what our people really need to have. That would be with a needs assessment and based on community needs and also based on what the market value is of hiring an LCSW.

They were able to hire and actual recruit from out of state because of the cost based payment. Those are design elements and SAMHSA having a role and designer start upset. Our grant money is for initiation of services and then have a sustainment plan and working on the services that are acquired. It is my vision and how it works and to have those funds to help with capital funds and startup a particular service and I think that is important. One other thing that I have to say is when we were born is SAMHSA was a 32 agency. We were carved out of NIMH and sorting out what the Federal Government should have and the states that and traditional been very important and really because of the role and support of institutions. One thing that is really important about that role of the states is releasing that exists and is really an important feature. States are important. I guess I will end with that. States are important with funding.

>> VICTOR J. DZAU: We know that.

>> ANITA EVERETT: There are things that the Federal Government can do. One of our opportunities in SAMHSA is design concept putting that out to the extent we can for both the CCBHs and the 988.

>> VICTOR J. DZAU: Perfect segue to Congressman Congressman Donald Beyer.

>> CONGRESSMAN DONALD BEYER: I love your vision. Let me do the opposite and give you a bunch of pieces. First 988 is a wonderful success. It is 7 million calls are expected this year. The 13 seconds is the latest I have heard. Down from a minute and a half to two minutes to respond. The call centers. We spend in the afternoon in lifeline center. The calls that don't get answered. We need to tell the whole world about it. If you are just to educate the public and about 988 and how you talk to your friends and family and coworkers about suicide. It is different when I was a kid and don't talk about it because you might give them an idea. We have the used awareness and giving money to state and local governments to remove and protect those physical aids for -- for example, the nets on the bridges. Or the telephone pole that has been run into. The local police know where people die by suicide and address that. Artificial intelligence is a huge piece. You veterans. I think the best artificial intelligence research into why people are -- what are the warning signs about something who is at risk? The two three away facts, factoids that somebody that died in suicide 50% will have had an emergency room visit in the previous greater percentage than that will have a healthcare visit in the previous 90 days. All of a sudden they're deep learning machines and something is at risk. Same with using AI to train the lifeline counselors. You don't have to go through weekend after weekend. You can have those models. Using large language models to teach people to be lifeline counselors quickly. Diagnoses. Then the peer to peer counseling and Dr. Dzau and we have John and champions of the house trying to empower people to help each other. I'm mensing my son. More is changing the state law. You have to be an imminent danger to yourself and others that day. If you threatened to kill someone yesterday it doesn't help. I am the fan of the treatment advocacy center. It is really important to do. More research. Just recently announced the first new schizophrenia drug in 30 years.

Let me just put this all. My congressional hat on. Limits the budget for 1% increase. We're looking at a fiscal place where we won a lot more money and not going to be any money there. That is before the current promises.

>> VICTOR J. DZAU: Thank you. I'm going to ask Ranga and put it all together to say what are the things we need to go forward. Maybe we will start with Ranga first to tell us about the five big ideas that have developed in Aspen. We heard about technology and drugs.

>> K. RANGA KRISHNAN: Let me try to take a look at the entirety and get perspectives of thoughts going forward. First I think the research is slowly beginning to payoff. I do think the progress is happening and building better treatment and evidence for therapy. That is the big gap and we have to figure out how to address it. Some difficult challenges that we have to face head on. It is not about money. Part of the things that we don't think about it is how we spend the money matters a lot. I can give you examples of what we've tried to do within the constraints of how Medicaid works. The key here is we have optimized each component to the point where that component does well, but the big one does much poorly. The estimate from mental illness and effect on medical cost for the Miliman report is 400 billion a year. That's a lot of money. You should be able to do everything we're talking about. Even take 20% that is a fair amount. Some of it is insurance because of the way it is optimized in insurance. Some of it is transaction based care. We are doing experiments within certain states. I'm not going to get into details. The sense of it comes to the New York State is talk being. We forget about housing. It is not just a determinant. It is a cycle. You have to solve that cycle. It isn't going to go. It costs you a lot more by not solving it. That is something we can do. Second, in the context of patients coming in to a medical center and we're having a rush we were screening everybody when they walk in on day one. If you screen them 25 to 30% have either depression, substance use or alcohol. What we do is start a treatment plan by day one. Cuts the day of length of stay. Cuts the whole day by one or more. Possibly to redo the current system has created problems that we can solve on the ground, but if you're a CEO or CFO that is not what we want to do. We rather not think through all these things. You have issues around labor and workforce shortage and burn out in health care is a real problem. We're asking more people to do, fewer people to do more things. Not going to work. I think there is a need to rethink and redesign. We cannot think of it as a medical issue and health issue. We cannot think of it as a social issue. If we do it separately we can build better treatment and more therapist. Ten years from now it will be the same as yesterday. It is not going to solve it. To do it, I think Richard was bringing up a and talking about housing. Some of it is what rules and all those. If you have to have it you have to think, how does housing fit right upfront. How does community health systems fit? How do I build it all together? It is a reframing and restructuring and reassessing. You have to do it as a local level unfortunately. I'm involved at a local level. Within a year we're seeing big impacts without spending more money. I get the point. There is no more money to spend. We have to reconfigure. Think through all the barriers. Federal level is plenty. Insurance level there is plenty. State and regulatory is plenty. With don't have the money to throw more money. AM has to pull together a group to say how to do it. Probably with SAMHSA. I think the problem is clear. You are seeing the bits of the solution all day long. What they're not talking about is how do we put it together without increasing the cost. By the way, if you look at the total cost of care and deal with mental health your TCOC should go down.

>> VICTOR J. DZAU: Assuming the sufficient funding, the fragmentation and efficiency and the whole system there is a lot more ways for non-efficiency. I would like to hear from are secretary Sebelius. She co-chairs and Aspen Health Strategy Group. We had a meeting this summer and spend thinking about this issue and came up with and Kathleen to share those ideas with us.

>> KATHLEEN SEBELIUS: First of all, I want to recognize I'm the reporter and these are not by ideas. I want to shout out that Ellen was here and editor Ruth Kats is here. Executive Director of the health medicine and society division of Aspen. Ann Garland is an expert and Dr. Dzau is a member of the group. This is a unique presentation. One of the things that we've been able to do is focus on one idea a year and try to get experts to do deep dives into the area and our membership group is some health care providers CEO and policymakers and economist. People who are coming to health issues from a variety of lenses. Not try to be competitive with congress. The goal is not to endorse bills that are in play. What are some things that could be implemented potentially to look at this.

Our focus is adolescent and child crisis in mental health. I would say a couple of things in framing the issue and it has to start with us recognizing that it is a crisis. The surgeon general called it out and others have called it out. Health providers have to call it all out. Not mental health but health provider. This is a crisis that I think we need to deal with. The health sector is uniquely positioned to lead that you have to start with the youngest children at the most risk and solve with a lot of the population. Second kind of theme that emerges is we have to get real definition and then promotion of evidence-based strategies. SAMHSA has done a brilliant job in a lot of this but I'm becoming more and more believer with the money comes evidence-based strategies. We found out with the affordable care act that money is a big incentive. When you said to people you actually can qualify for insurance benefits if you have a defined health plan that meets these essentially health benefits and never been defined before in specific terms. Mental health needs that same set of strategies. What are the definitions of an adequate mental health program. What does an intervention look like? Clearly family and community-based healing tools are important. The recognition that this has to be much broader than the health communities with schools and community groups.

The five ideas that we talked about are first we have to talk about prioritizing prevention. Both and Ann's terms she was a brilliant educator in a lot of this. Primary prevention. Screen at the earliest signs of trauma. You intervene as early as possible. Secondary try to prevent to escalate further. Rather than waiting for somebody in the emergency room or jail, the earlier the intervention can happen and the more the focus is on prevention is important. Secondly is access. We talked about it in all sorts of ways is important. Particularly access to children who are transportation dependent and locked into situations that are high risk and don't have any way to get out of that situation. Looking at ways to improve that access and again that is a lot of place based services. We know that children are in schools and daycare centers. How to equip the schools. I don't know about the congressman you talked a lot about suicide and gun prevention. The element of money we spent to putting armed officers in schools and nurses and counselors and mental health training and people that can spot early intervention. I would say there is money there and I know where to get some of it could actually be spent on -- if we want to keep kids safe and healthy that is a good way to do it. High quality and evidence-based treatment. Over and over again. It is celebrated that is not the protocol. And again, that is not terribly different than physical medicine and the known protocol is not followed on a regular basis by providers. Money from the Federal Government manages to solve that. If you say primary care Doc you get additional resources if you do these preventive measures and screen for cancer and if -- we should be doing for mental health. Pediatricians. I'm the grand parent of five lovely grandchildren. I can tell you my daughter in law is

really my daughter in law and son are trying to follow the protocols of foods and screen time. I asked them the other day when putting together notes to this. What does your pediatrician talk to you about signs that your kid may be having trouble? What are you told to look out for? I know growth measures and you know what a toddler should do at age one. Those kinds of screenings should be widely available to parents and trying to do their best. Particularly I know home visitation is not nearly employed often enough. Having high quality standards and government support that is driven through the states because a lot of the SAMHSA and grants come to the state level and down to the community and local level. Again, as a former governor and legislative I didn't like when the Federal Government told us what to do, but frankly you need to tell states what to do. Just say it. It works. If the money is tied to having programs on the local level and putting a table at the local levels where people have to sit downT happens. If it is not told, it will and driving that and government support.

Then this is the most interesting and I can't wait until I'm giving you sort of the cliff notes. The document is not ready and finalized. We have the most rebust and interesting discussion about technology and about both warning and technology and screen time and may negatively affect particularly young people's mental health and adult's mental health. Online other hand technology can be impactful in a impactful beneficial way. Telehealth gives access to people more mental health services that they cannot possibly have otherwise. We talked about meeting at clearly house for digital therapy. Somebody that is looking for a star program or a good housekeeping stamp of approving. How do people disconcern what works and doesn't work and beneficial and standards that regulators have to pay much more attention. All due difference to my congressional colleague to my left. Technology is the only industry in this country that has no regulatory rules at all. None. Zero. Zip. Some of the richest people in the country are making rules for the rest of us and people are backing away saying we can't get there and stop it. I just beg you. Please dive in man. I think it leaves people trying to figure out this very complicated world on their own. I think we really need to tackle it. These can be implemented at a local level fairly quickly and encourage and hopefully can be embraced at a federal level. Our report will be probably ready and finalized towards the end of the year and widely available in the Aspen website. We hope it adds a little bit to the conversation and not specific legislation. It doesn't have to have much of this doesn't really require new funding. It is actually redirection of some of the funding that is out there and hopefully can add to this robust conversation. Again, thank you Dr. Dzau for focusing the academy on this very important topic.

>> VICTOR J. DZAU: Well, listen we've had a long and extremely productive day. I will say this last panel exemplifies the passion and commitment of people finding solutions together. I heard a series of really good suggestions. How we can work together towards this. I do want to end this meeting on a high note, which is you heard six experts. All of you want to do better than where we are today. Many panelist brought so many different ideas. This panel, thank you very much. Has been able to bring together and the last ideas put forward by Sebelius. We've had a long day. We won't have a Q&A. I thank you for attending all day. Thank you.

[Applause]