

## EVIDENCE MOBILIZATION ACTION COLLABORATIVE SUMMER WEBINAR

July 27, 2020 – 10am ET – 1:45pm ET

### Unperfected Transcript

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MICHAEL MCGINNIS

I'm Michael McGinnis. The Executive Officer of the National Academy of Medicine and it's my distinct pleasure and privilege to welcome you all to this National Academy of Medicine meeting of our evidence mobilization action collaborative, which is going to focus on the issues of evidence of development generation and use during the COVID-19 crisis for the ov

Leadership Consortium for a value and science driven health system  
develop a continuous learning health system. And I'm going to come  
I just want to offer thanks to all of you for tuning in to the session today  
and recurrence, who I will introduce in just a moment, but who  
speakers, a remarkable set of speakers, along with a superb staff  
and Faisa Gebre Noor Ahmed and others on staff to pull together

collaborative. I'm going to just give you a brief contextual overview of the  
under which the collaborative works and then turn it over to our co  
facilitator. I mentioned that the NAM and leadership consortium, which is a  
cross-sectoral effort around the nation has been working under the common  
goal of a learning health system, the definition of a learning health system which has  
been developed by the consortium. Is that a learning health care system is wondering  
about the definition and culture. Remember those four because we'll come back to them  
later. We're focused on innovation and equity with best practices seamlessly  
integrated into the care experience. We have the technology and the  
data and we're collectively working to marshal the societal commitment to  
improve the health of the nation.

Leadership consortium, we focused on increasing understanding about  
the kinds of issues that need to be engaged. If we're  
going to enter into each of those are I'm just going to say that  
the report dives into various aspects of a learning health system published  
in the series. And the evidence mobilization action collaborative  
is the way to the kinds of issues that need to be engaged. If we're

that period of time. The anchor principles that guide health system  
development of you on Who have joined us today are familiar with the path  
of the 21st century, published by the Institute of Medicine. Now, the National

Academy of Medicine on crossing the quality chasm and to err is human. The six anchor principles identified as important for health system performance at that time, largely health care system performance were services that are patient centered safe, effective equitable efficient and timely, we have evolved through the work of the Of the consortium and the learning health system series so that we have added to personal safe, effective equitable efficient and accessible the notions of transparency at activity and security, and I mentioned those because Over the course of the work of the consortium.

The activities have evolved around four domains evidence. We're going to be discussing today and we'll come back to the strategy there and just a moment. The Digital Health domain. The financing domain and the culture domain and those these anchor principles map onto each of those domains and provide guidance to the stakeholder actors and organizations in each of the domains. Next slide please.

Today's session. Is an important example of what we in the National Academy medicine leadership consortium are undertaking In order to draw to the strength of our multiple sector representation and assessing the impact of the COVID-19 pandemic. On each of the major sectors that are represented nine major sectors represented on the consortium. And seeking to in those assessments learn lessons that can then be applied to broad health system transformation that's all I'm going to say about the context of the broader context for today's Meeting in the in the work of the evidence mobilization action collaborative

I'd like now to I'll come back to this specific strategy around evidence in just a bit. But I want now first to introduce rich Platt of Harvard University and recruits of Medtronic the CO chairs of the action collaborative and turn it over to them to get us started.

RICHARD PLATT

So you can see my former self on the on the slide here. Rick has held up better than I have in that regard. But we're both delighted to be part of today's session as Michael said our, our collaborative remit has been to focus on the fact that, despite Our being in the midst of the greatest wave of Research in in our lifetimes, the knowledge gap is actually growing the number of things for which we either don't know the right answer or don't know how to implement the right answer is, is growing even faster. And so that's broadly in broad strokes. That's the challenge that our collaborative is trying to deal with and our hope for a learning health system. The COVID-19 epidemic has created an opportunity, in

so five lead presentations with discussions to follow to follow each of them. And just to just to review the bidding. It's Ashish first Howard second Carlos third deitram Fourth, and an Amy to follow up and then we'll have a summary discussion.

Rick will talk with us about the logistics of how to make this into a conversation that could involve As many of the 323 of us who are on this. Webinar as possible, Rick.

RICHARD KUNTZ

Thanks rich and so as rich said I'm cover a few of the housekeeping issues. So for this meeting. After each presentation will have an opportunity to answer your questions. So speakers vs. You turn your video on when you're presenting and remember to keep yourself muted when you're not talking, they're the only ones can be muted unmuted. Will start by some pre selected prepared questions for the speakers, the time permits, will be able to answer questions that are generated from the audience. And if you're watching and one ask a question, please go ahead and type in your question into the Q & A located in the controls of the bottom of your screen on the zoom platform. And that's going to be in the chat box, as I understand, please include your name, organization, and if applicable. If you want the question direct the tours and finally according and a copy of this presentation will be available to view after the event is done so. On the screen or some other issues related to zoom instructions which I won't read through that they have covered most of them, but this is a typical zoom call, which I think most of us are familiar with. So With that, I'll turn it back over to Michael to introduce the first session.

MICHAEL MCGINNIS

Thank you very much, Rick and rich In introducing this first session. I'm actually speaking for Rick and rich who and fashion, the Structure, along with their other co leads From the other collaborative. The other three collaborative so working as part of the leadership consortium. And I'm going to run through a series, I think, three or four quick slides that will give you. First, a sense of the overall structure of operation of each of the collaborative Then a Review of the issues that are engaged in some fashion or another by the evidence mobilization action collabora

understanding at some level, the extent to which society is progressing in each of these domains and then drills down with specificity on one or another of the areas of for direct project involvement. Next slide please.

noted earlier, the anchor principles that were Used across all of the collaborative and here you see the mapping of the anchor principles for stewards of evidence generation and use That is to say, organizations and individuals developing interpreting and applying evidence and a learning health system. Are responsible for ensuring that those activities are personal that services are assessed and delivered and tailored to circumstances and individual goals, they're safe. Health services and research contain safeguards against unintended harm, they're effective evidence is generated are applied using objective standards to eliminate bias. They are efficient evidence is provided in content form and manner appropriate to need they're accessible. relevant evidence is available at the point of service. They're transparent. Evidences transparent as to source strengthen applicability there adaptive evidence protocols are continuously assessed for and responsive to new information and they're secure personal health data are securely tracked reported and stored

So those are the anchor principles Guiding the work of the evidence mobilization action collaborative final slide please, the collaborative and also developing a series of dashboard indicators to Identify the level of progress in society. Around the generation and use of evidence. That is needed in real time and the three that are currently in scope relate to the percent of standardized national guidelines that are supported by high quality evidence They relate to the percent of healthcare delivered and reimbursed, which is supported by high quality evidence And they relate to the percent of individuals endorsing protected use of their personal health data for evidence generation using an understandable uniform consent vehicle. With that, I'd like to

Thank you for your indulgence of that quick strategic overview of the work of the collaborative and thanks to our two co chairs for stewarding the progress of the collaborative That has resulted in what I've just presented to you. And now, Rick. I'll turn it back to you to introduce the first session.

RICHARD KUNTZ

Thanks Michael. We're about 10 minutes ahead of schedule here. So the speakers can have a little bit longer time. I just want to make another kind of housekeeping comment here about the presentations are engaging that the presenters will speak for about eight to 10 minutes each. And other speakers, if you can remain on muted during your presentation muted during when you're off. That'd be helpful. And the staff will advance the slides, the speaker just basically say next in the slides ago forward. Afterwards will then go ahead with the presentation of the questions.

One minute before the end of eight to 10 minutes you'll get a chat from our staff, saying that you've got about a minute left in your presentation. Again, I think we're a little bit early. So I think this first session can go a little longer than needs to them as needed so that It's my pleasure to introduce Dr. Ashish Jha, professor of global health at Harvard th Chan School public health and Director of the Harvard Global Health Institute.

ASHISH JHA

So good morning. I am online. Can everybody hear me okay Great. Fabulous. So I'm excited to get started and I'm excited to get started a little early. And what I'm going to do. I don't have slides. I want to speak. for about eight to 10 minutes on this issue of evidence for action in the context of this pandemic. So if we start with where we are as a country. It is I think without a doubt clear that we have the worst pandemic

response of possibly any country in the world and there may be a couple that are rivaling us, but we are certainly among the very, very worst. Um, there's a whole host of reasons why we're doing as badly as we are, but I believe very strongly, and I'll try to lay out the case for it. That fundamental one of the reasons why we are so far beyond where we ought to be is the lack of high quality evidence and data and the speed with which it has arrived has been consistently too slow. So the issues around evidence and data and how it has hampered action is critical. And the other reason which is related is that we are also dealing as a nation with a torrent of misinformation. And when you have a vacuum of high quality information, I think it creates an opportunity for misinformation to show up and to take root. And so if I think about things that I would want to improve in our pandemic.

If we could go back to January. It's actually quite a list of things I would do differently. But one of the top things would be to think differently about what kind of evidence and data we've had for fighting this pandemic. So let me start off there and ask the question. So what's been missing, what would high quality data in this pandemic have looked like. So what we should have had sort of from the beginning, from day one. And I'm going to lay out some very basic things. And then I'm going to lay out what I think are some a bit more sophisticated things. And what I'm going to try to share with you is that this is what a good response with in terms of data would have looked like because data is fundamental to then being able to act and when you don't have high quality data, your actions are going to be hampered.

So let's just be very simplistic about this, what would have been helpful and useful to have from the beginning. For every community, we would have wanted to have number of cases, number of tests being done. Number of hospitalizations that are occurring from this disease, number of people dying from this disease. So it's not rocket science. These are like the fundamental building blocks of any disease outbreak. We would have wanted that information broken down by critical factors such as the race and ethnicity of people who are being affected, but neighborhood, the age, the income. Because that would have taught us a lot about how this outbreak is playing out. We would have wanted that information updated real time daily. And by the way, these are not pie in the sky ideas. These are things that lots of countries have done.

We would have wanted data from high priority places, we would have wanted active data from nursing homes, from essential workplaces like grocery stores, meatpacking plants. And th

We could go through Kansas is still also not reporting hospitalization. So it's just this incredible hodgepodge people reporting cases differently people reporting testing differently. Almost none of it was broken down by race and ethnicity and the testing data, the testing data that not just I but people like me relied on but the testing data that the White House coronavirus Task Force relied on Comes from COVID-19 tracking, which is a group of journalists who pulled together daily information about the state of testing in our country and the state of new cases. In our country. So basically, a group of journalists are pulling together and some of the central data that our countries.

tLve poi

So what is the consequence of all of this hodgepodge of data collection. Well, I started with. We are number one in the world, and I'm from some cases and we are number one in the world in terms of number of that's Um, but it goes beyond that we have this virus this disease has not affected all communities in America. Equally, it has had a massively disproportionate effect on black Amerte7mv(oca)4.4(s a)4.4(d)J-22

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entire gathering, which all of you have been really spearheading and leading in so many ways is we know that high quality data is fundamental to effective action. And we have not had the kind of data we need in our country and we continue to not have the kind of data that we need The bottom line is we can't fundamentally improve our performance on this pandemic. Without it, though. I think we can make changes that will get us through this a bit easier. But once we do get through this pandemic. I think we have to have a very substantial national conversation. About how we make sure that we are better prepared for the next one. So let me finish with that and say thank you for having me on.

RICHARD KUNTZ

Thanks Dr. Jha. as you were speaking, there were several questions from the audience about things like how can this country with all of its advanced technology. And it's fantastic private companies, Google, Amazon, be the worst. I mean, we're. What's the gap. What was the glue that was missing that other smaller companies were going to pull together like Taiwan or South Korea.





RICHARD KUNTZ

So if we do come up with a decent testing tracing pr

But I still believe that undermining our public health agency when it's already struggling is not the right strategy and I still think this data should have an can

And one of the things that I think has been a huge problem in this pandemic response. Is that much of what we have heard coming out of the White House has been from political leaders, whether it's the President or the Vice President. Where I would have much preferred a doctor Redfield. The doctor he or even Dr. Burke's to lead. Most of those conversations it de politicized is these fundamentally scientific issues.

RICHARD PLATT

Well I, I bring together several of the questions that our audience has as Ashish, and that is Since this pandemic isn't creating the, the National surveillance infrastructure that we ought to have What's the prescription for Either things to build out during the next year or two, or when the dust settles. What will put us in a better position for our future as a society.

ASHISH JHA

It's really like the hardest and most important question. So short answer is, I don't know, but there are some principles that I've been thinking about We need a public health agency that is largely de politicized and it has CDC has been, by the way, in the past, and I feel like It is really struggling to remain in that role and it really breaks my heart because I know the incredible scientists were there and they're still there and they're doing God's work. But it's been a challenge for them to be able to do what they need to do. So we need to think kind of from an organizational political point of view, how do we how do we build in some independence into the CDC. Second is, we obviously need to do massive upgrades OF THE KIND OF IT infrastructure of state public health departments and the CDC and I've been speaking quite a bit of a lot of members of Congress, there have been efforts to try to do that. I don't know enough about why that hasn't gone as far as it has But then, beyond, you know, if you look at the CDC website today on testing, for instance, they'll tell you what testing is happening in the public health lab. So I'll tell you what does things happening. In these very specific and state labs, they will not give you a lot of detail of what's happening more broadly in the private sector. And this idea that the public health agencies only kind of look at what's happening within the public health infrastructure doesn't make any sense. Our world is now incredibly complex with data flowing in from private companies that work in public health. Private companies that have nothing to it, public health, but their data like Open Table reservations, I have found that to be one of the most useful things. I looked at As a way to calibrate hard people behawrbew.0022 Tc-.0023laCc and sr





So it's important to note that New York State was not informed by the Federal Government regarding that the cobra Nike was coming from. From Europe throughout February, and I know we've heard a lot about that. And this is what happens when something's all the information and as we've heard we don't have all the data. It makes it difficult, so we had millions of travelers coming from Europe, they came into JFK. They came to New York airport And so that resulted in what we found was an estimated about 10,000 plus cases of COVID-19 New York City in February. And that was obviously before we even knew about a case.

At the same time, the CDC diagnostic testing rollout was a major problem. So, it caused critical delays and an outbreak regions and we were sending test down For sampling so consequently for New York. These two factors were like truly stumbling and falling at the start of like a 400 meter relay race but we picked up.

So the department has a watch for central Laboratory, which is our state lab. And our state lab rush to create a viable COVID-19 diagnostic tests as the CDC tests kids had problems and therefore to so we became the first state. For a public health lab to perform a covert testing and the New York did secure through FDA is emergency use authorization to use that test on February 29 And to have further authorization. On March 12 for certain state labs as well to begin patient testing under certain circumstances. So we moved from just our state lab through all the other state labs that all the all the other labs within our state that could do testing as well. Next slide. The trajectory of the pandemic has validated. Our guiding principles that the most effective Actions for containing a virus were identifying the positive test positive cases through the diagnostic testing. Testing and tracing testing should say the context of those who tested positive and obviously isolating. Those are effective. These are the basic principles we all know

In addition to setting up the drive thru in the mobile testing sites. We work with the various partners to address the continued high infection rates, particularly in the low income minority communities in New York City. And we did notice that We increase the testing sites of public housing development, some places and at churches and community based providers and predominantly minority communities and some of the numbers. I'll show you. Which also showed us how prevalent is this disease. Probably was before we learned about this a simultaneous are was with center followed a SWAT team approach to manage all the aspects of the lab operations, including multiple shifts that provide 24 seven coverage. Next slide please.

So this slide shows the expansion of our lab capacity to accommodate the rapid increase of collection points. So New York has more than 700 testing sites across the state, and more than 225 sites in New York City in per capita diagnostic testing.

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Howard Zucker: It and we are testing about 70 to 80,000 people per day. So since July first the diagnostic and antibody testing have been available to all New Yorkers and. Next slide please. So this is a our, our covert tracker. So at the start of the outbreak. The department launched a COVID-19 tracker. A webpage provided daily testing data to the public, we realize. Once the numbers started taking out, we need to have all this information, we broke it down by county and when people were tested how many were positive. We looked at a lot of the demographics, which Was I was thinking about and we weren't there who has the disease. This is the who has the disease part of it. So our website also provides multiple online to tools to find a nearby testing site is a very interactive website actually You can click on it could



In children, so we looked at this and initially we found 160 or so children witness and now we're up to about 242 I believe as a term for you want it yesterday. But we recognize us and we wanted to get data



now, we didn't, we didn't even know back then, you know, you start to look backwards yes hindsight will give you a good assessment of like

RICHARD PLATT

What you could have done differently.

HOWARD ZUCKER

But we were moving forward and one of

Literally recognize that this was a very time sensitive issue because if other states. We're starting to see this problem. They weren't aware of it, then what do we need to do and so that also was a tour de force working with everyone. But I think everyone's recognize that the need to sort of get data out as quickly as possible. I dropped the clinical issue with some It's a little tricky because it was a belief in there.

Obviously, we know the presence was believed this was going to work. And we felt like we need to look at this data and figure out what was the real facts and I do know that there was a study recently it was published that would say that Maybe it's beneficial but when you look at that, though. They also administered steroids and their studies, Justin. The steroids are helpful so we realize that you need to really tease the data out and look and see what's really happening. That's what we're trying to do with

RICHARD PLATT

With the next generation of EHR obviate the need for dozens and dozens of highly trained people to spend day and night on this, or are we going to need them anyway. To tell us where you think that's going to land. So I, I was thinking about

HOWARD ZUCKER

This actually two days ago about where we will be in the year or two from now and and on many decisions about health, health records health transparency. The sharing of information. And I think that people recognize that as a result of the Pandemic and the information we need that there needs to be better sharing of records for whether it's infectious disease, but just in general, there's been a little skittish about this whole issue of health records and sharing, but we know that this is very beneficial. And the way I'm looking at the pandemic in general is is aware, look to when I was in the federal government and I was down there literally the week that 911 happened and I realized that the world. Looked at things as pre 911 right when it came to security, just in general, it's like well pre 911 and then post 911 and and our society adapted and changed. After 911 this as well, you know, take your shoes off the airport is that is we're going to do. We just adjusted To as sort of think that it's like pre pandemic and then post pandemic of how we will look at public health and part of this post pandemic will be the issues of electronic health records and sharing information. and tracking things sooner and looking at data and how we use data to make decisions that it's not that we don't do it now, but I'm saying how we look at Data and have a public look at the benefits of data and getting information out there. I think that that's what this is going to be one of those pivotal points of pre the pandemic and

RICHARD PLATT

Well, I guess there's a chance if you and your colleagues, make the case in a in a clear enough way that the rest of us can hear it and act on it. It does make sense that this is a real opportunity and I take the more broadly. You can frame that so that the rest of the learning health system can ride along with the public health system, the better.

HOWARD ZUCKER

Is a lot of information came in is, like, why did we not look at things a little bit differently, you know, not just New York but just us as a public health community, you know, and I thought a lot about that question, I feel that What may have happened is that when this was Presented as SARS and new SARS virus. And I think that there's a psychology involved here that when you just say Well, a new starters virus for all of us in the public health to me think SARS back in 2004 2003 say okay so this is going to be an infection. It's in China, they're going to get control over. It's a big city like last time, it may be in another big city, and they'll get control, there'll be thousand People get sick and 10% or five whatever percentage will die and then it was like 10% and they'll give control. I think when people thought well SARS another

SARS. The Thought process goes down the same way of what happened last time and you know one bad flu and sometimes people start taking pandemic flu, which is which is a different time for processed and I think that may have happened. Initially, early on.

RICHARD PLATT

I just want to this is, this is an observation, not really a question though I'd be happy for you to respond to it. Another takeaway. I had from that JAMA article was a comment that the outcomes. The clinical outcomes. Didn't differ by race or ethnicity and which You didn't make a big deal of it in the article, but I thought that that's a headline in its own way. So,

HOWARD ZUCKER

No, I don't. I, it did not as correct and I'm not sure, you know, Yes, we probably should have looked a little bit more as to why In this particular situation, it didn't, although we were giving know that it was given to different hospitals right and so we assume that was randomly given and so that probably would say why, you know, at least the distribution But why was the response not difficult.

RICHARD PLATT

It is for the physiology. Well, I mean, we are so used to hearing That minority populations fair worse. You know, this was the dog that didn't bark that If he were hospitalized and one of the New York hospitals, your chances of having a hospitalization didn't depend on the color of your skin.

HOWARD ZUCKER

Yes, I mean well as expressive effort, obviously, and all the hospitals and He provided an incredible amount Of cure, but what we did see was that the certain regions where we felt that a lot of essential workers were coming from. How to hi

RICHARD PLATT

Okay, great. We've got just a few minutes left. And there are a couple more questions from the audience. But I think it'd be good to hear you hear you speak about You did talk about the very large workforce, you put together. Could, could you say a little more about

RICHARD KUNTZ

Thanks, rich, the next session is that every generation immobilization during COVID-19 pandemic with regards to treatment. And it's a real pleasure for me to introduce Dr. Carlos, Del Rio professor of medicine at Emory University School of Medicine. And Dr. Del Rio's research focuses on early diagnosis ACCESS TO CARE engagement care compliance with antiretroviral therapies and prevention of HIV infection in this presentation. He will speak about the current status of COVID-19 Treatment research practical real

CARLOS DEL RIO

Thanks to Mike and everybody for the for the invitation and delighted to be here over the next few minutes, I'll talk to you where we are in treatment and what advances have been made. Next slide please.

I think one of the things I will start is by talking that that COVID-19 is not Is not one illness. We have an infection that causes a spectrum of disease like few of us have seen before. With all the way from asymptomatic or pre symptomatic people that have a positive test, but absolutely no symptoms, all the way to critically ill individuals who have respiratory failure shock and multi organ dysfunction and in that spectrum. Next, next slide please.

Is that we need to put ourselves in perspective. So about 80% of cases or more are either asymptomatic or mildly symptomatic. And it's only about 12 to 14% that are severe enough to be in the hospital and about 5% that are severe enough to be critically ill and end up in the ICU. So whenever we talked about treatment is when you say where, what are we talking about and I will start by saying that A lot of the treatments that have thus far been developed have been looking at looking at the tip of this pyramid of how do we prevent death and critically.

And we really have done very little, and how do we treat people who are mildly a symptomatic or asymptomatic, but are still transmitting infection. I think a lot of needs to happen in that sphere. The next one please. So if you think about the goals of treatment you can go all the way from before exposure to after exposure to during the illness to after the illness and you can really put things in perspective. And next one of answer. So the goal in before exposure, which would be to to prevent infection. So, for example, some of the monoclonal antibodies being tested. Other going to start to be tested. Is and people who've been let's say somebody diagnose and they go to the home.

And they look at people who have been exposed to the home, but are not infected, could we give them a pre, post exposure prophylaxis with a monoclonal antibody to prevent them from getting infected sort of a kind of a Mac vaccination approach. How about after exposure. But when you're incubating. Same thing, maybe a monoclonal antibody would work. Then you go to the duration of illness. How do we treat people to prevent the progression to breathe better applications. And yes, also to prevent transmission. We know that by Decreasing the viral load and individuals we can decrease transformation. And finally, how do we have in recovery. The next one.

So really, When we think and we link this to pathogenesis. It's really you know Erling disease is more about viral replication laden diseases more about treating the inflammation. The next one. And therefore you need to think about antivirals immune responses anti inflammatories and the spectrum, you would not use an anti inflammatory in the incubation period and an antiviral lane disease may not be as effective. The next one. So here's a representation of the viral Cycle of this virus have a SARS, Coby to and those who I was doing a Chevy are kind of used to this approach of looking at. Here's the virus that attaches to the ACE to receptor.

And therefore, you can use drugs. I will block them are low entry either as to receptor or some other drugs at that level. Then you can use drugs of ours has to fuse against the cell. So you can use drugs that will block the future on the endless titles and chloride, hydrogen chloroquine will start to work this way. Then you can work on the on the viral proteins. And that's where you know looping have a return of birth thought to be effective. And finally, you can work at the level of the RNA dependent RNA polymerase. And here is where the antivirals like Chrome disappear or far from it from your heavy and Trump to be effective. The next one.

So here's a list of all the different drugs that have currently been tested or looked at, or thought about useful. I'm not going to spend my time talking to all

was, it was thought that given the hyper inflammatory state and COVID-19 steroids needed to be evaluated and an open label randomized trial and conducted in the UK.

By the recovery group showed the deck Samantha some compared to usual care decrease mortality and about 30% and those who receive SMS or some therapy. The next one. Okay, and therefore it was concluded that dexamethasone was associated and decrease mortality among those on supplemental oxygen or on mechanical ventilation. But there was no benefit and those that did not require oxygen, and this is why it's really important to look at, again, this is a drug that is an anti inflammatory early in the course. It makes no sense that it didn't have any Africa, see the next one. There's also been a lot of interest in looking at anticoagulation and we know that infection with source copious associated with an inflammatory and programmatic state. And a lot of the patients go on to develop from bardic events, particularly those that are critically ill and hospitalized patients, therefore, should receive venous thromboembolism prophylaxis. And there are several studies now looking at how do we do anticoagulation therapy to decrease mortality in this individuals and excellent

There's also drug and alcohol abuse or anti inflammatory drugs like talk a listen up. Listen up as a as an interleukin six blocking agent and it's thought that this could be Kevin effect and patients and their for their clinical trials being conducted with this drug. So, next one. So as you can see where we are today of all that spectrum we really have solid evidence of the use of them disappear and solid evidence for the use of dexamethasone and those are the two drugs that have now been incorporated into the clinical guidelines and next one. There's also a drug being tested. Right now, it's an oral drug. This will be the first orally available drug It was developed by investigators here at Emory. So I have no interest or investment in that company that developed this drug.

It has now been purchased by Merck pharmaceuticals and it's being used as a potential drug to treat mild disease and outpatient settings, an area where we really need, and it's being looked at in that in that way in clinical trials. So, next one. So, in the midst of this of this storm in the midst of all this things happening. You have to develop guidelines, you have to write guidelines. And I will give credit to both the Infection Society of America and the National Institutes of Health that have put together panels that have really developed treatment guidelines evidence based treatment guidelines that allow us to know what to do in the clinical setting, and why we are much better treating covered 19 today that we that we were back in March or April is because of clinical trials is because of research is because of research translated into guidelines. The next one.

So a couple of final thoughts around this is number one, you know, code 19 treatment requires a multi dimensional approach with an understanding of the host, the stage. The severity of disease and the intervention. And depending on the host the stage and the severity of disease optimal interventions may really vary so you may go from antiviral drugs to immune modulator to combination therapy. The next one. And for those of us that have worked on HIV. We need to be careful that the pleasure to the pressure to Deploy interventions, it needs to be tempered by importance of finding out which treatment works best. That is how we do science.

And that finding research finding good therapy is really an iterative process, building on advances until the tipping point is achieved, and it's critical that we address disparities and inequities related to this sort of twin epidemics. The next one. I want to end by thanking both Dr. Rajiv Gandhi and Dr. Stan there's for facilitating them some of the slides and I'll be happy to answer. Now some questions.

RICHARD KUNTZ

Let me start with a couple of questions that may be more on the policy side. I'm from medical technology sector and when we noticed that there was a shortage of ventilators several of us got together and made



In 1994 we were all very depressed that nothing was working for HIV till years later we had highly active antiretroviral therapy. And we had now a way to keep people with HIV essentially free of viral replication on live and live a normal life. And that happened, you know, I don't think anybody would have predicted. But that's how Science Richard did tipping point at that tipping point, then things improved. So I think we just, you know, again, we just need to continue Trusting our investigators trusting our basic scientists develop new drugs or pharmacologist, are you know industry partners and then clinical trials to show us what works and what doesn't. And I can tell you that, you know, We've talked a lot about the things that are not working in this country that testing is not working the reporting is not working. The contact tracing is not working. I can tell you the research infrastructure is working and it's working really well because the fact that we were able to go from finding A new virus discovering a new of ours and getting a first vaccine to a human within 65 days. And getting it now into phase three clinical trials in such a short period of time. It's unbelievable. I mean, that really shows that something is working very well in that working very well. It's called research.

RICHARD KUNTZ

It's a great point. What do you think next to therapies that are going to be positive are going forward.

CARLOS DEL RIO

I think it's going to be antiviral, so I think it's going to be oral empty bottles. I think it's also going to be inhale antivirals, I can see ourselves developing, you know, Things like similar to run disappear. That could be given through inhalation, like a, you know, A meter dose inhaler or something like that, something that you can do right now is you know room disappears and IV drug. You have to be in the hospital, you have to have an IV. It's reserved for fairly You know, fairly sick individuals. But let's suppose you had somebody with mild COVID-19. And you can give them something oral or something that that would, uh, You know, being hailed that would not only limit their disease progression, but that would limit transmission would be fantastic. As you know from HIV. By giving people antiviral therapy and bring the viral replication down to zero. We can we can prevent transmission. We call that undetectable equals on transmissible right So we can get the viral replication in influenza, for example, giving something like Tamiflu in the first 72 hours of the onset of symptoms limits transmission So limit, giving him a drug that blocks viral replication and limits transmission is going to be huge to decrease the spread of this infection.

RICHARD KUNTZ

I'm going to paraphrase a question from Sally Okun who raised the issue of we're in a very confusing time right now, different levels of evidence different levels of methodology. In a very complex new pathophysiology, which most, most of us have not really understood until now, how do we basically leverage all the different cultural assets we have faith based groups celebrities and others to be able to say what is good evidence, what isn't good evidence and is that something that we need to basically focus on because I think people are overwhelmed. With the spectrum of different viewpoints about this disease and the different viewpoints about good or bad therapies. You know, I think, I think that it is a very important point. And I don't know the answer. I think this is the first pandemic of social media era. And I think, therefore, you know, you have more than one source of information more than one trusted source of information and I'd say to people look at the trusted sources of information, unfortunately. There's a lot of people looking at the what they think is trusted sources of information that are giving wrong information. I simply don't know any way to combat that. I think it's just part of a culture that that is so you know even right now there's this



CARLOS DEL RIO

I think clinical research right those trials are starting. And I think as we advance those trials have they shown to be effective, they're going to be included in their show not to be effective, they're not going to be included. I think it's a It's a, it's an iterative process I'm you know we're following what we call in clinical trials and adaptive design. So you try something it doesn't work you quickly pivot to something else, rather than continue trying something That mean driving continued beating your head against the wall and saying, oh, you know, we need to find eventually will open a hole here. You know, you go somewhere else and that that is really the way that that we're advancing things and that's the right way to do it. And that's why the hydrochloric when story. It's so clear, but it's also frustrating. The evidence is there, which is stop banging your head against the wall that it's going to work. But instead of that there are people still trying to show us that it works and it just, it just creates a eight. It doesn't allow things to advance it just makes things go back, unfortunately.

RICHARD PLATT

So I'm interested in your assessment of the of the Adequacy of the clinical trial infrastructure that we have and you've, you've done a great job of showing us lots of therapeutics that that need evaluation. And do we have, do we have the trial infrastructure that we need. And it's not what should, what should we have in addition

CARLOS DEL RIO

You know we do And we do because we had a lot of Clinical Trial infrastructure done for other things. And I'll give you the example of the things that I'm involved with For years the NIH has been investing in

RICHARD KUNTZ

Thanks so much for your time and a great and very timely presentation. Much appreciated.

CARLOS DEL RIO

I would just say that You know that this slides may go stale within a couple of weeks so So I would just be careful. Michael about You know, posting them because it's important to post them, but I will tell you. In three weeks within three months, we may be giving a very dear friend therapy, a very different approaches so rapidly evolving field and, as such, what we present today may not be what we talked about tomorrow. But that's what's exciting about it.

MICHAEL MCGINNIS

Excellent. So we'll see everyone back at 1215



cover of installment magazine. And of course, all of that is again in, you need to think about this as public perceptions among most Americans who don't have public health or medical expertise.

Now they're reading The New York Times that scientists are battling with each other, which of course is exactly what should be happening. That we're vetting research and we're trying to figure out what the reliable bodies of knowledge aren't that are emerging. And those are of course in immediately politicized. This is a tweet from Laura Ingram who said, you know, next time they tell you to trust science and the best available evidence

Remember what they did with all those studies from the Lancet, and the New England Journal of Medicine, which led to policy that turned out to be based on data that turned out to be wrong. So facts have been the facts that we're using to counter misinformation or to correct misinformation have by design. That's not a bad thing. Been



But for others and for citizens, it may well be about wearing masks is actually the best way of reopening the economy more quickly. You should wear masks because it really gets at your primary goal and that is economic growth or well being and livelihood and so very often. Framing messages in ways that resonates with goals that that consumers or voters have is much more effective than around the values that all of us, especially on this call may see a central The next one is related to, and this is a study from the 1940s. So this is 80 some years old, where basically they showed Participants in experiments fail at random shapes. This is out of the stone psychology circles triangles. Moving around. Why am I mentioning this because this is ultimately a meaningless movement of shapes and other things.

Many people and I'm simplifying them to design that they used to read many people interpret this As having motivations as having causal links. So that little triangle. Does this and then the circle tries to get out. But the other triangle is trying to prevent it, even though there's zero meaning behind it. This is what pandemic and conspiracy theories do they basically provide meaning to a large set of moving parts in a pandemic like this. That most citizens have don't have the medical or scientific infrastructure to make sense of and so conspiracy theories from many of us.

And of course, all of us hold views. If those are religious or spiritual That are that are not backed up by necessarily science, but that help us make sense of things in the world and. And so making sure that we acknowledged that into its own simply be a little it as just an informational problem is crucial. This one is actually, I think one of the most important ones coming back to my second bullet point but also something that came up earlier. The best evidence that we have doing COVID-19 is best presented as the best available evidence right now and I put intentionally chemotherapy here because I think it's a great example.

Where we know this is not the best therapy that medicine and science will have for cancer. We know they're going to be better therapies. We're working on them right now and we're trying to replace it in perfect therapy. But we know it's the best available. Therapy, we have right now. And that's our value proposition. So I think especially during COVID-19 to speak about the best available evidence that we have right now and that that may change and as science produces better evidence will share it with the public. Is a really important part, because in the long run I showed you the Laura Ingram Tweet in the long run. Otherwise, we may be losing the long term war over trust in science, if we're presented every piece of evidence as permanent as final if we know they're going to change anyway. And of course, that's exactly what code what what's ha



RICHARD PLATT

Okay. Well, thank you so much. And I have to say it's hard to believe that that big triangle wasn't really a bad actor. In that little movie, you may say this, there was nothing really going on there. But many, many of us know the truth about exactly So, so, it all sounds so reasonable when you when you lay it out for us this way. What are our options for an action plan. I mean, we're living in a in this in this sea of problems that you've put your finger on and what's, what's your advice for us as sort of members of the community who are interested for Public health officials who are wrestling with these kinds of issues. So I don't want to drag Howard sucker right back into the conversation, but They seem to have a different set of needs, then governors who are managing states that are much less receptive to messages so what do you advise. Yeah.

DIETRAM A. SCHEUFELE

And my answer would be it along. Two lines, I think one is infrastructure and we're already seeing some of that. At the Academy's we have a standing commito Howaa86b.2(w).8(msmcwco5(y2d w31.uo2ge2d are 8\$o lm9e 8IJd w3

RICHARD PLATT

Could, could you speak specifically to the problem of vaccines hesitancy. I mean, I know your comments generally applied to all topics, but that is sort of looming as a major, major challenge.

Dietram A. SCHEUFELE

Yeah, and that's going to be an interesting one. For a variety of reasons. So vaccine hesitancy. Of course there's been and I showed very briefly at the beginning of a study by Brendan I Hand that he did in pediatrics, a long time ago, where he showed that under some circumstances. and in particular constellations more information if we if you If you, if you present that information to vaccine hesitant parents Can actually make them perform worse than the control group meeting if I hadn't talked to them at all. It would have been better than when I threw all the CDC back the information. Now, that's not a universal phenomenon. It doesn't happen all the time, but it can happen.

But I think for vaccine hesitancy I think one thing that is really important. In general, the American public believes in vaccines, the American public. You know vaccinates. The problem is a fairly finite proportion of the population. Typically, in particular pockets that then leads to outbreaks. And those tend to be not homogenous. That's the problem. So we've seen, for example, for measles vaccines. We've seen some of the lowest vaccination rates in the child care facilities of Silicon Valley meaning highly elite school educated parents Who think it's a natural and who tend to lean more left. But we've also, of course, seeing, seeing the current president early in his administration talking about vaccine schedules and so on and so forth.

So a lot of this. And this is, I think, where, where the report from the Sean report from de Bas that I mentioned at the very end is really helpful. A lot of the pro-social choices we make in this society. We actually don't make because We know more. We know from research that people don't buy flood insurance because they know that their house could get flooded are in the floodplain there by flood insurance because there's one of the strongest predictors, is that then neighbor bought flood insurance.

The same thing. We know that solar doesn't spread along the street when somebody gets solar because now all the other people learn about it, but because it basically now becomes social invitation. So these social norms campaigns are crucially important and say, well, that's just what one does. I also think, and this is this is You know, here's where the language matters tremendously again to which degree and I, this is a study. I would love to do and I haven't seen anybody do yet. But to which to be herd immunity is the best label and I think it's a really my guess is it's not. It's really about community. You want to contribute to your community's health. Do you want to be a member for her. And of course if you followed some of the means and social media around wearing masks in a. Don't be a sheep don't just put on a mask. So we have intuitive terms that we think intuitively makes sense, but that don't communicate. I think what we're trying to get across. And so rethinking how we describe herd or community immunity. I think will just be a really important step. This is also a problem. I think that we want to tackle now because by the time the vaccine is available. It's way too late.

RICHARD PLATT

Okay, you, you, you touched on social media in your last answer, could you could you focus on that now. I mean, we live in an environment where social media is just such a dominant player. How does, how to how to use it to advantage or to mitigate the, the problems that occur.

DIETRAM A. SCHEUFELE

And I think Michael mentioned already a project that in Dallas and the Academy's Collaboration with Google trying to make sure that when people do Google searches Carolina heads and others. That Google searches, get the best available academies bedded information when people do searches and the Basically, the, the challenge that we're in is that if you look at data from Oxford Reuters. The internet Institute there, you see that that older generations, and that includes everybody over 34 just for those of us who are on the So everybody over 34 is still using media in a very traditional way right we go to the website, we

We have news alerts set up on our phone and so on and so forth. Everybody who's younger you see more and more shifting court algorithmic delivery. So delivery that is tailored toward the individual Where I'm not getting a front page of The New York Times, but I guess basically getting a curated timeline on Twitter, Instagram, whatever else social media. And even, of course, Snapchat and tick tock, and so on. Now having, having bits of news or news channels.

So the problem that we're having is that we're going from a world where we had broadcasting one piece of information that we all know to be true goes out to a broad public to narrow casting mean everybody gets news tailored towards them. And on my Facebook feed I joked earlier about mind being hyper liberal. The same thing of course is true if I'm, if I'm, if I'm vaccine hesitant. I'm probably surrounded by a social network that's also vaccine has attend. So a lot of the stuff that ends up on my newsfeed is curated, not just by my preferences and Facebook. But everybody around me. So that's the world that we're that we're operating in And, and I think the next step is will have to be a collaboration between social media firms and places like the Academy or the scientific community and saying we need to figure out a way of how to rethink These infrastructures, the irony is, it's easier than ever before to find good accurate information on emerging disease. It's easier than ever before. I can do it quickly, no matter where I am.

The paradoxes. It's also easier than ever before to avoid any piece of accurate information if I really don't want to see it. And so that's why understanding the algorithms, working with Google with Facebook for the largest social good is really is. I think that will have to be the next step. This will not. This will not be a problem that solves itself. Because the, the economic incentives for Google for Facebook are to tailor information that's where the money comes from. So, then they're not going to switch around unless there's really a larger social good discussion that we need to

The non settled science. And I think we want to be very clear that that That, that, you know, when the science is not settled, or when it's the best available science we have right now. This is the best available evidence and we should act on it, it may change, but when it does change will let you know. I think the second thing is, and this I know there's a taste of temptation and this is what the Academy's are really good at is not being partisan. I think this is Virtually any other organization has not been able to avoid this in some way, shape, or form that at some point.

They got accused of artists and bias. I'm sure that has happened to the Academy's as well but but i think in principle or in the larger picture. They that hasn't been an issue. And I think that's that that's really important. That's where the last step comes in, in my opinion. Also something that the academies has been really good at. But I think the scientific community hasn't been and that is separating questions of policy from questions a science. The National Academies is asked to provide advice on science to the nation, but it's not asked to make policy.

And policy by definition is a weird mix of values of priorities of fiscal considerations and hopefully the best available science but policy has never been just based on science. And I think COVID-19 is a really great example for that and said, I can't remember if this came up today, but people often bring up the, you know, People speed and they die in cars and we don't outlaw driving. Yes. That is absolutely correct. It's it but that isn't a poor parallel to COVID-19, but it's

obviously trade off was speed to publication versus traditional peer review and I may be oversimplifying it, but I know if you have any insight or maybe the rebalanc

DIETRAM A. SCHEUFELE

And we've seen it before. For many of you might remember the arsenic study that came out of NASA and the thing, if you're attracted at science. Exactly the same thing that pretty quickly. Led to social media discussions and then eventually a subsequent study and then every traction in science. So again, something that has happened in the past, but I think that that's happening at much higher rates and much more quickly now so I very much agree with that, that's not bad at it.

CARLOS DEL RIO

And I think that's a really important role for social media, which, you know, social media is When people ask me, Why are you in Twitter because I that's how I get a lot of my science information that's how I get a lot of the advances. That's how I hear A lot of things that I otherwise I would have not be reading, but it allows me to engage in conversations with other scientists. Absolutely.

RICHARD KUNTZ

And the way that we did this was first to partner with the real Reagan you'd all foundation and this is practically managed through Reagan you doll, which is the congressionally mandated Foundation sitting next to FDA as well as their partner organization friends of cancer research and they help manage this community, so to speak. Where there are a number of methodological tools being brought to bear to try and accelerate our understanding of how rural data can be confidently used The first was to identify a set of prioritize research questions. I say this as research targets, everybody can understand here, the critical questions to go after also identify a practical shortlist of common data elements that could be utilized by teams as they were starting to address these research questions.

And then at FDA we generated a set of translation tables that allowed translation of the common data elements between common data models such as the sentinel model. Oh, mop see disk etc so that these are tools that can be brought to bear by the Community. The another tool is to develop a common main protocol that multiple teams are analyzing in parallel. This allows us to look at for replication and findings, as well as to help to design consistent Methods that multiple teams can use and helps to really share lessons learned an upscale different teams when appropriate.

Another part of the Tool Suite was a set of meetings and a forum for rapid cycle feedback and learning as I'll come back to. And then ultimately ways of organizing our work so that smaller teams could work together and get practical tasks done. Next slide. If you want to see any information. This is the website importantly we publish the tools on the website. The Reagan you'd all Foundation does. So as well as minutes from the various meetings. Next slide.

And this is an example of the prioritize research questions importantly we update the research questions as the story of COVID-19 unfolds. But you can see we're looking at questions such as natural history treatment patterns starting to ask questions such as, How can we understand Drug utilization surges, so that we can help to predict drug shortages asking questions such as, How can we understand performance of diagnostic tests, including RT PCR and serology tests. Next slide.

And this is just a highlight of the parallel analysis project this a grown out of work that had been done in the oncology community before COV

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prospective randomized control clinical trial. And the solid adherence to a protocol to reduce type one error and things like that when we have such an open data system that goes too many people

AMY ABERNETHY

So I think there's a number of points embedded and your question. So I'll use for hit on a few. And then if I miss them. Just bring me back to them. So the first point is your point about data curation. In fact, one of the reasons for the evidence accelerator, as I mentioned, we started off asking about companies in the health tech space That have historically not been brought to bear in the world data space. And part of the reason for that is that there's a number of companie

RICHARD KUNTZ

And have you seen so far in the in the reference of COVID-19 that that you're seeing some different methods for evidence development that will be permanent. After the code was over.

AMY ABERNETHY

know if anybody noticed by gloss righ

And I'll just make a quick follow up there. Is there an element of trust that you feel in this trust strategy, if you will, that you have at your disposal that you'll use more extensively next time around.

HOWARD ZUCKER

Sure. Well, I think that there is there is a lot of trust. I think with the governor, doing, doing the daily presentations, was that they that he was able to provide a trust to the creator, but I felt that I didn't raise that point with everyone out of how we use that to convey our message to others and and I think there is a lot of mistrust about government in general. And I think that what we were doing was trying to provide trust to the public. Arch about the government New York State is working to try to solve this problem.

MICHAEL MCGINNIS

Appreciate that clarification, Howard because all of us feel that to generate a lot of trust.

CARLOS DEL RIO

You know, I think. I think that there are a couple things that to me. It's, it's very hard to I mean thinks this is a very fast moving train. This is a very advancing speed of light, and the information is changing. And I think to be able to you know, somebody said to me, you know, in a pandemic you wish you knew today. What you're going to know tomorrow because your recommendations are going to be better. Is, is how do we convey that how do you communicate that to the public. How do you say what I said today is not what I may be saying, tomorrow, and I'm still correct. I mean, this is what it's applicable today. And unfortunately, in this day and age in which a tweet persists there forever. Things come back to get you. So how do you how do you change information. How do you get the perception that the information is advancing and therefore changing and yet not necessarily. You're not wrong, you simply didn't know

You know, in a week, we may know something that we don't know today and may change totally how we recommend people do things. And that has been really hard to, to, to communicate. Even including within the hospital. I mean just within the hospital setting. With top clinicians. No, you don't need to wear a mask, except when you see patients with covered, then we said, yeah, maybe you need to wear a mask. Now, the most recent evidence of CDC is. Oh, by the way, you also need to put up and you know I protection. And it's not like we were. It's not like we were withholding that from people before it's simply the evidence suggests that that's probably what we ought to be doing today. And to me, that's probably one of the most difficult things to get across in a way that you do it and you don't lose trust.

DIETRAM A. SCHEUFELE

I'm gonna pick up on something that Howard said, and I think that's trust and I want to focus on one thing that I didn't emphasize as much with that but that highlights why trust is so important. I think science and Howard said this, the difference between scientists and a lot of political bodies is that they enjoy a huge level of trust among the general public. In a couple of the questions at this idea came through. We need to get the public to understand how science works with how scientific studies works, what good evidences And I think this is one that I wish I had gotten across a little bit more explicitly. That's not going to happen. For me, I didn't 30 million Americans are not going to think that like scientists, they're not going to vet scientific studies and work their way through it. They rely on bodies like the National Academies and scientific associations to do that for them. They, they give a huge amount of investment to science to do just that for them. And so I think the, the one thing that I would like to emphasize what we should avoid is this idea that while we need to get the public to think, just like us, and then they're going to work their way through evidence and believe the evidence more Decades of social science have disproven that and frankly, that's not their job that's ours.

And so we should take advantage of that trust that Howard mentioned that we have. And I think we've seen you know lots of people like him or some people like you and in the in the public eye doing exactly that very successfully.

MICHAEL MCGINNIS

Thank you very much. But before we do that, we're going to insert one more aspect of this reflections and that is if you have a question that you would like to ask one of your Counterpart Speakers Will give you that opportunity before we move to the lightning round.

So let's go to Amy. Terrific.

AMY ABERNETHY

So I think I would follow up on one of the questions that was asked of me as it related to clinical trials. And I, if I had to amend something about what I was talking about. I would have made it clear from the very beginning. That we shouldn't think of real data and real world evidence as a substitute for clinical trials, but rather as a way of answering questions. That are critical of a COVID-19 and allowing us to point our clinical trial resources to the most critical, critical questions that clinical trials and specifically randomized trials are most apt to address. I think that's what it might have been my man.

MICHAEL MCGINNIS

Thank you Amy. So here's your chance to ask questions of your panelists and we can't imagine a better group of folks position either to ask the right questions or to give the right answer. So who would like to lead off.

CARLOS DEL RIO

You know, I think, let me let me lead off by asking and saying something, but also asking when you initially had mentioned, what would we, what are we, my dream thing that I need right now. That could really make a difference. And to me, having a home test rapid test like a like a pregnancy test. I can do at home quickly effectively and that can tell me if somebody has COPD or not. Would really transform the way we approach this this disease from a public health standpoint and would real allow us to do. What we're not doing right now, which is really to rapidly isolate and quarantine individuals. So my question is, you know, I know the FDA is working on this and Other people are so, so how realistic is that will have something like that. And I think we'll start with Amy, but we can go to the trim.

AMY ABERNETHY

So, you know, if I play that back to the question is how realistic is that we're going to have at home testing or, you know, rapid testing that we can rely on. And I think that the key feature here is that testing that that testing needs to be something that where we trust the results and where we also have access to the right reagents and the right capabilities to get that work done. There are a number of new testing solutions coming down the pipeline, and I think the other important aspect here is the active program coming, excuse me, the red X coming program coming out of NIH, which also has promise of bringing new testing solutions. But, we not only want a test available to us, but we want to test that works, and we need both of those. Yeah.

MICHAEL MCGINNIS

Thank you. Did you give a question for one of your other panelists.

AMY ABERNETHY

So I'm gonna ask one to Howard, because I think you know he and I have lived in spaces in parallel and I'm curious for you. Howard, as you think about what would have been most helpfully for you in planning. What are the right studies to do and how do you efficiently take care of the population in New York and also do studies would have been helpful for you.

HOWARD ZUCKER

And I think that her that the issue is to be able to have gotten more data from other places, not just the data that we have from New York, and to be able to share A little bit more and to seen some limitations. What we saw as a lot of information coming through very quickly. And you and I have spoken about this and so In the effort to try to get something out there for the public to see and as others intervention and sometimes the data changes across the same. They don't change and adapt accordingly. I think if we were able to add more data from elsewhere and realize what was happening. Other parts, not just in the US, but even other parts of the world. That would have been helpful. And we research in the literature in China and trying to find out what was happening. They Were trying to get some information, Italy, I was calling over there trying to say and what are they see remember the whole issue with the blood grouping and whether there's a difference. Oh, and am. So what's the data on this and what are we see that would have been helpful.

MICHAEL MCGINNIS

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And I think the stakeholders to that are groups that I mentioned earlier in 2007 Larry Page, gave a keynote at AAA as in San Francisco or San Jose, where he said science as a gigantic marketing problem.

time focusing on COVID-19 was to Try to understand where the, where the things we've been forced to to learn from COVID-19 can apply to the larger set of activities that that the leadership consortium is interested in. So I, I see that as our next piece of work. They're all the things that were confronting us Before COVID came onto the scene will be issues for us, after we've wrestled covert to the ground and so It would be, it would be a great step forward. If we can extract from the, from the progress that COVID is is making insight that we're making in solving the covert problems apply them to the set of issues that The consortium is dealing with. Personally, I would pull out as one of the things that has been an issue for I think through each of the conversations we've had today is the critical importance of being able to use real world real world data and And the set of issues related to that, I think, as, as a society, and as a consortium. We haven't quite gotten to the point where we see as A critical, critical piece of a critical