Panel discussion on COVID-19 Real World Data projects

Overview:

Graticule and Medexprim hosted a webinar on April 28th 2020 to convene a panel of experts that bridge across geographies and backgrounds to discuss solutions for sharing advanced Real World Data for COVID-19 research. The COVID-19 pandemic presents a new crisis with limited evidence for treatment decisions to use a wide variety of novel therapies and protocols. It is essential for biopharma industry sponsors and healthcare providers to fund and build aggregate data in order to generate evidence on how diagnostics, vaccines, and treatments are performing. Data needed includes hard to obtain unstructured information including radiology studies and lab information from EHRs. The panel shared their expertise on data needs, data sharing, and their vision for success.

*The transcript of the webinar is below**

Transcript

Dan Housman: Well, want to say Hi and welcome to this webinar. We are going to be focusing on the topic of real-world data for COVID-19, especially around the collaborations between health systems and pharma and how we can come to solutions faster. I'm Dan Housman and I'm co-hosting from Graticule along with Romain from Medexprim where you can see on the line. We are going to share a couple introductory remarks and then we are going to jump into the content of the panel discussion.

Romain Cazavan: Hi, so my name is Roamin Cazavan. and I'm the CEO of Medexprim. On behalf of Medexprim, I'm here to introduce this webinar. First of all, I would like to thank our party participants will all very quickly agree to be with us today. I would also like to thank our partner, Graticule, who coordinated the American path and the reward that difference made.

One month ago, to create a database in partnership with 20 European hospitals to predict COVID-19. Then we thought it with Graticule that we couldn't stop there and that we anticipate a second wave which is likely to arrive the symptom. And that's why we build on this team of ours to transform our Medexprim platform into a platform that would also be able to hold large for the clinical trials that will emerge in the next coming weeks and months.

The idea of course, is to be able to reuse the data that connected to it is to define different synthetic arm, which will be a huge advantage of focusing on future vaccine and treatment candidates to compare results. I don't know if there is or was any comparable initiative that could bring Europe and United States together. Frankly, if you could equal all this to save just one life. This could be profited. Thanks again for your participation and I sincerely, sincerely hope that at the end of the webinar we will have as many agreements as possible to build this platform against COVID-19. Enjoy your webinar. Thank you.

Dan Housman: Thank you. A quick piece of housekeeping. There is a tool built into the Zoom webinar. So, our plan is to hold the panel discussion, but please feel free to enter questions at any time during the discussion. The panellists can see the questions, so we may pull some of the questions during the dialogue or we'll hold them towards the end. We'll probably be running close to seventy-five minutes. Our plan is to wrap up the panel discussion within the hour. Time is, of course, very relative because we're dealing with people on the east coast of the US, west coast, the US as well as folks in Europe. And so, everybody is in their own time zone. So, I definitely think everyone for accommodating the times we found would work for everyone. The topics we're really looking to cover here are about global collaboration around real world evidence for COVID-19. I'd like to introduce our three panellists, Tom Scarnecchia, Dr. Sheng Feng and Dr. Riccardo Bellazzi.

I'll have them introduce themselves so I can do justice to their backgrounds. Maybe I'll quickly start with, you know, my background of why I'm here working on these projects at our company, at Graticule. We are focused on advanced real-world evidence, which really means the kinds of data that's hard to get to beyond the datasets like claims and some limited electronic health records. Groups have been able to use in the past. And so, we have been working on initiatives around imaging free text notes, genomics.

*This transcript is auto generated, and may contain some errors

And as COVID-19 come out, you know, we've seen it to be an area where there's an especially high interest in finding novel ways to accommodate research and analysis around patient data.

And so, we are working hard to work with our partners to find ways to make information available. A lot of the partners are very busy. I'm sure Dr. Bellazzi can explain how things look in Italy and, Dr. Sheng Feng can describe how things look in Asia. But, you know, we're trying the best we can to pull together the tools that are necessary to figure out what's happening with COVID-19.

So, I will start with Tom. Maybe you can introduce yourself, take a few minutes to describe your background and sort of how you fit into this space.

Tom Scarnecchia: Certainly, thank you. I'm Tom Scarnecchia and I'm the co-founder of Digital Aurora I work with life science companies and research foundations and health systems to inform their strategies around real world research, very broadly defined around real world data, real world evidence that includes strategies for data platforms and partnerships that are required to generate a wide range of real world data driven operational and evidence needs.

As part of our work, we have designed and launched multiple public private partnerships that are focused on real world research networks. That includes a role that I played several years ago as the executive director for the Observationally Medical Outcomes Partnership (OMOP). I'm a software engineer by training and I have a long career as a CIO and a technology strategist,

Dr. Sheng Feng: Hi. This is Dr. Sheng Feng. I am a data scientist from Parexel. I got my PhD in statistics and bioinformatics 16 years ago. After that, I joined the Faculty of Biostatistics and the Bio Informatics in Washington University in St. Louis and later the Duke University. Eight years ago, I moved to pharmaceutical industry, join our biology and the later appley.

So, two years ago, I went to China and help Parexel to build Their RWD team in China and in APAC. So, from front from late January, I have been involved in many COVID-19 clinical trials, our first in China, then in the USA. A Real-world data has been widely used in both countries during the pandemic. So far there are about three popular use case like in our help our clinical trial designs and to extend the reach of enterprise to clinical trials. And it started to monitor and manage the mouth patients reopening the facility.

So now I do believe that RWD and RWE will play more and more important roles in fighting against COVID-19. And again, we are trying to get it ready for reopening the facility and we can discuss more later.

Dr. Riccardo Bellazzi: Yes. Good afternoon, everybody. My name is Dr. Riccardo Bellazzi. I work at the University of Pavia. I'm an engineer by training. And I'm actually heading the Department of Electrical Computer and Biomedical Engineering. I also have an appointment from a hospital in Pavia involved in the treatment of this pandemic disease. And within the hospital we are walking seems almost 10 years. In order to be able to use the data that are collected during clinical practice to support the research activities. So real world evidence data. And we started a number of projects around these topics, in particular because my department at the university became an academic partner of i2b2 initiatives initiative in the United States.

As academic group we organized several conferences all around Europe, to talk about i2b2 technology is one of the interesting technologies that are in the game. And I need to add that some years ago a group of my former students started the company that works on the basically this topic of data used to support the research. That companies called Biomax. And the recently after the there was this the disaster pandemic disease. I also tried to even help with my known how in the soul, the film, the cinema, Algeria, the film that's in a military hospital in the Majidi hospital. We started the initiative to collect data about COVID-19, and we also participated together with other groups in the Vatican Mall in Milan.

The initiative called 4CE. It is the initiative for that is headed basically by Harvard Medical School for the collecting data about COVID-19 and made them available to researchers. So far, the initiative is we are going to get the data. So, this is why I am here.

*This transcript is auto generated, and may contain some errors

Dan Housman: So, I think a lot of people are curious about what things are like in Italy because Italy and China are sort of our earliest sponsor. We heard in the news about COVID-19 and so on. I'd be curious to hear sort of you on the ground view of how data informatics has been working in Italy and also to hear Shen's perspective on China, on the Asia-Pacific, you know, what's gone on and how things looked.

Dr. Riccardo Bellazzi: Sure. So first of all, you need to well, you know, because it is now a problem is pandemic, so it is everywhere. But we were one of the first off to China at this problem that was really a sort of systemic challenge. So, a systemic challenge means that the entire health care sector in their way is being really challenged by these this outbreak that was so violent, so sudden, that many people have being surprised by this.

And so, the system, the healthcare system, you need to lead. You need to know that the public health care sector, but the providers are both public hospitals or public services and the private ones. But after the outbreak, the idea was to redesign completely the system in such a way. All the hospitals were supposed to collaborate together. So, sort of sent patients from one hospital to another, one close departments, open new departments in order to be able to deal with the pandemic.

For these reasons, you can figure out how hard it was to keep track of what is going on. So, from the point of view of the data. Of course, we have billing data that are shared by all the hospitals. And those are collected by the region and centralized. But these real-world data that we might need to understand much more are really hard to get when everything is changed. The organization is changed. And all the system is changed.

So, what happened was that the anyway each of the hospitals understood that it was important to manage the data or to keep track of what is going on. Also, the good level of Depay. So, they started the data collection, you know, in the sort of decentralized way, let us call it this way. So, the way that sometimes turns out to be Excel files or small redcap, for example, projects like data on them. All of those are dispersed in a way, in the different centres.

When I had to start working in depth with my colleagues at the hospital, it turned out that we had to go back and take a look at the data where they were collected. Tried to include them and merge them through our system for keeping track of what's going on at the hospital. We die to be to and that we have been sort of successful in doing this in the hospitals, which already had a system to support this kind of research activities. Of course, the better position if compared with the others. I want to mention in particular, Brigham a hospital, because the death was in one of the hospitals that was really sort of invested by the wave of infections. And not withstanding that, they were able to start the initiative for COVID lab where they basically integrated that the data that they were able to collect. And also, they put a canonical blended fit. But this was possible because previously there was an investment or in designing good infrastructure for managing the data.

Probably one thing that I can add to the story is that a big issue that we had a year and we are still having a hearing in Italy and in particular being Lombardian, where we had such a lot of huge number of infections, is that some of them were happening in the territorial hospitals or in these units that the something like nursing homes that manages elderly, elderly people. And sometimes those are sort of disconnected with the rest of the health care sector or not well or properly connected.

So, one important lesson learned is that also from the point of view of collecting data and making connection, we should work much more on embedding, you know, our management of citizens at home into the data system that we have for managing patients in the region. So, let us say that probably, if I can add a critical point that this norm, why Lombardian in particular, where I live is very excellent hospitals. Maybe that is being put too much attention on hospital care. and we have lost our interest towards managing in a better way Primary care in small hospitals and nursing homes and in connecting them also from the data point of view.

Dan Housman: Thank you. I thought it was fascinating. Sheng, can you give a perspective from China?

Dr. Sheng Feng: Yeah. So, Oh. What I just described happened in Dr. Bellazzi, happened in the Wuhan as well. It was a it was a chaos at the beginning. So COVID-19, began in the at the end of December of

*This transcript is auto generated, and may contain some errors

twenty nineteen, a time when the field of RWE were ready to boom in China. In fact, just on January 8th, the Chinese FDA just published the first national guidance of our RWE in clinical trials.

That was one week after the first COVID-19 patient was reported. And at two weeks before the state of Wuhan was locked down, so many life science organizations and their big data companies were just excited by the publication of such a national RWE guidance and thought now that their time had come before being asked to stay home for three months. And it's really slowed down. So, what I observe with that term. Well, the major contribution from those life science companies and big data companies in terms of RWE one that is that decentralized clinical trials. And just to expand in Italy as well. There are identical RWE. The data has been generated such as ePRO. So, they generated from smartphones from digital device and the wearables.

And the two is to monitor and a managing passant tactic and the mouth patients that they are moving freely in the facility. So that is very important during the pandemic to flatten the curve and are also after the pandemic. After the details of Wuhan was reopened a few three weeks ago. So those are RWD with to find and attract the random small-scale outbreaks.

And then the third one is for clinical scientific research. For example, one life science company applied artificial intelligence assistant Feherty to screen and a monitor COVID-19 patients. And I did see that some data sharing is happening between China and others other parts of the world. For example, there are some seminars with a title. “What did we learn from China?” So, some of the parameters from medical doctors. “How far away from a patient to get from car, from the first symptom to first diagnostic, from the diagnostic to ventilator to a hospital. So those parameters and the percentage from the patients can be used to design a better clinical trial.

Dan Housman: So, Tom, I know you are working with multiple Life sciences organizations, and I am curious what are the questions they are trying to answer with RWE? What's sort of the goal that they present to you with their research?

Tom Scarnecchia: I think it is important, first of all, to recognize that COVID-19, has really disrupted their clinical trials. And that is a combination of health systems reprioritizing their resources towards the crisis. And biopharmaceutical organizations have shifted to work from home situations. So, they have really had to begin to look at the concept of digital transformation for trial operations. And I think this crisis is really getting them thinking about it. And certainly, we are getting questions about who what type of resources are available from a technology and from a service standpoint to support that. But more specific around real world data. We are seeing biopharma firms really putting an emphasis on prioritizing their immediate RWD evidence activities to support their own COVID-19 development programs. Privately, the firms that are bringing therapeutics forward in that space and so much of the work is focused on informing study design and feasibility. They are also looking for biomarkers and indicators of disease progression in the data, as well as just understanding the target populations, the underlying factors of the disease. So, it is two things that you would normally look for from a public health standpoint, as well as for planning and trials.

Interestingly enough, we are also seeing health systems respond to that with their own robust in-house real world evidence business units generating insights and evidence not only to support their biopharma colleagues that are that are conducting research, but maybe more importantly, to support caregivers in their leadership. So, most of most of what we see from Pharma is really thinking about how to manage in this difficult time their clinical trial portfolio and to bring therapeutics forward into the into the fray. Regarding the crisis.

Dan Housman: Thanks, Tom and Dr. Sheng, you are probably a similar perspective at Parexel. What kind of uses and what sort of data are you seeing groups interested in? So, what is the COVID-19 data set looked like and why?

Dr. Sheng Feng: Yeah. Two different types of challenges.

One is for all the COVID-19 projects. There are so many of them. And we spend a lot of time trying to help our clients. And they are the other type is for other clinical trials. That is not involved in COVID-19. But they have some big impact. So, they have been slow down or some of those trials may be

cancelled. So those other two different types. So, for the COVID-19. Yeah. As Tom just said, set the number one use of RWD is kind of intelligence, trying to help our clients to design their clinical trials.

Some are like the feasibilities. As I just talk about it, like those parameters. If someone is trying to do, you know, drugs re repurpose to write repurpose a cancer drug into a COVID-19 drug, though, what have the data look like? So, for the patient, for the cancer patients, the risk of infection of COVID-19. Are there any publications? And the other end date? So, we I. So, we use that.

And also, that if someone mentioned that if some diabetes, strokes or hypertension drugs may increase the likelihood of get infection with COVID-19. Whether that is true or not, we can look at the data and there some other data use, including part of the scientific data, including like the imaging data.

And also, diagnostic test data. As you know, there are so many diagnostic tools on the market right now. So, if you are preparing a multicentre clinical trial are the standard from those diagnostic tools, something like a false positive force, not a false negative, false positive. If the standard is not the same, if you are trying to enrol patients, that will create a lot of trouble. Yeah.

And also, some of the precision medicine concept. Like for how the disease progress in the patients. There are some biomarker papers and also that is related to your drug. So, if that drug is an autoimmune, then what type of patients do you need to correct the biomarker? before you will run your trial? So those are some of the questions that may be addressed by our deputy if the data is available if data is not available. The only thing you can do is to read the papers and talk to site or talk to a scientist. And if that can be varying a lot. By which KOL you talk to. some other important thing in helping our studies are all those practical issues or what we call the pragmatic issue. So, what happened in in each site, you can cite? Do they still have beds? or How many ventilators they have. Can we send the drug to the site because of the quarantine and the lockdowns? Yeah. And so, if doctors and nurse do not want the physical paperwork. Yeah. If they want to have an e-copy of everything and can we supply that. Yeah. So those are some of the RWD we are collecting in addition to scientific data evidence.

Dan Housman: Thanks, you Dr. Sheng. So, Dr. Bellazzi, Obviously, this is pretty challenging. What do you see as some of the blockers making it hard to make the data available? You gave us some of them when you are just describing, you know, the situation on the ground. But I am curious what you are seeing is the big challenges to be solved.

Dr. Riccardo Bellazzi: I think that there are at least two types of challenges that we have to face. First, of course, is data quality, because as I already mentioned, the data that are collected during these waves of infections are those that are needed to take care of the patient. So sometimes considering the situations where ICU and emergency rooms are working, it is difficult to think about a high-quality system for data collection and so many for many data at least, that we have had to deal with where all these notes. And we had to process them using, for example, NLP. But then you need no validation and you need to check and verify. And I also want to mention that one of the challenges that was previously talked about that is basically the logistical information. So, what was the scenario where these people were playing? It is difficult to measure because or to enter the data about because also the departments were moving away. So, as I told you before, some of them were closed. Some of the loss of the beds were added to others. And the people that, for example, clinicians or nurses, they were read their assignment were changed. So also, all the process for collecting data and taking care of the of the information is being affected by these by these challenge, because the entire health care process has changed views due to the due to these diseases.

So, I think that on the one hand, we have these issue of all of the poor-quality data. And for this reason, probably two orders to start to the good data collection we have to go with the low hanging fruit. Is that the labs that are, of course, the building codes and that are that it is everything that is collected properly during the process of care and then adding No. Starting from that and then going backwards. Then of course, we have an issue that is related in general to the IRBs. IRBs, of course, are there in order to avoid an improper use of the data. And I need to say in my experience that they have been very flexible and excellent in trying to be faster, helping those who were going to start with new initiatives. But at the end of the day, it's a general problem data, when we collect data, we collect data more just to be able to answer too many questions and not call one or to speculate and have ideas around a lot of the data to look for other aspects while we are analysing the data themselves. And sometimes when we have to send our protocol to the IRBs, those are strictly in terms of what you can do with the data. And this is a

general problem of all is not only a problem of COVID-19, but of course in this case where these are the dynamics of IBRs is amazingly fast. Because you start and then new knowledge arrives and something new is publishing the literature. And there is a real flow also of ideas and new concepts and then the innovation. Sometimes, you know if protocol is too strict, then you are sort of blocked. You cannot go on with the with your data analytic process. And that leads, in my opinion, somewhere, somehow the second challenge that is particularly important in this case.

Dan Housman: Thank you. I am curious, too, from your perspective. Tom, did you. Have you seen things that are challenging? Folks are trying to get these COVID-19 projects working?

Tom Scarnecchia: Yeah, we are seeing organizations that. They really do not have the necessary fabric in place to build communities around the research questions have a heavy lift. And so, you know, they the alternate view is the organizations in the communities that, in fact, have both the operational, legal and the technical frameworks in place to do shared research. are a big advantage in this situation. I will give you a couple of examples. If you look at some of the public private partnerships and disease specific research communities, they have got some good examples of being able to kind of spin off COVID-19 RWE programs.

You know, you look at Pickering, for instance, in partnership with DCRI, try to leverage the Bacau Net Real World Data Network to stand up their COVID-19 registry in a matter of just a few weeks. And it is a national footprint. What made that happen? Standard data model, standard terminologies, legal frameworks for sharing to opt in, distributed nature. Where you sending the analytics to the data instead of trying to centralize the data. We are seeing professional societies work across their membership using basic tools like Redcap to build registries and then they open source and standards-based communities such as RC and i2b2, tranced smart have frameworks in place to support. Their health system members directly opted into shared research initiatives and so those are two examples of having shared programs up and running in late March while everyone else was still thinking about moving data. So, tell it to us. It is, you know, the barriers that we see and the obstacles that we see. You know, really kind of centre on one. Do they have a legal framework to do it, particularly if it across borders and into to address kind of the velocity that is needed? You know, you have the right standards and an infrastructure in place to be able to rapidly react to a research problem without having to actually build capabilities.

Dan Housman: And what is your perspective on some of the big challenges and some of the solutions you are seeing?

Dr. Sheng Feng: Sure. Yeah. I like the examples that Tom just gave. So, you tell us how overly impressed that Duke University are can start 3 clinical trials based on this registry of 850 thousand doctors and nurse network. and the safety solvent doctors and nurse English network and they can enrol 15000 quickly. So that is a particularly good example to see how of RWD is able to help. What I want to mention is that so when we talk about Multi Centre and a specialist in international clinical trials, which matches US centres in sites in different countries. What is the legal end of the policy? That is a legal consideration under the policy and I think the leaders are building that right now, already this month that regulators from 28 countries. They had a meeting and they want to. Yeah, and it is a title of the meeting is "COVID-19 and the real-world evidence and observational studies". So, during that meeting, they claim that they are going to. Yeah. That they are going to work together and make that happen. So, it is hopeful that after they set atop that stage and then I think we will see more and more collaboration internationally.

Dan Housman: And Dr. Sheng, what do you think about how all these trials are going to work if there is 100 trials all working with the same patients? This is a real, real world data can help with that.

Dr. Sheng Feng: Yes. So, in China, there are already six hundred clinical trials and there are not enough patients. So currently I was I am aware of that. And no one can finish their clinical trial. And in the USA. We heard from FDA that by next Friday, there were already more than 900 proposals sent to FDA. So, there are a lot of clinical trials. So, one way. I do not know how those clinical trials will be run differently in the USA versus in China, but they may run into the same turbine. Two months later, when they start, there are there are clinical trials. There may not be enough patients and the trials cannot finish. So, I think that each and the other leaders are already considering this. They have building those consortiums as NIH building has worked with 16 pharmaceutical companies. And then there are some

other nurses. So, when by doing that, they may share they may share a common placebo arm or they may not even use a placebo arm. They can just use historical control with a with a standardize the trials. So that it can save a lot of patients. So, RWD can play important roles in something like that, for example, like the single arm design. And also, with us. Are the synthetic arm if possible? So that is some of the possibilities. So, one key word here is we need to be organized. It is not like 900 individual clinical trials. It is better to be organized. And then we can share that resource together. Otherwise are we are going to have observe without seeing a consequence of what we observe in China are very few clinical trials can finish by now.

Dan Housman: And I am curious for everybody. Do you think that the government needs to do is it is something that the CRO. should do? What is the right model? Maybe I will start with Tom, because he is struggled through many of these quasi-public private partnership systems. And what do you think, Tom?

Tom Scarnecchia: Well, I do think the public private partnership model will play an important part in this. Sean is brought up. For instance, the NIH working with the Foundation for the NIH, really able to use its consortia building power to bring together a large number of pharma companies and academic institutions to coordinate in a thoughtful way. And I think that that is I think that is an important model. And I think the public private component of it is important. And I think having a trusted neutral convener to help manage through that is also especially important.

Dan Housman: How should Life sciences companies, for example, think about waiting or acting? So, should they form their own partnerships now just to get answers to questions and data, go all the way down to the individual health system, look to aggregators. I am curious from your perspective, maybe yours as well Dr. Sheng.

Dr. Sheng Feng: Yeah, I. Oh, well, I do not know. So that is a best answer for that. But I can say that it is better that life science companies like CROs. We can engage in the public private foundation that is led by NIH or WHO. If we are doing the things just by ourselves, we may not have the appropriate authority to crack down a lot of barriers or the ice loss. So, we do need an immensely powerful leader like NIH or WHO.

Like what? Of solidarity clinical trial led by WHO now. So, it is covering more than 90 countries. It is impossible for ours. Almost impossible for a private company just to us to lead a study like that. But we can help. Yeah, we can help. I took how to collect that data and they use I use a network internationally and the tool to show them how our deputy RWE may help them. Like, for example, now the Solidarity trial is. We can say it is a 100 percent problematic clinical trial is a piece 80 hours as our say teach, although randomized comparative clinical trials. So how are these trials can be wrong. And so, there are a lot of experience and there is a framework and a campout to help that leaders to. Yeah, but then we need to show them that, you know, when I went to NIH, said that we can do a single arm clinical trial. But how that is possible. You know, how RWE or RWC, if we saw historical data and external data, how that can help and where are the data and the White House that they have quality? How are we going to work out so we can be proactive and the workforce? And so that is one way to beat to be engaged others and to work by ourselves. Yeah. That cannot wait. We have some real-world experience to work ourselves in China. And then you eventually there are a lot of issues. Maybe only the government or the WHO can solve a private company cannot.

Dan Housman: So, Dr. Bellazzi, what do you think about the timeline for making this work on this topic?

Dr. Riccardo Bellazzi: I can just one of the problems that you are dealing with here in Italy that is in relationship with the private public initiatives. Because the healthcare is being structured in such a way, is mostly managed by what we call green jobs. And so, the region where I live and it is allowed for region and so on and so forth. Of course, this problem of finding me is a national problem. It is an international problem, the world problem. So, there is a tension there in terms of the management of the of the old days where you have been to the studies. But also, the initiative strategic initiatives between the center and the periphery, because they both want to play their role in the student body. The region in particular is an especially important need, really, because we have one sixth of the entire population. We are 10 million and we are the richest area. So, we pretend that we have enough power to manage our public partnership between private and public in the wild. Probably that we would need a mission of coordination in order to be really successful. So, there is the tension between the two. It is understandable why it is not that I am in favour of one solution to the other, but probably much better

coordination would also help companies to find a new partner. At a level that can really drive the studies with the dimensions that are needed to gather evidence from a disease like this, that is a very I mean, from the statistical point of view, it's a very challenging disease because of the body ability. This is extremely high. And so, these implies the need of numbers that you only have numbers if you put together a lot of institutions.

Dan Housman: Thank you. So, I am curious what your visions are for how this is going to play out. Like, what is the future? And it does not have to necessarily be the dark future. What would be an ideal state for really moving research along? So, Dr. Sheng, I am curious, from your perspective, what is your vision for this future of Wuhan in COVID-19?

Dr. Sheng Feng: Well, we I, I still think the public private collaboration will be the hope will be the direction. Yeah. So, each part can play their roles. It is a government and they cannot help to open to break down the barrier and that data sharing. And if they are talking to the hospitals and talked to the other companies, that may help to collect the data together and I am talking about the RWD and RWE perspective. So that will help a lot. Yeah. And then the private company can provide the techniques that bring light and to make this happen. So, I think that is, you know, from other high level, high level pass. Yes. That should make more sense.

Dan Housman: And does it look like this future. I know there is a lot of initiatives out there. I have seen data vans trying to link data together. There are different projects that you hear about. Right?

Dr. Sheng Feng: Right. Right. We do hear a lot of this. OK, Coke. Coke correlations are data bent. We are applying. They are the data and they are trying to do something and they are trying to answer some questions. So, none. But I think the format can be, you know, if we talk about that all day, while details are able to recommend like something called a dream challenge that has been famous in the past few years, like the organizer can ask a list of questions about COVID-19. And then they can provide data like work with data Bent, Train Axelle. Some of the companies to provide that data at its end to call for data scientist statisticians to work together and see what kind of data they can dig. Yeah. So, this type of activity is may take May to group people together to bring some of the brightest minds together. And they use the most recent and comprehensive data to answer some of the most urgent questions, that most urgent questions, for example, like only last week. There was a report saying that if you have a flu shot, then you are at 36 percent. You have a more assertive 36 percent higher likelihood of being infected by COVID-19. So, if you are talking about the second wave in the winter when the flu and COVID-19 come to us altogether, this kind of answer is especially important. So, you know, so we can do something like that to discuss this question and then to build the army with the weapons, which adds on data to us. So, and also, you know, we cannot help to help the pharmaceutical companies as a whole to carefully identify those parameters for then to design their trials. If you want our master protocols and what are the parameters in the master protocol, answer those parameters may come from a pilot study or it may come from RWD and RWE. So that is something. Another thing we can help our country.

Dan Housman: One thing that comes to mind. Thank you, Dr. Sheng. When it comes to my what I think it is big public private partnerships. There is no, at least in my experience, working with health systems. They are concerned that they do not have the funds or the resources. The resources are connected, the funds to participate in these things. How do you see that working, given all your experience with the public private partnerships you have been involved in? The economics seem daunting if you do not have a good structure.

Tom Scarnecchia: I mean, I think that is that is a fair concern. You know, 10 years ago when we were 12 years ago when we launched OMOP, we essentially had to fund that infrastructure in all of our partners to be able to bring their data into a common format to create a research ready repository. I think things have changed.

I think the emergence of what we are seeing in the larger health systems, this notion of a real-world evidence enterprise where. Data's being used to support decisions regarding clinical care. You know, it is being used to help demonstrate the value of their health care delivery. It is being used in a number of ways. Those organizations stand post two to be able to not only contribute to these broader initiatives from happening from a data standpoint.

*This transcript is auto generated, and may contain some errors

Even more importantly, have the organization to be able to deliver on some of the research commitments. You know, one of it. One of the challenges that I see repeatedly is when you approach a health system, for instance, and you want to talk to him about a data deal, they're much more interested in understanding what the research problem is and how they can contribute to the research problem. I also see a lot of potential in terms of these emergence of learning health systems. Years ago, one of the major health systems on the West coast, they were participating in five or six different research networks. And I asked them why they were not in a position where they were really sort of the gold standard in terms of research ready data. And their point was, well, to answer the type of questions that we have, we need more data than what we have. And so that means working in a community, working across organizations and I think was Dr. Sheng was pointing to is you have to start first thinking about the community and, and how to work together from a research standpoint. You need to put the governance frameworks in place and then you really have to think about the enabling technology and standards that lowered those barriers. And we are starting to see more and more of the mainstream EMR vendors and health IT vendors looking at how they can enable this network effect within their client base on behalf of their, their health system clients. And I think that's substrate to be able to enable this type of research in the future.

Dan Housman: What are your thoughts? How do you fund this? Where does the money come from?

Dr. Riccardo Bellazzi: Yeah, the, if I, if I want to wrap up, what was my experience so far? I think that I, I fully agree that we have to board on the aspects that you need to deal with. One is to work on standards and frameworks that are share the between know the communities and one of those is certainly the RDC initiative. i2b2was another, those are the initiatives that very fast were able to put together data also because they worked a lot on data representation and standards on the well, the way that the ways for really sharing data in a, for both of these. Agreed.

The second aspect that I want to raise is that probably we also may want to work with some better technologies to share data or even better to perform distributed data analysis over the network. In a form of federating the centres to perform the studies in a very secure way. And in this case, I want to mention the initiatives that are carried on by the EPFL in Lausanne, in the university hospital in Lausanne where they are working on a strategy for this sort of very secure strategy so that in a federated network, the data are encrypted and the data analysis is performed on encrypted data. These, these are done through a technology called the homomorphic encryption.

And this, that is remarkably interesting because now we have available algorithms that are able to run and perform distributed analysis to compute machine learning let us say models to run machine learning models. But at the same time, if we are relying on very secure and high level ways of, of sharing the information, maybe we are, we can be in one line from the technological point of view that allows to overcome the barriers that we might have in bringing such kind of studies.

Dan Housman: So here I have question for you Tom. I feel I have this idea since the days of PubMed net yet when talked to the life sciences companies interested in real world data study and they are asking what data and what type of data can you deliver to my site so that I can do my analysis. So, do you think there is this disconnect here. Is there a solution to it?

Tom Scarnecchia: Depends on where you are sitting to view it as a disconnect me a lot of the work that we do is around data strategies helping by science companies find appropriate sources to bring data in house. And you know, it is one thing to look at in terms of just the identified research ready or regulatory great data requires a lot of curation and data cleaning. So they're there is a disconnect from the standpoint of the Richer types of data types are not necessarily available to the normal Source has been so you have to look at new ways of distributing the research and so the interest in networks is growing not only from the standpoint of life science companies. But the traditional players around additionally did the middle of curating making data available. So it is there is there is a disconnect because the easiest path to do analysis is to bring the data in house, but I think the future will be the more distributed Models and as Dr. Bellazzi mentioned to overcome a lot of barriers around privacy and security with these newer Technologies. There is still room for a greater with Improvement around on the Federated distributed capabilities. You cannot expect everyone to agree on one set of Standards. So how do you semantically work across a variety of standards and we have seen some more precarious than across the i2b2 or own data model. So, research is happening there, but it is a mind shift change is required and I think as the Network's become more accessible and more standardized and are able to really articulate their value proposition to conversational change.

*This transcript is auto generated, and may contain some errors

Dan Housman: I know where we are sort of out of time for the first hours. I think I am done for sticking around for an hour. Who is in the audience? I did not want to give everyone on the panel a chance to share a call to action where their thoughts. So, I will start with Dr. Sheng. and I love to hear your call to action.

Dr. Sheng Feng: I yeah. Call to action. So, if this RWE regulatory network, can bring us, some guidance and the policies of, in extremely near future, then then. And I do think that the public and the private consortia type of work. We can explore how to how to build Federal consortia to bring the global data together.

Dan Housman: And how about from your perspective, Tom? What is your sort of take away? Tom, do hear me?

Tom Scarnecchia: Do you hear me?

Dan Housman: Yes. Now we can. I thought you had gone for a sec.

Tom Scarnecchia: My takeaway and my hope for the future is this concept of a combination of the real-world evidence enterprise within health care emerges. And then. Point the contact of a real-world evidence echo system gels around that. And to make that work, we do need to think about more than just the movement of data or access to data. We have to think about the governance frameworks to think about the standards. We have to think about and the mechanisms to work across multiple stakeholder groups to do to do the type of work that is necessary in a compliant manner.

Dan Housman: Thanks. And Dr. Bellazzi.

Dr. Riccardo Bellazzi: I do agree to what my colleagues said. For sure. I just want to add to this scenario that we need to consider the data that comes from primary care. And we really need to work on improving our work capability of connecting into the system. All the health care services that are delivered to citizens or to people in the territory. So that is an especially important and primary care. We need to glue that scenario in order to be able to gather real evidence from reinvigorated.

Dan Housman: Thank you. Well, this has been a great discussion so far. I would like to open up some of the questions or the audience if you. You do have questions for the panelists. I see a couple so far, and I can sort of read one of them, and I guess I will not necessarily direct it. But the first is there is been discussion about OMOP and i2b2 for data exchange for research on how to folks see FHIR emerging as a key part of this puzzle. And, you know, how might it facilitate data exchange or aggregation to build up research capabilities? I will let any of you take that question.

Tom Scarnecchia: But where we have seen fire come into play is when you start to think about increasing the velocity of data from a point of care to research ready. So, it has been a great a great vehicle for making data more fluid and accessible. I think there is still wrought to be done to understand if it is a powerful enough format to support the analytics that we need around real-world research. And I know there's work happening there and there are networks that are emerging that are using the fire model for that. So, it plays an especially important role.

I think it is plainly important to recognize the reason why there is an i2b2, there was the concept of shifting from an exchange standard to an analytics standard with respect to data representation. And I think fire is trying to bridge that. But I think we all have to wait to see if there is a momentum in terms of building communities around that.

*This transcript is auto generated, and may contain some errors

Dan Housman: Any other thoughts? Dr. Riccardo?

Dr. Riccardo Bellazzi: I mean, we made some experiences and using fire on top of both i2b2 And of course, it is a particularly good approach is another piece to see the puzzle that we can use that is an enabler. Is this what I see then, Thomas certainly is more expert than me before he pointed out these shifts. That is a representation to an Olympics. That is very compelling in a way if we want to improve the use of fire itself.

But I feel we found the fire a quite convenient tool that we can use for data sharing.

Dan Housman: Great.We have another question, which I think is about data standardization from the question itself was asking about, you know, how do we standardize different data? For example, similarity or slice thickness and other features. And I think it gets to the question of how we can deal with, you know, it is heterogeneous data and these advanced data sets. And what would you know if we are going to push for, as you suggested, I think, record of that. Well, we will be looking at a tool that might look across many data sets but never have access to them.

If is not standardized, how will we work? So, you know, is there a solution to that?

Dr. Riccardo Bellazzi: Yes, this is the key really hard question because it is close. You go to the data; it is closed to the images and signals. The more becomes complex, the sharing of the data in particular, if you want to merge. Sharing results are going to lead themselves with the and sharing the data. So, in general, I know I am not an expert in image processing, but there are biologist to try. It tries to deal with the problem representation.

In other words, the tools that are quite interesting that derive meta images from themselves that are somehow a little bit more robust, the to the data who leaked it themselves. Think about like these transfer learning with the deep neural networks that are able to select Lipan features to fix the architecture of the neural network from the images that can be shared in a way that somehow more robust than the data themselves. But let me say that I think that the use is a challenge.

There are there are attempts to try to provide robustness to the images.

Dan Housman: Dr. Sheng to do this on a global basis for trying to standardize data?

Dr. Sheng Feng: So no, this is a prospective study and it is already in the protocol. That is how that they talk about the organized. So yes, it is far from that big Day top perspective. It is that retrospective data. It is almost there is almost no way you can say you can standardize that data from different countries, even from the same country, from different hospitals. Sometimes it is an exceedingly difficult to standardize that. So perhaps the best way is just to just do your best, is not to record what factors like how everybody has taken from that data source.

And if possible, you can a deeper trying to understand why. And there may be a strong hope that if you understand why you cannot do some justification, you know, data analysis. But that can be dangerous as well. So, I think it is the best hope for the prospective studies have a better desire to have all the data source using following the same standard. That would be a much better solution.

*This transcript is auto generated, and may contain some errors

Dan Housman: And there is another question about social determinants of health. And are they being collected and analysed in order to be of any of the panelists have come across scenarios where that is been an issue for COVID-19.

Nothing so far?

Tom Scarnecchia: I have not necessarily seen it specifically around COVID-19, but we have been watching a couple of companies that are in health care facing a. We are predicting risk. That are doing some remarkably interesting work around social determinants of health and understanding the barriers to care at that. From a geographic standpoint. And that is showing promise in terms of. Also informing clinical trials from an operational standpoint. So, I would not be surprised if those firms have not turned their hat in the ring regarding certain supporters' aspects of covered research.

Dr. Riccardo Bellazzi: Well, you just can. I am fairly sure that our local little care agency is dealing also with disaster victims. They recently published a study about the idea. And when I leave showing the number of deaths in the different areas and the good are several reasons why in an area that is so, so small, we have three different behaviour of the different of the two people is subregions. And there are a number of reasons. And one of those is certainly related to the social determinants.

So, it is a topic that you need, at least on the study. And my opinion is also related to the topic called having a better improving government system to manage people when they are at home. Basically, that is related to these disasters.

Dan Housman: I think is the last question we have time for, tonight's challenging one, which is- what do you think will be required to advance the acceptance of real-world data, real evidence by regulatory agencies? And I will frame it in the context of COVID-19. Is there going to be some progress because of COVID-19 around regulatory acceptance of evidence through RWD? What will it take to make regulatory groups look at this as sort of equivalent or capable at the same level as some clinical trials we have seen as the design of how most regulatory decisions are made?

So, I think Dr. Sheng probably is the person who most gets close to regulators in terms of running clinical trials?

Dr. Sheng Feng: Well, I think that some of the components has already been used. For example, like we can take some of the knowledge that we gather from China using RWD, RWE, you know, from how many days does a patient progress from the first symptoms to diagnostic kind of from diagnostic how many average days to hospitalize, and from hospitalize to ventilator. So, all these parameters are from, if, if FDA ask us, where do you get that data, we have to tell that it is from China. So those are the part about the RWD and RWE. We already know from the clinical aspects of it has already been used.

Then some of the some of the other aspects like how to how to determine sites, how to work with the hospital doctors and nurse and the some of our clients today specifically talk about please do not add any burden to the nurse. They are already terribly busy. So, so we have. So, when we design a trial, we have to think about that. We have to take that into consideration. Should we use E and the e-consent and how to do that.

So that, so that will be welcomed by the FDA as well. But then there are other things. For example, if NIH said that we welcome those 16 companies to use single arm, single arm design without placebo, then whether FDA allows that. So now they have they see tap program. They can talk to them. And they

are also FDA has their own programs. So, they have advocated some money out to propose some grant and that they invite you to apply for those grants for RWE and RWD to have some correct influence on the decision making up for FDA.

So, if appropriate, I think they are open. They are open. And if they are real and they really give importance of RWD and RWE during the pandemic, especially for some of the RCT, sometimes it is not even possible when doctors and nurse that helping that there are patients for time. So, it is not even possible. It will be problematic. So, if it if it is problematic then RWE and RWD will be in the center of those problematic trials. So, that is the fact. I think better communication with FDA will be especially important here.

Dan Housman: Tom, maybe your last word. You want to close at some point?

Tom Scarnecchia: There is there is clearly a regulatory science component to this. And, you know, think the agency and a lot of the advocates, you know, that are that that believe in the traditional ways. Clinical trials are looking for equivalency.

And if we just go back and look at where we are with active safety surveillance today around drugs, it can. Fifteen years ago, there was not sufficient empirical evidence that the studies were repeatable, that they brought it to the right decision regarding the endpoints. So, there is a lot of work going on today with FDA and with the community around the regulatory science dimension RWA.

And that is where I placed my hope for new ways, new designs and new approaches.

Dan Housman: Can COVID-19 help in any of this. Can it accelerate any of this because it is going to now when we wake up, just like telehealth suddenly arrived, whether we have arrived or not.

Tom Scarnecchia: I think that you will see a lot of ingenious approaches to close clinical trial with the use of RWA Trials to augment these trials. I think the industry would be bringing us forward. And, you know, I think the follow the guidance that is out there so far.

So, I think, you know, sometimes it takes an unfortunately takes a crisis to kind of accelerate thinking and acceptance of new approaches. But, you know, I do. I do not think standards will be relaxed. I think it will just be crystal clear thinking about the equivalence and does it demonstrate what is necessary to support the decision.

Dan Housman: Great. Well, I think we have run up against the time we had allocated, and I would just like to thank all of the panellists today. I know this has been a fantastic discussion from my perspective, and it is always lightninged to hear from different perspectives. Great to hear from places other than the US. And so just thank you very much. And also, thank you for all the people who attended and provided great questions. We will have a recording. So, if you have colleagues who are interested in hearing the proceedings and you can fast forward to the greatest hits of what we talked about, that should be available shortly.

And if you have any further questions, feel free to send belong to us and we might be able to have additional answers. So, thanks so much. And we are going to close out the webinar now and they will have another of these soon.

*This transcript is auto generated, and may contain some errors