

Medicaid Innovation Accelerator Program (IAP)- Beneficiaries with Complex Care Needs and High Cost (BCN)

Audio-only transcript of the video recording of the IAP BCN National Dissemination Seminar: Identification and Stratification of Medicaid Beneficiaries with Complex Care Needs and High Costs

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Speakers: Karen LLanos, Juan Montanez, Tracy Johnson, Ruben Amarasingham, Joe Weissfeld, Jennifer Valentine, Lynn Dierker

[Introducer] Good afternoon and welcome to the Medicaid Innovation Accelerator Program (IAP) - Beneficiaries with Complex Care Needs and High Cost (BCN) webinar. Today we are talking about the Identification and Stratification of Medicaid Beneficiaries with Complex Needs and High Costs. Before we get started I will just go over a few logistics.

Today all participant lines will be muted automatically. If you have a question during a presentation, we encourage you to use the chat box on your screen. Please note that if you are in full screen mode you will not be able to see the chat box or participate in polling questions, so just exit out of full screen to participate in both.

Later, during today's webinar, we will have a moderated Question and Answer (Q&A) session. To verbally ask a question please dial *1. At that point you will be connected to our webinar operator who will connect your line so you can ask your question. As a reminder, please fill out the evaluation in the pop-up box after the webinar to help us continue to improve the webinar experience. And now I will hand things over to Karen LLanos. Thank you.

[Karen LLanos] Hi, everyone. If you can hear me, this is Karen LLanos. Since we are having a little bit of static on the line, I am just going to try to make sure that folks can hear us. Welcome to our national webinar. First, we want to make sure we have a sense of who is on the line - so Chiara, if you can open up the polls, if they are not already open, we will ask everyone on the line to select which one of the

listed organizations they feel they are representing today. This will give us a good sense of who is on the line. We will just take a few moments to check. Chiara, you can close the polls and let's see who we have.

It looks like the majority of folks are from state Medicaid agencies, which is fantastic. There is also a nice distribution of folks from state agencies other than Medicaid. It looks like we have some health plan partners, healthcare providers, a few consultants and then a few other folks. If you indicated that you are under the "other" category, feel free to chat in using the chat box to indicate who you are representing. This helps our speakers and ourselves know who we have on the line so we can be prepared for some questions or tailor our comments accordingly. Thank you very much, Chiara.

If somebody can just move to the next slide, I'll give folks a sense of who we have on the line. My name is Karen LLanos, and I am the director of the Medicaid Innovation Accelerator Program, or IAP. We are happy to have you on today's call. Let's move forward one slide to give you a sense of how we are going to spend the next 90 minutes together.

Let's briefly touch on some background to give you context and a sense of what we are going to cover. Then I will be turning it over to Juan Montanez, a principal at Health Management Associates, who will provide more context related to some key learning on how to think about identifying and stratifying Beneficiaries with Complex Care Needs. I will just tell you - you will hear the acronym BCN a lot over the next several slides and during this call. This is just a shorthand way for us to describe Beneficiaries with Complex Care Needs and High Costs.

After Juan has given you some context setting on that, we'll move to perspectives from the field. That is an opportunity for you to hear from folks working, moving, and breathing in the aspects of this work. First, we will hear from Tracy Johnson, a director of Health Care Reform Initiatives from Denver Health. Next we'll hear from Ruben Amarasingham, who is the President and CEO of the Parkland Center for Clinical Innovation and Pieces Technology.

Then we'll take a quick second and hear from two of our BCN initiative states. For those who are not familiar with the BCN initiative, I'll describe it in the next slide. These are states we have been working with here at CMS as part of the Innovation Accelerator Program over the past 10 months. We'll hear from them in terms of reaction, in terms of how they have heard our speakers describe some work as it relates to their own challenges and struggles, and success stories with data analytics around identifying and stratifying complex populations.

Then we'll take a break and open up the lines to questions for any of the speakers. This will be an opportunity to share thoughts, or comments or some questions related to these topics. We'll then provide a little bit of summary in terms of what we heard today, tell you about the next upcoming webinars, and make some closing remarks. We will keep encouraging you to submit feedback on our webinar.

Let me move quickly to our background. Again, this is just to give you a sense of why we put this webinar together. This is an exciting kickoff of a four-part webinar series where we took the best of the best, or the most well-received work over the past ten months, while working with our five states related to our BCN initiative. The Innovation Accelerator Program is a technical assistance or technical

support program, which is really centered within the Center for Medicaid and CHIP services of CMS, and is focused around supporting states' Medicaid delivery system reform efforts.

As part of the BCN track, we have been working with five states to look at key issues, such as identifying and stratifying their target populations, incorporating social determinants of health into targeting and program design activities, designing effective care management strategies, and then how to redesign or pay for these activities or changes in a way that makes the most sense.

These are the most common themes. We have covered some other issues, but these are the four themes we are going to focus on as part of our four-part national dissemination series we are kicking off today.

So, today's focus is on that first piece, which is identifying and stratifying target populations. Before I turn it over to Juan, let me just say that the folks that are participating as part of our BCN activity are the District of Columbia, which we will hear from today, New Jersey, Oregon, which we also will hear from today, Texas and Virginia. We have two state reactions queued up today, and they are from DC and Oregon. Now I will turn it over to Juan Montanez from Health Management Associates.

[Juan Montanez] Thank you, Karen, and good afternoon or good morning to all of you participating in the webinar today. My job is initially to provide some context on the topic of Identification and Stratification of Beneficiaries with Complex Care Needs. Before I jump into that, let me just add a little bit to what Karen provided in terms of some context. Many states, if not all states, are dealing with the challenge of these high utilizers of healthcare services within Medicaid programs. That challenge is around the optimal way to address their needs. What we have done is to define this group of Medicaid beneficiaries and label them, so to speak, as BCNs. These are individuals that manifest poorly managed yet impactable health conditions. If we can find the right triggers in terms of addressing social determinants or other factors, we are able not only to impact positively their outcomes and health status, but also to reduce utilization of what could potentially be avoidable services.

The key to that is to target these individuals effectively. There are multiple functions or processes associated with targeting, all of which are of course very data-intensive and very data-dependent. When we are talking about the data required for these activities, it's totally multi-dimensional: if you are looking at demographic information, information about their context overall, their service utilization and cost, past history of utilization, and other relevant data which would include social markers. And what we are trying to do initially as part of targeting, in an ideal instance simultaneously, is identify where they are. That is the notion of hot-spotting. Is there a high concentration of individuals with common characteristics in particular locations? Could geography be actually playing a role in their particular situation? If you are dealing with asthmatics and they are actually living in an area that has a high concentration of certain pollutants? It could be a situation where the pollutants are actually contributing to their situation, not just that they happen to be in a particular location. But you are also profiling them, trying to get a better sense of who they are, what services they are or are not accessing, including services they could be accessing that could be better for their situation. Looking at those common markers then leads to what we refer to as impactability assessment. Are we dealing with health conditions that are truly impactable with the right mix of interventions?

That then leads to the two other activities we want to describe today. The first is stratification, where we actually group potential program participants based on common characteristics and needs, and the ability, through a certain set of interventions, to impact a group. We are always trying to individualize care service plans, but it also makes sense to try to group individuals that have common characteristics and a certain level of case complexity. The goal is to then find the right mix of providers, under the right care or setting, with the right interventions to actually address their needs. We describe the process of essentially moving those individuals or routing them to the right program or the right team as channeling. And we illustrate the channeling process in our next slide.

This is what we are trying to do. There is a universe of BCNs that we are trying to ultimately channel, using stratification first, into the right mix of programs. These could be health homes; these could be patient-centered medical homes; or these could be accountable care organizations (ACOs), whatever the actual ultimate provider organization is that will take care of these individuals. The idea is that, through the right use of data, we can get them to the right providers.

When we talk about targeting, we describe it as being something that happens at two levels. At the macro level, which is the level where states, counties or localities are operating, we are looking pretty holistically at the entire population, relying on how you order fairly aggregated data to actually do that initial identification, hot spotting, profiling, stratification and channeling. It does happen before you actually “enroll them” in a particular program. Different programs have different rules, depending on how the state has designed the program, for “enrolling” folks into those programs. For example, there are health-home programs across the country with opt-out versus opt-in rules.

What we cannot forget is another level of targeting, which is truly happening at the point-of-service (POS), where the action is happening in terms of providers intervening with the patients or the clients. That level of targeting requires more real-time information. It could be facts garnered from assessments, or observations at the point of care. It could be evaluations, whether self-evaluations or evaluations, done by a team of care managers for example. The idea is that while there is a macro targeting activity going on perhaps at the state level that results in an individual being channeled into a particular program, the provider has to take it to the next step, which is developing an individualized care, case or service plan, depending on your terminology of choice. The plan needs to identify key interventions that could be healthcare services or other services that complement the healthcare services, and then assign the individual to a specific care management or care team, which is usually something that happens within the context of those programs.

Again, all of these activities are very data-intensive. This graphic is meant to show that we are very often dealing with data sources from multiple agencies that very often have to be reconciled and harmonized because they are not always being managed in exactly the same way. There are challenges around indexing of timed data from different sources, as we all know. But the goal is that you are actually bringing together data that describes individuals in a very comprehensive way. Their demographic profile of where they are, how you can contact them, and their context, whether it is medical, behavioral or social. Their history in terms of programs they have participated in provides a lot of insight into what they might need in terms of future services. And, of course, their history must be considered - what they have consumed in terms of services - to then drive all of the activities associated with the whole lifecycle of the program. Today's focus of course is on targeting and stratification. We cannot forget that once those activities are completed, there are provider systems that have to be fed the right

information that can be used by other providers to drive decisions downstream. When we are dealing with a managed care environment, the MCOs are of course part of the whole process of managing the individual's services.

Let me share a couple of key learnings, more like five key learnings, from the engagement we have had with those five states that Karen noted before. What have we extracted in terms of key learnings that could be passed on to other states and other providers? We have learned, not just from the states we are working with, but also from other organizations that we brought in with subject matter expertise, that there are some pretty sophisticated algorithms being used for targeting and stratification activities. One example is the well-known Chronic Illness and Disability Payment System (CDPS)). It was developed by the University of California in San Diego originally for Medicare, but it has also become a tool used in programs involving duals and other populations.

The PRISM system, a predictive modeling software and data system, was developed by the State of Washington. Dr. David Mancuso worked on that whole effort. There is also a strategy for categorizing comorbidities of patients based on diagnosis coding called the Elixhauser Comorbidity Index, which was developed by a University in the great country of Canada.

The point is, you do want to have a structured approach for targeting and risk stratification. Then, it would seem that, several states have actually brought in academic expertise to the table, leveraging the expertise. In the case of Oregon, for example, the Oregon Health & Science University (OHSU) was always able to bring to bear, and in the case of Texas, use resources from the University of Florida. The bottom line is, if you can bring in folks from academia that can provide that detailed analytics expertise, it certainly complements the team working on this effort. It enhances the capability of doing some really high-powered analytics.

There is always that challenge of aggregating and harmonizing data. That is where data warehouses and decision support systems come into play, whether they are home-grown or third-party systems. The key here is to leverage those data standards that are continuing to evolve, going back to the days of HIPAA. You have the National Information Exchange Model that helps harmonize health and human services data. You have good old Health Level Seven International (HL7), and the Quality Reporting Document Architecture (QRDA) developed more recently. But the goal is, you can bring all this data together and then you are able to drill down and roll up as needed. You can then use all that information you are likely to have and want, whether it is social, medical or behavioral data, to do some really high-powered targeting and stratification.

I'd like to make a couple of other observations. We know that we have to make sure all this information exchanging, sharing, and using is conformant to all the pertinent federal and state laws and regulations, so working out the right data use agreements, and being very clear about the use cases that would govern how that information will be managed is always critical. Last, but not least important, is measurement. We are going to make this point throughout our presentation. You are not collecting all this data about beneficiaries to only use it for targeting and stratification. You want to collect that data and make it available downstream, so you have a continuum of data that can support ongoing verification and validation that the services you are providing to these beneficiaries are indeed resulting in the outcomes you want. And again, we'll be coming back to that point throughout the course of our webinar.

I just wanted to share that context with the group and then turn it over to the real experts here. We are going to start off with Tracy Johnson, who is actually joining us from Australia, and is going to be talking about her experiences at Denver Health around these activities. Then, Dr. Ruben Amarasingham from Parkland Center will be sharing his experience. From there we'll be hearing from staff from the District of Columbia and Oregon. Then we'll be having what hopefully will be a pretty animated Question and Answer (Q&A) session. So, without further ado, I am turning it over to Tracy Johnson.

[Tracy Johnson] Hi everyone. Good morning, or at least for me it is morning. Good afternoon for the rest of you. I would like to start by just telling you a bit about Denver Health, so you will understand the context in which we were implementing our stratification project. Denver Health is an integrated delivery system, so we have a 500-bed hospital and 8 physical sites for primary care around the city of Denver. We maintain our own health plan and we run the local health department for our city. So we have pretty much the full range of care under our umbrella, which for this kind of project is helpful because it means we collect a lot of data on our patients. We have a data warehouse including payer data that we can leverage to really understand our patients. I will show you, hopefully in the next 20 minutes or so, how we were able to do that.

This is the process by which we developed our program. First, we put together a team that I led with clinicians, IT professionals, finance department staff, and health services researchers. We then chose our macro population and developed our stratification approach. We evaluated it both from a clinical and financial perspective. Then, we really looked at what care models worked for which population. We identified individuals that we thought were good for the care models. We iterated a lot on that point and then eventually developed workflows, processes, process monitoring, and evaluation. I will go through that on a step by step basis.

The project that really launched this work was a grant from Center for Medicare & Medicaid Innovation (CMMI), in the Centers for Medicare and Medicaid Services. This grant allowed us to get substantial investment for clinical resources and also Information Technology (IT) resources to support the project. The philosophy was that we would identify a population we felt we could manage in a primary care setting. Just that first step, identifying the macro population to be the focus of this project, actually required some level of conversation. As I said, we were the public health department, and we actually do 911 services for the city, so we had to really think about what population we were really accountable for and that we wanted to focus on. We ended up with people using primary care at our delivery system, or should be using primary care, as the population to focus on. In other words, it was the people who should be using primary care, people who were members of our managed care plan, or people who were using a lot of hospital, E.D. and urgent care services. We decided that this group of people, and their behaviors, suggested they think of Denver Health as a delivery system so we should get curious about whether they have a primary care provider, since we offer primary care services.

So that was the group of people we thought to risk stratify. As this image shows, what we tried to do was not just to identify the highest risk people at the top, but really try to break people into four groups. The healthy group is at the bottom, which is the largest part of the triangle, and consists mostly of kids. As you go up the triangle in risk severity you see more adults. We really felt it was important to stratify our population from a high-risk perspective but also from a medium and lower-risk perspective. So, what we sought to do was think about how to tailor a staffing model to each of those groups, what

types of services those groups might need on top of regular primary care, and what would be different according to their level of risk. As you can see from the dollar figures, the amount of money we had to kind of play with is really different based on our current per-person spending. Our thought process was that if we could, for example, develop a high intensity treatment team for our highest risk tier, we could save on hospitalization. We were currently spending nearly \$7,000 per member per month on that highest-risk population, and we hoped there might be some return on investment that we could use to continue to fund the program.

As I said, we spent some time thinking about who our macro population was. Just so you can see how it plays out, our total patients are about 250,000 but the patients we enrolled in this program are about 140,000. For instance, if you arrive by ambulance to Denver Health, we do not assume that you were expecting us to manage your primary care services. You can see the differences in those two populations numerically.

The next thing we did was to really start focusing on our risk stratification approach. And I did find the language from our prior presenter very helpful in terms of separating out macro versus micro targeting. This next exercise really focuses at that macro level. What are the large population segments that you can do some mass-tailoring of services for? We experimented with a couple of different tools, we played with CDPS initially but we ended up settling on a software package called Clinical Risk Group (CRG). It's a 3M product. What we liked about this particular tool, and there are others like it, is that it takes your billing data, runs an algorithm over it that mostly looks at diagnoses, age, gender, a little bit on procedure coding, and pharmacy, and then it sorts into 1 of 9 categories.

Those 9 categories are clinically coherent, which is what our clinical team liked about this product. You are assigned a 1 if you are largely healthy and a 2 if you had a history of significant acute disease recently. Three through 7 are categories of chronic disease, the higher the number the more and the more severe a chronic disease. Eight is where the cancers were, particularly the metastatic cancers; and 9 was the catastrophic category, for things like diabetes, or a car accident. Within each code there were many sub-codes, so, for instance, in category 6, which is chronic disease in multiple organs, you had a code that specifically referred to the diabetes and asthma combination. Then, even within that code, people could be more or less severe. So the dollars associated were quite different, depending on if you were the lowest severity or a higher severity.

And initially what we thought we might do was just create our 4 tiers directly with this algorithm, but what we started to think about, which again was referenced by the prior speaker, is impactability. We were really looking for avoidable utilization, not just high cost, so when we looked at those 8s, and those 9s, the metastatic cancer and the dialysis patients, we thought those folks were expensive but not necessarily impactable expenses, at least not with a primary care strategy. What we decided to do was use CRG as a building block, but we didn't necessarily put the highest numbers into the highest tiers. This next graphic shows you how we built up our tiers based on CRG.

Really, what ended up in our highest tier was CRG 7s and 6s, and those were the people with multiple chronic diseases. We actually put our 8s and 9s down a bit lower, because our thought process was that a person with cancer may need some level of support to get the cancer treatment, but again we did not really think about the impactable cost, so they were not in our very highest tier where we were trying to allocate very intensive care coordination resources.

The other thing we did (about 97% of people got into their risk straight according to CRG) was to overlay some rules we came up with on our own, looking at unusual patterns of utilization. One of the criticisms of using these models as they exist today, is that a lot of them don't have very strong capabilities to incorporate social determinants of health or even behavioral health, very well.

So we hypothesized that if people were coming to our hospital 3 or more times in a year, maybe they had an unmet social or behavioral health need or, in any case, should get a little bit of a closer eye. We then would promote people to the highest tier at least temporarily so someone could take a look. Basically our macro targeting involved using a commercial predictive risk tool, overlaid by some rules that we developed on site, mostly around unusual patterns of utilization.

The next process was to really evaluate the clinical coherence and the physical properties of the population segmentation. We relied on our clinical teams to tell us if the tiers made sense, and this is where that rolling up or rolling down feature becomes really important.

We developed some pretty good IT tools so that, as we made decisions to put people in different tiers, we could spit out lists to clinicians working on the project where they could see their patients, tiered according to what we were hypothesizing as our next iteration for tiering and they could really react to this, and thought, yeah, this makes sense.

From a financial perspective, what we did was identify patients of 3 different time periods in January. So in January 2012 we identified a list of patients. Then we looked at their cost going forward to the next year. Similarly in 2013, we identified people in January, and looked at their cost going forward. And in 2014, we looked at people and went forward for 6 months. What we wanted to see here was, is this CRG tool financially stratifying our patients so we can just use it as a building block, and not necessarily have to go in and check in on the financial properties all the time. It largely showed that the higher the CRG number, the more expensive the patient, so that then made just working directly with the CRG tool more straightforward.

The next step in our process was to really look at what kind of care models might be appropriate for particularly our higher tier patients, the patients that are the focus of our grant project. And to really think about patients who would be good for those programs, as I was saying in the introduction, this is a highly iterative process.

We focused up here, on our tier 4 people, particularly the people who had a lot of hospitalizations. We did some analysis to try to understand this population a bit better. Here is an example of one of the analyses we ended up writing up. Basically what we wanted to do was try to understand how many people we had who were BCNs, and to what extent they were the same people over time, or if they turned over at the individual level. This graph basically represents 24 times of us running our algorithm, once a month for 24 months. Each time we ran our algorithm, we identified people for whom it was a true statement that they had been at the hospital 3 times in the last year. And since when you move forward, your lookback period is slightly different, you get a slightly different count each time. If you look at the height of the bars, you can see that the numbers are around 1,650 every time you look. But if you look at the colors of the bars, particularly that first bar at the left, what the colors reference is what is going to happen to the individuals identified in the first time period over the next 24 months.

The orange group at the top, represents people who are likely to die at some point in the next 24 months, people who have been to the hospital frequently who are at the end of life. The blue part of the bar, which is the largest part of the bar, are people who are going to start using services less as they become lower risk at some point over the next 24 months. The yellow group are people who kind of go in and out of status - they start using services less for a while, and then start using them more again. There is only that very small group at the bottom that, every single time you look, are people who have had 3 hospital stays in the last year. Someone who is on dialysis might meet that condition. That really got us thinking, not only as we originally did about evaluation questions, but it also got us thinking about programs.

So, for instance, if we were going to run lists to identify who our frequent users of the hospital were, it would be really important not to run that list off billing data, because billing data can be old. By the time you can get a list out to somebody, the information might be 6 months old and then half the people on the list are no longer using the services at a high level anymore. You really need that real-time data. Again, if you start thinking about micro-targeting, your strategy for doing analysis needs to change a little bit. This also got us thinking about the program, which needs to be pretty responsive too, since you are catching people in the middle of their high-utilizing episode.

Here is an example of workflow. It is not a very interesting slide, but it shows you that you need to come up with a mechanism to surface individual patients to a program. We had a way to detect when someone newly met the condition associated with 3 hospitalizations in the last year, and we sent it over to a nurse who worked in an intensive outpatient clinic, that would look and apply some additional clinical criteria to understand whether they should enroll in that clinic.

After you develop your clinical workflows, you want to think about how you are going to know if this program has made any difference, and do some evaluation. One of the implications of the slide I just showed you with the colorful bars was that when we have a large number of people who are going from very high levels of utilization to very low levels of utilization in a short period of time, it complicates regression. It means that it's going to look like there was a reduction in service use and lower cost, but that happens with or without your program. That phenomenon is called regression to the mean. This illustrates (it is actually the same data represented a little bit differently) that if you think about these people we identified on the first bar, they were selected because they had 3 hospitalizations or more in the last year, and they were quite expensive the year before we were potentially going to involve them in the program. If you look at the year after, and this was several years before the program existed, you can see that their cost and their admissions went down. But again that was just a natural pattern; it has nothing to do with the program. The program did not even exist. So when we evaluate the program, we need to think about this phenomenon.

What we did was an actuarial analysis. The reason an actuarial analysis works is that we are not just looking at the people re-enrolling in our program; we are looking at all costs for an entire year. There are going to be people who are going down in their utilization, but there are also going to be new people going up in their utilization. They are capturing everything. What we did was take all of our costs at a baseline period before our program happened, added medical inflation factors to estimate what our costs would have been without the program, and then we looked at our actual cost. If there are any savings relative to what would have been to what actually happened, we can potentially attribute that to our program.

In terms of lessons learned, I have sorted them in a couple of different categories. On the macro level I think there was some work involved getting clinician buy-in. That really required a lot of focus on transparency, and also language. Clinicians are more motivated by avoidable hospitalizations than they are by lowering cost. That is not an inherently compelling argument with clinicians. But most clinicians are pretty motivated to avoid avoidable hospitalization. We needed a lot of time and energy around thinking about target populations, and thinking about payment models that would really support this kind of work.

In terms of the micro-targeting at the patient level, really that real-time identification was quite critical. As you are thinking thoughtfully about where, when and how to intervene, you really need to match the kind of patient we are talking about. We found a lot of differences and the extent to which, for instance, patients who were using primary care before we were thinking about our program or not. It is hard to do a primary care-based program if your patients are already using primary care. That sort of recruiting them to primary care needs to be part of the strategy, if they are not already using primary care for instance.

In terms of state Medicaid opportunities, I think there are a lot of things to think about on the regulatory side. In particular, how do you monitor people who use services in this program then move out of a fee for service environment? What is that alternative structure for the monitoring progress? I think there are a lot of things states can help with around data analytics, providing the actual data, but also some of the analytics, particularly that macro step, and payment models. This is going to be challenging, I imagine, because systems are going to want different things, depending on where they are in their continuum.

I would just like to acknowledge our funder and my collaborators, and emphasize that these findings are findings of Denver Health, and don't represent the views of Health and Human Services at the federal level. Thank you.

[Juan Montanez] Alright, thank you very much. And without any further ado, we turn it over to Dr. Ruben. Dr. Ruben, the floor is yours.

[Ruben Amarasingham] Thank you so much. It is a real honor to be part of this panel and speak to this national audience. Thank you so much to the IAP for allowing us to present our work. I am the president of PCCI which is based in Dallas, Texas and also CEO of Pieces™ Technologies, which is a software engineering spinoff from PCCI to help execute our work. PCCI stands for the Parkland Center for Clinical Innovation. We are a research non-profit affiliate associated with Parkland Health and Hospital System, which is a large safety-net hospital in Dallas, Texas. We focus heavily on how to use data and technology to improve care for socially vulnerable and complex patients.

Everyone on the call is probably familiar with some version of this type of framework around the importance of social determinants in health. This is data that we have taken from the county health rankings that we really like. It really represents that for clinical outcomes you know a large portion of what happens for individuals actually occurs outside the four walls of the health system, or the outpatient center. It really can be driven by social, economic, and environmental factors, and only 20%

of clinical care. A large chunk is also due to health behaviors. When we are thinking about strategies; how do you address the social economic environments? How do you address the clinical care? These are obviously difficult strategies. We work on both in Medicare BCN, as well as Medicaid complex needs patients and the uninsured. Quite frankly, we have a lot of those patients.

I want to speak about our work at a high level, and I want to encourage audience members that are interested in significant details about this to visit our website. We have almost 30 published peer-reviewed papers that talk about our work in any level of depth that could be useful to you. But at a high level, we approached this problem from a variety of perspectives - the workload issues that we previously discussed, the data and technology issues, and the change management aspects of this work.

On this slide what you see is a timeline. In this particular case, this could be a re-hospitalization or readmission timeline. A person got admitted. They had their hospital course. Then they're discharged. Post-discharge there are a number of events to manage after 30 and 90 days. That's the timeframe for something like a readmission timescale. There are also timescales for avoidable hospitalization, which we just mentioned. That should be the pre-hospitalization timeframe, the hospitalization timeframe, and post-hospitalization. If you are looking at conditions that can progress over a long period of time, such as the progression of chronic kidney disease, or oncology, then the timescales are different. When we look at it, we say for a particular adverse event that we are trying to prevent, like an avoidable hospitalization or readmission, what is the timescale, and what are the critical steps where actions and evaluations need to be taken?

What you see here on this slide, in this particular timescale, is what we think are 6 critical steps. In general, we think that these 6 steps need to be followed for any kind of adverse event, whatever the timescale is. We have a critical focus on these 6 time points. A big part of our work has been to determine how to then extract the data from the multiplicity of systems: electronic medical record systems, health information exchanges if they are present, clinical data warehouses, health plan data, and, increasingly in our view, a really important component is the community-based organizations that care for vulnerable populations.

We worked on a system that is called Pieces™. It was initially developed at Parkland Health and Hospital System, and it is now being deployed at other health systems. Essentially it follows patients through these 6 steps, and tries to do some of the work that has ultimately been described at Denver Health, to make sure we are predicting, activating resources, and learning from these processes. I'll walk through that in a second. The last part that you see there is - we heavily have been working on how to evaluate when things go wrong as they inevitably will, and learn from those, and use that to improve modeling, workflows, and interventions. We think that change-management and learning component is really critical for anybody that is working in this space.

Specifically at a high level, the areas that we think are important to tackle these issues are listed in these steps. For whatever the timescale need be, whether it is a readmission timescale like this, avoidable hospitalizations, or progression of disease over a long period of time, we think a critical component is identifying what is going on from the disparate systems. A huge part of our work has been focusing on developing natural language processing capabilities, which is the ability to read narrative data, in any format. Sometimes it can even come from structured data sources, but structured or unstructured, data to identify obvious things like clinical condition and clinical concerns. We increasingly are trying to capture from all of these record components around social determinants of health.

Homelessness, substance abuse, behavioral issues, social support, changes in address, aspects of personal chaos in individuals' lives by the fact of moving around to different locations. We are finding personally that natural language processing offers a wealth of opportunities that were not present before. We have had the ability and increased capability to model features. For example, an individual lives on the third floor and may have difficulty, because they are wheelchair bound post-hospitalization, access that third floor. How does that affect the case management decisions? We are taking the data that is in these electronic records in whatever form, and really modeling a thoughtful profile about what is going on with the individual, both clinically and increasingly around social determinants of health. Once you have made that identification, then establishing risk. In the early course of this work, which began 10 years ago, the nature of modeling risk was initially pretty crude, the overall risk put into some categories.

What we have come over time to start working on, and increasingly develop, is explore the nature of that risk. You can indicate that someone is high risk, but they may be high risk for different reasons. If you know the reasons, then you can establish whether or not you have the right intervention approach. At certain times the interventions may not be available to a certain, let's say, health provider or care plan or health plan. Then you may want to focus on interventions where you have resources, and focus on the patients where you can make a larger difference. What is the risk and what is the nature of the risk? That process can help significantly.

In the boxes, C and D are making sure you can activate resources in real time. There are a variety of ways to do it, but obviously if you are working with health care providers or case managers or folks in the field, a lot of times they want to work within their own workflows. Being able to activate interventions within electronic medical records, within case-management systems, and within community-based organization systems are really critical to making sure that you can take action directly on the front lines quickly.

For step E, once you have done identification, you established risk. You established the nature of the risk. You activated the right resources. But a lot of things need to occur correctly. Trying to leverage the data systems that are available to monitor what's occurring, and that we are on the right path, is a really critical element. That is a key component.

Then I would say for step F, of all the things we have done over the last 8 to 9 years is, how do you constantly learn from the process? When you have an outcome that occurs and goes wrong, for example a readmission event, or an avoidable hospitalization, for an individual that you are targeting, and have significant amount of resources played on, and they still occur, what may have occurred? Initially, we do these extensive chart reviews/data reviews, to do this. We have been increasingly, over time, making that process more efficient. We can do chart reviews more quickly/do data reviews more quickly, and use that information, either to recognize where models may not be predicting correctly, or where we need to retire certain elements, or where we have blind spots in our system, in our community or elsewhere that need to be filled for appropriate change management strategies. We think that the steps from A to F apply across the board for all sorts of scenarios for BCN patients.

These are the areas that we are currently working on. We started with re-hospitalization at Parkland Hospital and had great success there, and continue to do this in a variety of areas, some of which you can see are directly in the inpatient environments, and some are much more focused on outpatient population. Health approaches involve a lot of the work that complex patients have. You can see on the

right side, at the very end of the chart, we have a full focus now on social factors. Can you, from electronic medical records, from claims data sets, from case management systems, identify in a more-rich way what the access to care barriers are, and make sure you are lining them up with intervention in the system?

Can you truly understand the level of homelessness, the quality of the homelessness? Is it someone that is doubling up with someone, or is it someone that truly is chronically persistently homeless, perhaps with mental health issues, or environmental stressors? Even understanding how you then use that information to make referrals to the right community-based organizations, this is the further work we have been doing in Dallas.

I wanted to just let the audience know that, if you are interested in this work, some of our work has been reflecting on the challenges of predictive modeling in health care, of which there are many. I think some of them have already been outlined, but I'll mention them again. I think one is: if you are building models, there is quite a bit of model maintenance that you have to consider. You built a model to identify individuals and appropriately tier them. What is the velocity of remodeling? How do you know when a model is failing? What level of confidence do you need before you are taking real-time action? What level of oversight is needed? These are all important tasks to consider when deploying models, because, I think over time, we will have more and more models, conflicting models, different algorithms. There needs to be a consistent approach to this work. So, we try to talk about that work.

One of the areas, again, I just want to reinforce, is just a kind of a description of why the quality of the modeling is so important. It's basically a broader topic we are talking about today. This is actually, if you look at avoidable hospitalizations, you may have heart failure patients whose risk can be very high, but it could be high for different reasons. You could have individuals that, let's say, have mild diastolic dysfunction. They don't know, however, how to treat their care; they do not have a lot of family support. They may have many other conditions that they are also dealing with. Combined with their overall vulnerability, they are very high on the social determinant scale in terms of needs and risk, but their actual clinical illness is not that severe. That would call for one set of interventions like intensive case management, which could be a very effective intervention for an individual like that, to prevent hospitalizations and prevent readmissions.

You may have another individual whose risk is entirely driven by their clinical illness. They have severe heart failure. They mostly need inotropic therapy, significant heart failure care, and may even need transplant, let's say in an extreme case. Really, no amount of case management is going to be effective there. Obviously it is significantly driven by their clinical environment. Being able to use all the data to then personalize the path and the resources that are available to the overall profiles is really important. That is increasingly recognizing that you are going to get a different interplay between socially determinant risk and a clinical determinant risk. We need to find new and better ways to target pathways around that.

I think I want to underscore the previous presenter, who said that the real-time nature of this setup becomes really important, because conditions change rapidly. You can have an overall prediction. Let's say I can predict the likelihood of avoidable hospitalizations for an individual over the next year. When you are making a plan around that, and then you're constantly re-organizing the risk and what the interventions are, I think you very much need real-time systems. To the extent that State Medicaid and Health systems work together around this, I think it is really critical for that real-time component.

One of the things I wanted to make sure we touched on that relates to our work, is the impact of work that occurs through the doctors outside the health system's walls. No matter how much we can try to control that 20%, there is always the 50% that occurs outside. How do you make a difference for that? We have begun now 6 years of work here in Dallas, to really categorize all of the community-based organizations that address the social determinants of health care we think are critical to this. If you predict that these are current, how do you really focus on the social determinants? And more importantly, how do you make a difference for these patients? You can totally establish that someone is high risk, but need a way to deal with their crises and emergencies, their food needs, their transportation, their housing and utilities, it might even be human trafficking, special needs, youth counseling, and the list goes on and on.

And the reality is we have in most American communities, significant work is occurring in the non-profit sector, by community-based organizations that are working on these issues. They just are largely disconnected from the health system. They are very fragmented. They lack the technology in many cases. They may be operating on paper system. They don't have the analytics and technology wherewithal. They are often very disconnected from health systems. If you go to case management departments or even the health plans that are doing this work, and find they work with 5 or 10 community-based organizations, they still don't realize the full extent. In Dallas, depending on how you classify community-based organizations, there are anywhere up to 9,000 community-based organizations. The percentage that may be really working with hospitals is probably very small. How do we then bring this all together?

This is important work that is funded by a major local client over here. The intent was to determine how we might connect these organizations through affordable software that is now possible in 2016. What we are doing here in Dallas is we built software called Iris™. And it's a very simple community record platform that these organizations can go live on at a very low price point. But more importantly, the goal of this was to allow them to conduct all of their business on this platform, for clients that they are treating, for whatever their needs are, or whatever their social organizational mission is, and to then be able to connect to the hospitals directly and electronically to create whole-person care plans.

So, if you are at the hospital and you have identified someone that has high risk, and then on top of that, that they have among their needs food insecurity, you can then connect them to the relevant pantries in their area. You really start to create integrated clinical and community care plans. We also have the goal to eventually be able to connect with the individual health facilities, and local health information exchanges.

We have learned a lot in this process. One has been that the health systems and big health care plans, and even state Medicaid agencies are large organizations. Community organizations are really on their own. They are kind of fighting their fight, and there is the power differential somewhere. One of the key things we wanted to do was to make sure they could find software that they could use, and if they never want to connect, then they don't need to connect, but once they connect then they can connect through this system. So it could be useful in a lot of different areas.

This is just an example of how we think about it. I know I am running out of time, but these are just the ideas. How do you make sure that the systems can connect to all the resources? I think there are a variety of ways to go. This is one way that we tried to do this, and what we have been working on here in Dallas. It has been really exciting. These are the organizations that are going live. Almost 600

community programs will be on this network. We are in the early stages. One of the really exciting things is establishing these care plans in the community so that can start first, in a, let's say, homeless shelter. As all of the homeless shelters and homeless services in Dallas are going up on this network, imagine, then you could say, hey, we have these needs that cannot be met by the health care system. And vice versa in the health care system, you know, high risk, complex beneficiaries that need a multitude of social determinants and services, and they can get networked.

I think there are increasingly creative approaches occurring across the United States. This is one example in Dallas that can really work on these underlying challenges of social determinants. The last slide is just a thank you so much to our team here at PCCI. We have published two playbooks for other communities, funded by The Commonwealth Fund. One is a playbook for how you can use, and how you can think about organizing your work between hospitals and community organizations. Certainly, if there is more interest about our work here at PCCI, please feel free to contact us directly. Thank you very much.

[Juan Montanez] Thank you, thank you very much. I just want to briefly mention before we turn it over to DC and Oregon for their reflections, that both Tracy and Ruben have participated in an onsite workshop we held with the five states that were part of BCN Track 1. Some of what you are hearing today was actually shared with the five states during that onsite session. We thought it was so good, that we wanted to share it with the nation at large. So, thanks to both Tracy and Ruben.

I am going to now ask both the District of Columbia and Oregon in that order to share some reflections on the work they have been doing to date in the area of BCN program design, development and implementation, and also to touch on what they picked up from both Tracy and Ruben, and how they built that into their own program design. So first up is Joe Weissfeld, from the District of Columbia.

[Joe Weissfeld] Thank you. Good afternoon. I am going to briefly talk about how we have used data in the program design of a new intervention here in DC, as well as talk a little bit on how we leverage BCN. I am starting a little bit backwards, but I am going to go through the program that we are working on. It is a Health Home program, which I am sure many of you are familiar with. It is actually our second one (Health Home Program) that we are hoping to launch next year in 2017. Overall, we are looking to serve about 25,000 beneficiaries in the District. The eligibility for the program will be 3 or more chronic conditions. We are utilizing an opt-out with utilization trigger, and using an attribution process that will look back at prior provider-patient relationships for up to a two-year lookback, and then also looking at geography and provider capacity.

Based on that overview, I am sure a lot of you can hear all the little data pieces involved in that overall framework. On the next slide I am going to start to go through a little bit of exactly what those pieces are.

Before we even started with the BCN process, we did quite a few data analyses ourselves, really carving up the data and looking at our population at large to identify what was going on, who were the high utilizers, and what were the conditions driving those utilizers, looking at both utilization patterns within EDs, and patient admissions, and cost overall.

We looked at quite a few different ways to segment the population, including some of them many of you might have probably seen from Camden, where they have a four-by-four chart of ED and inpatient utilization. When we carved the data up in a bunch of different ways, we were able to find a few sticking points that helped us determine that a helpful program, focusing on those individuals with multiple physical chronic conditions, really made a lot of sense for us. Right around that time, we got involved with the BCN process. The next logical step was to start to look at what that actual eligibility population would look like. We then carved up the data looking at a combination of the most expensive population, the most prevalent chronic conditions within the population, and we worked really closely with our clinical staff, to make sure that we were including conditions most amenable to care coordination.

That's where we then got into our eligibility population. As a next step, we wanted to tier by acuity. That was one aspect for which it was actually really helpful to have our BCN partners here. When we were looking at those opportunities, Tracy actually presented to us in Baltimore, talking about their transition between CDPS and 3M, these were the two tools we were reviewing at the time. We have decided on CDPS, but a lot of that actually had to do with procurement challenges at the beginning. But we are still looking at both those tools pretty closely.

I just want to point out that the BCN really was helpful there, and not only having Tracy come to Baltimore, but also being able to connect with Tracy and some of her staff in Denver, to help us think through CDPS and the SAS programming level. So just a plug there.

The next thing that we did was really take a deeper dive into our data on who the potential providers would be. This is a program that we wanted to embed into the primary care setting. We did a deep dive into providers, looking at a set of primary care providers, and a set of primary care Evaluation & Management (E&M) codes. We bumped those against our eligible beneficiaries to identify our high-volume beneficiaries, which helped us to do quite a bit of targeting in recruitment for providers.

The next layer was an even deeper level of recruitment activities for providers, where we have done two levels now of what I have been calling "mock attributions". Actually, they take our attribution algorithm and share the data file with potential providers, to give them a sense of how many beneficiaries would be in their panel and who, so they can begin doing some cursory data analysis before the program starts. We want to iterate that as we get closer and closer to the program, and have a more defined set of providers to join.

That really takes you through the evolution of our data analysis. We also, as part of that attribution, are working with a different BCN program that is doing Medicare/Medicaid data alignment. We are using some of the Medicare data in our attribution algorithm, because we are looking at historical relationships with primary care providers. But we only have the Medicare claims data, so bringing in Medicare data will help us to be a little bit more precise in our attribution.

The last thing I want to talk about is our incentive payment structure, because I think this is really interesting and another place that BCN has been really helpful. Pending CMS approval, based on my understanding, we will be the first state to have a pay for performance component attached to our Health Home program. That incentive structure takes two phases, one on the front end and one once the program starts. On the front end, we are doing an incentive payment, associated with the development of a care plan within the first quarter of the program. We are really excited about that

incentive because it will get providers in the program early, and it will get beneficiaries to participate much earlier in the program than we think would happen otherwise.

But when it comes to data analysis, we really had to do a better job of getting a sense of what the uptake rates would be, because those have huge financial implications. Our BCN coach and partners have done a great job of connecting us with other states, and really giving us a better sense of what both historical uptake assumptions have been across the country with programs like this, as well as what actual assumption rates were. That has been helpful to us for doing some budget forecasting. Come back to me in about year and I will let you know how accurate that is, but we have been pretty excited about that structure. Then the P4P component on the back end was really based on some of the key drivers and outcomes that we want to push with this program.

Moving on to the next slide, I just want to give you a quick take on the top five data analytics challenges that we faced, or are currently facing. The first one I am sure many of you are familiar with, is just the linkages across the system. We are still in an environment where our Health Information Exchange (HIE) is maturing. That takes multiple forms, including across our sister agencies at the government level, as well as data sharing across the providers generally. We recognize how important this is, especially when it comes to care coordination. Something that we are trying to do, in parallel processes, is to really align and use our Health Homes as one of the big first use cases to test a few new linkages and processes.

Similarly, having access to more than just claims data, but a little bit more sophisticated data for our providers, and for us as well, is really something we are trying to improve on. We are in the process of standing up a data warehouse. Initially, that is going to be mostly internal-facing, but we are going to test out a few external-facing reports and linkages to our data warehouse for our providers, so we are excited about that.

The third one really is that internal expertise. This is something that we don't have a lot of internally dedicated staff time, or staff that generally has this type of expertise. We are learning and leveraging different technical assistance opportunities including the BCN, but it has definitely been a learning process on our end.

Then the next one is around integration, really wanting to make sure whatever tools we develop, are tools that have useful data in them, that they are tools that will be used, and not just an additional tool or platform that someone has to sign into or integrate into their system, and that they really work with the workflow well, because we recognize that if providers don't use this on the front line, the tools are not going to be used.

And the last one is just generally the IAPD process. This has been one where we are really excited about the 90%/10% funding match opportunities to help build some of these HIE tools. But there have been some difficulties as we have been trying to align these tools with the launch of this Health Home program. It can be really difficult to time out the process of getting approval, build these tools, and still meet the deadlines we set for launching programs.

That's really, in my few minutes, an overview of the work that we are doing here in DC.

[Juan Montanez] Excellent, Joe. Thank you very much for sharing. Now we are going to turn it over to Jennifer Valentine, for some reflections, and some perspective from the BCN work that has been occurring in Oregon.

[Jennifer Valentine] I wanted to first just mention the context of this work a little bit. In Oregon, we initiated significant health reform beginning in 2009. Coordinated care organizations in Oregon took off in 2012, managing a significant portion of our Medicaid population, and, in Oregon, we have a lot of the micro and population health software for those populations and the case management happening within the Coordinated Care Organizations, or CCOs.

Our organization is the state agency supporting that work, as well as working with contractors who handle some of the same kind of work with our future service population. We really looked at our needs as a state agency, to address how our data could support the work of our partners in managing these populations. We were not focusing specifically on that direct day-to-day management of the population, but really building our own capacity to address our health analytics work for BCNs.

We began by looking at the dual-eligible beneficiaries (duals), because we knew this was a complex population with a high prevalence of chronic and behavioral health conditions compared to our overall Medicaid population. That was where we began this project. We engaged the Oregon Health Science University's Center for Health Systems Effectiveness team to assist us in this work.

We started out by looking at an evaluation of our duals in managed care versus fee-for service in the beginning portion of our health care reform. As part of this, what we were really also doing here for Oregon, was to begin an All Payer All Claims Database, as part of our health reform. Data first started to be entered in that in 2011. But we had not yet pulled the data, or tried to put it together with our Medicaid data, to get a more complete picture of those dual-eligible beneficiaries.

That was how we got started on this work. While our work may be a little different than some of the other folks who are focusing more on actually managing the populations themselves, we really see ourselves engaging and supporting the work. We have, as many people already know, and can point you to spaces on our website, significant CCO metrics. Our work with CCOs, reduced our readmission rates for our complex populations as well as the data, such as our All Payer All Claims Database. Just different places we can point you to if you want to learn more about Oregon's health care reform.

Speaking of that, we went through this process of being in the IAP for the BCNs, which we sought to help us look at how to do this, since this is kind of a new step for us in bringing our data together. What are the challenges? Can we gain some technical assistance from our CMS partners? This really got us to looking at, what other states were doing to analyze their super utilizer populations. We decided to add that into our work as a phase 2. It then became a 2-phased approach within this project.

We focused the first phase, on data analysis, looking at a population profile of Oregon's Medicaid super utilizers, and then selecting populations we thought would most benefit from further regression analysis. You can go to the next slide.

This highlights some of these key things we did. We looked at a full slew of other published literature, had a lot of conversations with other IAP teams like our Texas folks, Colorado and the work going on in

both Denver, and Dallas, here, as we were thinking about how we would look into this for a state-wide picture of Oregon super utilizers. Unlike some of the other states, because we started out the project including dual-eligibles and using our APEX data, we did engage in making sure they were in our analysis. Next slide, thank you.

We looked at themes from background work, and then the definitions of things we would be looking at within phase one this phase, which was defining the population. We got information on neighborhoods, and characteristics from this first phase. We really focused on who were the high utilizers we could target for intervention, as you heard a little bit today, from the others. We looked at large numbers of visits for any reason that put strain on health care systems, and really focused on high numbers of preventable ED visits.

We looked at repeated versus time-limited high use, and for Oregon the role of mental health, given that we knew we had populations with high behavioral health use in our dual population. We assumed that this would also be true of our super utilizers. We also hear a lot of that from our Coordinated Care Organizations managing populations, that mental health is a significant factor in these high-need populations.

Then we also did want to look at our Medicaid expansion population, and try to determine if there was anything we could gain, although we had very limited data available to us, because our dataset was only available through 2014. Really, from the very beginning of our work, we knew we were going to need to continue to look closer at the Medicaid expansion population.

We really began to see that there were 9 groups of high ED utilizers that came out in that phase 1. We really looked at these 3 categories of definitions: the temporary, persistent, and the Medicaid expansion population. Once you get into that data it's all very interesting for our first level kind of report. That report is not 100% finalized yet, so we have not yet been able to share it with folks, but we hope to have all of our reports out here before the end of the year, so folks can take a look at this work here in Oregon.

We then took phase two to look closely at the persistent ones. We were able to say they had four plus ED visits of any kind, four plus avoidable ED visits, or four plus ED visits for a mental health condition. Those were the groups that we then we looked into doing more regression analysis.

I do just want to say a couple of other things. I have 2 screens up here, so a couple of other notes. We had hoped to be able to get access to some social determinant data, the Supplemental Nutrition Assistance Program (SNAP) data in particular, to incorporate those. We had some issues around being able to get them the way they are stored, and the process for gaining access to those is a little more complicated in Oregon's data storage system. As a result, we did not get this data in time to include those in this analysis, but certainly want to look more closely at it. We are focused on social determinants in our work with our Medicaid population.

We also had some other potential data that would have been interesting, like our long term services and supports data system. We just were not able to get the match to get it all together to pull, so that is for another future look. As well as some other things, like looking specifically at our individual CCOs and our data, or looking at our stratification. In Oregon, we have some aligned Medicare Advantage Plans, and

we have some unaligned Medicare Advantage Plans (with our CCOs), and we still have some fee-for-service members.

We wanted to also get to that place, so in the future we can look more deeply and see whether members in a highly managed setting, both on the Medicare and Medicaid side, would be improving in outcomes. We do hope to continue this work, and feel like we saw a lot more future things for us to be doing. It also brought us a lot along the way of how to work with our data. And we appreciate the support we have from CMS for this project.

[Juan Montanez] Alright, Jennifer. Thank you very much. We do have some chat traffic, and it's good to see some questions that have already been posted. Some have actually already been answered, which is great. I wanted to say I have a colleague, Lynn Dierker, who has been doing some behind the scenes compiling of questions. We probably have about five minutes, unfortunately, not more, but we will do our best here for Q&A. Folks (without access to chat) can actually dial *1 if they want to pose some questions, but I think we already have a few in the queue that we want to toss out there.

[Lynn Dierker] Thank you, Juan. Let me pitch this one. I think it's going to go to Dr. Johnson, although it does reflect on an issue we heard from Ruben Amarasingham as well. It has to do with this issue of real-time identification of the targeted BCN population. Tracy mentioned it, and Ruben mentioned it, and so the question is: What real-time data did you use, or would you use, and how are you incorporating billing data with real-time data to assess the program?

[Tracy Johnson] I'll start and then I am sure others will have things to say. I think we used real-time data whenever we could have access to it. But at the macro level, when we are doing macro targeting, that's where the billing data came in very handy. I would say that's just the simple answer. You know, when we are trying to find patients to deliver services to, you really need that real-time data to make the decision about what patient gets which service. I think the macro data really just helps you understand which populations are at higher risk, and who you should be monitoring more closely, but it doesn't tell you what to do right now. In order to know what to do right now, that's where that real-time data comes in. We use a variety of things. We use a lot of things from our Electronic Health Records (EHR) because we are connected in an integrated sense. We know what happens in other parts of our system, but also our local Regional Collaborative Care Organizations or RCCOs, like CCOs in Oregon, helped us to get data from outside systems in a closed real-time sense, so that was very helpful too.

[Lynn Dierker] Ruben, do you want to say something about the real-time data?

[Ruben Amarasingham] Absolutely. We are also very big proponents of the real-time data. Our use has been in taking data directly from the electronic medical records, both the structured data and also we find a lot of valuable information directly from interpreting physician's notes, case management notes

and some other things, that really give you a nice profile as to what is occurring with the patients. That has been very important. In terms of integrating it with the claims data, our use has been to integrate it where we have permissions and access. They integrate with the claims and health plan data, and obviously that gives you a longer kind of perspective on some patients.

And some patients may be new to a system, where there is no EMR data, or you might have more claims data and health plan data than you have in the Electronic Medical Record (EMR). In cases where the health plan is seeing care that extends beyond the health system itself, then it's more useful to understand total cost of care, because they may be going out of network for certain things. We think it is important for both the predictive modeling, the outcome ascertainment, and measurement after the fact, to incorporate both EMR and claims data. And lastly, I would say that real-time data is also needed for directly affecting the intervention. We find it really important to be able to get risk scores and get the predictions in front of the physicians or nurses at the time they are making decisions. You need real-time data for that.

[Lynn Dierker] Both of you have talked about this toggling back and forth, and constantly monitoring and collecting data to refine the targeting. We had a question come in about the social determinants data in particular, and I think this is a question for you, Ruben. Since you are networked with these social services organizations and you mentioned natural language and getting information from notes and things, are you using that data for actually refining your modeling efforts?

[Ruben Amarasingham] Not yet, but that is absolutely the plan. We think that the data that comes from community organizations need obviously a significant amount of consent and security process issues to be considered, like any information exchange in this case, community organizations to hospitals. But they are asking. Our work in this space has been really interesting to see the types of conversations, questions, and things that they are asking and discussing in the community organizations that isn't really asked in the health systems to the same extent or detail. That is going to be obviously very important for these community-wide predictive models. We think if work like that is being done in any community, it is certainly happening here. That information should come in the predictive models. It would also allow for understanding where individuals need to go for specific events, which will be called community-based referral predictions. That is absolutely being tapped.

[Lynn Dierker] Great, great, thank you.

[Juan Montanez] Not to cut it off, but only because we are almost at 3:30 here, at least Eastern Time, so I want to see if we can quickly touch on key takeaways. There are a lot of questions that we have been collecting and it is good to see that there has been a good bit of back and forth going on behind the scenes. I just wanted to share some key takeaways from what we heard today, and what we have been gathering from the five states that we worked with on the BCN Track 1. I think that both Tracy and Ruben touched on these.

The criticality of incorporating those three major towers of information: medical, behavioral, and social, into any kind of algorithm for targeting and stratification, is very important. The fact is, technology and the data centers have advanced to the point where this is becoming more doable. There are still some challenges, as both of them noted, and as also DC and Oregon noted, but the ability to exchange that information, and to put it to use, is becoming more real. It is enabling states to actually configure programs that are more targeted, pardon the pun, to meet the needs of individual BCNs. The fact that there is a need for that overarching strategy for obtaining and using data takes into account data sources beyond just traditional clinical sources. Although we did not talk about this a lot, it has become very important to note that there are a lot of laws and regulations that have to be reconciled and harmonized and better understood, because they do govern access, use and exchange of data, but they don't tend to restrict it as much as some folks think. It's all in understanding what the laws and the regulations allow you to share and in some cases, encourage you to share. This is very important to the success of any of these initiatives.

Again, we could always spend some more time talking about these issues, and there are other webinars coming up that Karen will be talking about, but I just want to close with these thoughts, and thank you again for your interest and for your availability today. So Karen, I am going to turn it over to you for some closing thoughts.

[Karen Llanos] Thanks, Juan. We are right on time and I just wanted to thank you all. It's a great 90 minutes and I want to thank Tracy, Ruben, Juan and Lynn. Hopefully this piqued your interest. I think certainly, the next topic is one that we heard come up over and over again in the chat box and across our speakers, and that is factoring social determinants into strategies for Medicaid BCNs. So I just want to point out to you that the series continues, if we piqued your interest today. That is on December 12. We will have a registration link, and we will send out our information through our State Operations and Technical Assistance (SOTA) listserv. We will also use additional channels than we have used this first time. Since we have you registered this time, we will be able to send information on this upcoming webinar. After that, we'll be talking about care management strategies. We'll finish up our series with thinking about how payment plays a role as part of this work. All of our sessions are tentatively set for 2pm Eastern time.

In closing, there are some resources. One of Juan's takeaways is the importance of sharing data and we just cannot emphasize that enough. To that end, we will soon be posting a resource page related to data privacy, data use and data use agreements. We know our states have been asking for this, and we know this has come up in other areas. This will be on our web page. We also have upcoming, and we'll be able to share, additional details online soon, information about our T-MSIS based tools from our IAP data analytics team. One of them is around helping states think through a way of defining their BCNs or super utilizers and what is a good starting point for that.

And finally we heard DC and Oregon both mention the importance of Medicare data as it relates to high-cost, high-needs individuals. We have our CMS State Data Resource Center for Medicaid agencies who need additional support with accessing Medicare data, and certainly IAP's Medicare/Medicaid Data Integration Initiative is there to support states as well. So we have a lot coming up. I encourage you to keep an eye out for the December 12th webinar. If there are questions that we did not address, we have ways to track you down and send you the responses to that, so don't fret. With that, I would just like to

ask everyone to complete the post webinar evaluation that pops up as soon as this webinar is over. A giant thank you again to Tracy, Ruben, Juan and Lynn, and thank you all for spending the past hour and a half with us. We hope you found it helpful.

[End of recording]

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