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TRANSCRIPT - GR 10 06 23 TRANSCRIPT –"Cost Conscious Care and ICPs" guest speaker Amber Inofuentes, MD and Ian Crane from the University of Virginia

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- Hi. talking about our the top 1% of healthcare consumers. And so what you can see from this graph here is sort of and percentage of the patient population, and what percentage of healthcare dollars will be consumed. And so at the top, 1% of healthcare consumers in the Us actually account for 20% slightly more than 20% of health care costs
- $50 spent in us.
- If you try to look at that on an individual level, I think it's a little bit easier to think about that magnitude. In this top 1%. And this is data from 2,018. So we can all imagine the numbers are higher. Now, our accounting for over $100,000 per year in both their costs 2,015. The statistic was actually about $100,000, as you could see, it's gone up by 27,000. And again, we can imagine that's continuing to rise, given inflation and other things.
- Not a surprise to any of you, and certainly not surprise to me as a hospital. But the alert percentage of where the dollar going United States is to hospital based care. So nearly a third of all healthcare dollars spent. The United States are going to hospital based care. And there's really the intersection of these 2 things. A very small, patient population in the United States accounting for a disproportionate number of healthcare dollars being spent and significant amount of those dollars going to hospital based care? That was really the indices of the work of complex care, the focus on pagans who are high utilizers, super high utilizers.
- So how you need to find super utilizer. Well, there isn't one definition. There's a lot of head heterogeneity in this field. But I've shared for you here a few different definitions for different organizations. Johnson Foundation definition, and they ultimately funded the canon coalition through more of that later. Take a little bit more of a focus on from the from the person's perspective people that are experiencing significant fraction definition. They really call out that this help, their use could be prevented upstream. In the system upstream at that. So once we have a handle on meeting how we're defining it. In order to create programs designed to address the needs of super realized or patients, we really need to understand more who these patients are.
- So this is a a study that was done, a pretty large study in the Journal of Hospital medicine. It really looked just at academic medical centers, and tried to describe the characteristics of patients who are high utilizers compared to patients who are not high utilizers. Ultimately they looked at close to 30,000 patients, high utilizers, but for them, for patients who had 5 or more hospitalizations within a one year period and they compared them to almost 2 million pages who did not large number of patients. And here's some of their finding. So one of the things that they found. First and foremost, these patients are sicker. They have significantly higher medical comorbidities than patients who are not only hospitalized. So on average, 7.1 medical morbidity in the high utilizer group and not high utilizer group.
- They also have a larger percentage of agents who are younger interestingly so, more patients in the high utilizer group under the age of 65. Compared to the non high utilizer group, a higher percentage of patients who are either uninsured, or have medicated their form of insurance. As well as a higher percentage of mental health disorders themselves.

Use particularly depression. I mean, what's interesting to note about this study, and there are others that I've looked at. Who are these patients? And it's not the same depending on where your medical center is. It actually does varies that focus on, for example, safety net hospitals. They're gonna have a disproportionately, even higher representation of patients who experience homelessness or substance use disorder. And so the population can actually vary a bit by area. One study that I saw from Memorial Hospital, obviously

- large academic safety net hospital, 20% of their high utilize their patients are experiencing homelessness.
- And I need another note where you find that study. Just to speak again to the medical conflict these patients are is that patients in that study had 3 full increase mortality rate across the time period for that. But sometimes I think patients who are frequently in the emergency department admitted, can be considered potentially there because they're couldn't get there. But just to input by the big person quite sick and have a pretty high mortality rate.
- Another no further finding in this study was when you look at the medical reasons for hospitalization, and this is not homogeneous population again. So they looked at all of these data. But it only accounted for 4% of this patient optimization.
- And, in fact, what are the drivers of the high utilization.
- So I'm gonna take a moment to share with you. But the number one utilizer uva around the time we started the program. Many of you will potentially not not be new to residents, but many of you severe alcohol use disorder. Frequently coming in for epoxy substance, use, suicidality, depression.

Thanks.

He was occasionally challenging for staff, sometimes quite agitated and threatening in different ways. He had an extensive family history of mental health as well. Substance use disorder. He was homeless and unemployed, and notably had significant childhood trauma in the form of abuse and you will connect in. So now I'm going to go into talking a little bit more about complex scare, which is really only about 2 decades old at this point.

- So how can we do something different to address the fragmentation of their health care and reduce some of that utilization?
- At that time the the term healthcare hotspotting was a coin. This is really a way of using data and using large data to identify. Who are these patients who are really frequently in the emergency department or hospitalized, but then go beyond that to try to look at patterns for patients and decide, you know, where are the breakdowns in the system in order to draft, address some of the barriers that the patients are experiencing. The Camden Coalition. II was ultimately founded by the Robin Johnson Foundation in 2,007 and develop what they call their Camden form model, which is their primary model that's still in existence today as potentially a complex, a care coordination organization where a team of nurses, nurse practice nurses, social workers, community health workers really go out into the community, meet patients where they are, help them get to appointments, connect them to their full services. Make sure that they are connected to and really provide a very high touch. Frequent agent while they're involved in the program over time. This program has evolved quite a bit. And it this structure has a very robust housing first program which prioritizes getting those who are on house into permanent home as well as medical legal partnerships, to making sure that when patients are encountering a

healthcare system. There is a legal support as well for some of the legal challenges that they're experiencing.

- Let's hear a brief and flip by Dr. Brenner you have any.
- We may go followers of my
- I'll be there. No, it's me. I think we'll great so out of the can be polishing really the birth of the field of complex care, and these are really the driving principles around which they were in as their care. And a lot of that we barred on in the home program. So first and foremost, and the idea that you need the engagement, what are their own goals for themselves. Not just what the system goals are for them a real focus on team based here, unfortunately joined by a couple of the home program team members in the audience. So this is often very disciplinary and cross sector. Right? So it's not the healthcare system in the healthcare system, in partnership with community organizations in partnership with local gel and all sorts of other individuals. And then the data driven piece is really, really key. Right? So going back to how the human coalition began.
- We can't get a good understanding of these people, both in our healthcare system, moving around community. What are the resources they're needing? Where are they touching other healthcare systems and not just our own? And so an idea of making sure that we have a robust health information exchange is really important to the field of complex here, because we know that these patients don't just see care in one particular setting.
- So there are lots and lots of different models out there for addressing high utilization. I'm going to share kind of 3 of the key ones that show up again and again in the literature in terms of design. The first of these is the care management model, which is really the way the candid coalition is designed. But what I point out about that is that it can look very different, based on who's funding it. So in the case of the campaign coalition, this is sort of Robert Johnson funded community based. Our program is obviously funded primarily through a hospital setting. And there are many programs decreasing utilization.
- Another model that exists out. There are intensive outpatient clinics. So can we just redesign our primary care clinics and graduate and better use the needs of highly high-prof patients.
- So as you can imagine, requires increasing nursing resources, the social resources, the behavioral health resources, as well as providing longer clinic visits. So most of these patients are going to do well for high cost Chinese patients. And then, lastly, what we refer to as individualized care plans so as you've already heard from me one of the problems and high utilizers is the care can be really fragmented. And, as you all know well, when a patient comes to the emergency department and you're asked to admit that patient. And they add dozens, really challenging pretty quickly. What are the key medical conditions for the patient?
- How can I take good care of them, and but individual care plans are, and a pretty brief summary of patients, medical and social history, as well as guidance for how to take care of them. They present with a common reason, sort of a snapshot, or how to care for them, and these are utilized, and a lot of different complex care programs, including our own, as you can see from the way I assigned the slide and many complex care programs, including our system.
- Has some portions of different types of these, and then, you know, overlapping features throughout one other example, to share with you before I get into our own program. I think this is a neat one. The University of Chicago has a model that they call a comprehensive care program, which started about a decade ago. And interesting. It may feel like it's sort of a reversion to what we used to do before there was a hospitalist.

- So we roll back the time. We're primary care doctors who saw their patients, whether they were in a hospital setting or they were in the clinic and you know 20 is sure. 30 years ago we went away from that, and with the birth of hospital medicine, and in most instances now there's that handoff right between their position and then into the hospital, setting a hospitalist. But University of Chicago. What they recognize, I think, was
- that for patients who are really frequently hospitalized. Let's see that many different providers and different households each time a different resident, you know, going back to their primary care. Clinic was not benefiting, and so they have a team of 5 position to go around in the morning and take care of their patients while they're in the hospital, and they go to the clinic in the afternoon. As a part of this model. They also get the rest of the to that
- when they began their program. They realized a few years in that there were patients who were engaging with it well and say, developing offshore that program policy working program which they also provide patients with a community health worker, and then they also do things within a community to support patient engagement in their own communities through things like cooking classes, exercise classes and other things like that.
- So now we get into more about specifically, so how do we start? Well, because we're based out of a hospital system. We really began as a readmission reduction program so long about 26 the department 30 day remission rate. Right now, we're more like 13 to 14%. So a lot higher than.
- And it was a very dedicated network. Understand why that was happening and work reviews preventable readmission. So a team on 3 West medicine got together and started looking at all the readmissions from that unit, and what they found is that there was a small population of adults with sickle cell. We were frequently hospitalized at that time. We were then able to put in a request for a data scientist to establish with creative turn, and what you see here all of the adults with sickle cell, who were admitted during that time period, which was around 2016, 2017. And what you can see is that the top 10 patients who are hospitalized accounts, identification of who are our high utilizer patients at Uva.
- At that time we didn't have nursing support in terms of the library dedicated resources to create a complex your program. So we didn't have a dedicated social worker or nurse so many of the things that we're really fortunate to have now. So the team of us kind of said, What what do we have, what can we do with what we have in terms of resources, and how we work to address some of the really, what's just the development of individuals care plan. So the only piece of it we're really able to buy off at that time. And that require a lot of volunteer work by a lot of folks. Including care, nurses, social work, pharmacy, and a lot of other folks. In order to do that extensive for each of these patients and really then come around them and develop an individualized treatment plan.
- One of the key features at that time that was really important to us was making sure that patient voice was a part of this, and so for every single patient that was enrolled at that time and developed an individualized care plan. We also met with them. Talk with them, top of them, their family about what goes well for you when you come to Uva and care, and what doesn't go well for you, and incorporated those elements into the individualized care plans.
- We were able later that year in 2,018 or 2017 to get an Emr bill, which is a banner that is clickable. And this included the information and the content of the individualized care plans for these patients and one of the feature. But it's most important assistance. So whether the patient in the er in the inpatient setting or admin community going into their targeting to view the individualized care content.
- So after doing this with 9 patients in our initial forward and sickle cell. These. This is the data we had at that time when we looked at the patients who, 12 months prior to

enrollment in the program and 12 months moving forward. And, as you can see, or pretty significant reductions. I'm not terribly dissimilar to what they came, and coalition shared in terms of reductions in utilization of the hospital so it was really with this data, that we were able to negotiate and secure dedicated funding so that we could go beyond just implementing individualized care plans and really make it more of a care management organization and bring on some additional resources.

- So speeding up to kind of where we are now. We are now. A more cognitive care program. If nursing. So for administrative support position time, our goals remain that we do want to improve consistency and quality of care for patients. And we want that goal, including reducing utilization. But the second or the third pull. You see, there is also really important to us and impacts a lot of what we do is that it can be extremely hard. I'm sure it already has been for many of you to take care of a patient who's really frequently hospitalized, particularly the ones that have substance use disorder, behavioral health challenges that can create burnout stress. The team feelings of futility. And so one of the things we try to do is reduce some of that burden for the frontline team members as well.
- We don't have a lot of enrollment criteria and what I mean is, we don't have a lot of exclusion criteria. So, aside from not doing pediatric, we really do look at most other patients who are frequently hospitalized as eligible for the program, and we maintain and access about 30 to 35 patients with 75 plus or lifetime enrollees since the program began.
- So this is kind of the way our program currently works different team members. So we have some like and support. And I think what we do. A lot of that is that it's billing as a medical chart and history in order to develop the individualized care plan. Other things that we do is work on the data analysis and trying to figure out is our program working. What is it achieving, and how we measure that over time?
- We are really lucky the last couple of years, through violation health, to have some admin support. So that Theresa can stop doing that and do other valuable things with their time. And speaking of our nursing support, and Mary and Teresa here in the audience with us. They really just meet the patients wherever they are, and they go to their homes. They take them and go with them to clinic visits. They do a lot of communication with patient teams. Potentially, many of you interacted with them. You've had one of our patients in the hospital. And then, lastly, our dedicated social work resource does help with a lot of kind of meeting needs related to social determinants of help, how we transfer patient and then also have the ability, and enable with some patients to engage more directly in behavioral health. So counseling for such other mental health disorders.
- I will point out that you know this is not siloed and mutually exclusive, particularly in the social work side. One of the, you know. I guess benefits of being a really small team is, you can't sort of say, well, I'm only going to practice at the top of my license. And so we get a lot of overlap and role sharing particularly in the audience. And the last thing that I point out is that we know style ourselves to what's happening at Uva. So a lot of the work in particular that our nurse and social workers are doing is they're connecting outside the hospital. So we've had patients who've gone into jail, and we continue to have active care coordination with their care team in jail. We have patients that go to other hospitals, and we have a way of communicating and working care. There are other hospitals, and the way you try and make is cross, institutional and Cross sector as possible, even when the patients are outside Uba.

So, looking back to our Number one utilizer and the time that we started engaging with him, so this is a trend of this utilization you can see in the orange are his Ed visits, gray as

hospitalizations, and blue is 30 day readmission, and they're wide quarter. If someone is wondering why there's no quarter 2 for 2,018. He had no utilization during that quarter, but actually because he was incarcerated.

- So the as you can see at the time that we were picking him up he had extremely high utilization of the hospital system.
- So we began working with him in November of 2,018 and at that time he also was able to get some additional community resources through our help, including and our navigator, through a program called Partner for Mental Health. He also established primary care with our very own. Dr. Ian Crane. Who was his zoom a Pcp. That year.
- He ultimately had a couple of more hospitalizations for alcohol. I use this order, and then was successfully discharged to the more center, where he completed 30 day rehab. Our team became aware that at the end of his 30 day rehab he had no housing.
- He was in the queue for permanent supported housing through Region 10, but that made lists can be a little long, and we understood that there was probably gonna be about a 3 or 4 month gap between when he was discharged and he was ultimately house, and we saw this as a real risk and vulnerability for him, knowing that the homelessness had been a major driver of his alcohol use and hospital use, so we were able to work towards some bridge funding that included philanthropy, local churches, as well as directed, support from the Medical Center in order to get him housed in portable fee temporarily, until ultimately his apartment having came through later in April.
- So this was this first year I kind of after enrollment with utilization with us, and we like kind of took a victory lap right like this looks really good. He has significant decrease in all and measure of his utilization. And you know, that felt like a really big success for kind of the first year of our program. In this way, working with this type of patient, as you can tell. There's a bar, a box there, cause that's not the end of the story. And so we'll come back to him later.
- Everybody hear me? Okay. alright. So I'm the I'm the data guy today. So
- starting off with, you know, why do we care about data in this field. You know, there's several angles to look at. This. I think one of the most kind of interface aspects of this is how we convince for organizations to pay for this work. So part of that is demonstrating a cost saving. But what I hope to convince you of today is, that's not the only important thing. And so I'm gonna walk you through a little bit of the research here and gonna start with some of our data. So this is this includes 42 patients. We have a total of 75 patients. Rolling are in our group. But only 42 have that criteria having 12 months before. They were rolling 12 months after, which is really the time of analysis, is this, 12 months, pre 12 months posts and so, taking that, mind, you can kind of see across the board. These are all various utilization metrics. And so, from addition to renditions, the total cost of end days. We see across the board reduction. What you may notice is that total cost and days is flagging behind a little bit, and they also tracking each other closely, and that really has to do with how we calculate costs and how closely correlated it is that days other gi illness.
- type, one, patients with type, one diabetes substances for all includes the patients with various psychiatric illnesses. And then in state, real disease. What you'll notice is that there's variable effect for these different groups. And I think that says a lot taking, for instance, complexity and across the board improvement whereas for single cell. It's a little bit of a mixed bag, you see, reductions in admissions, but actually the increase length of say, and a corresponding increase in cost, and I think that actually tracks, perhaps with some of the recommendations in our individualized care plans where we have very strict

criteria, for you know, guidance around discharge that sometimes can lead patients to be here, to where? To the point where we really don't think they're going to be re admitted.

- And then contrast that finally with our in stage renal disease group. You really see, you know, just few patients here. But you really see lack of improvement across the board, and I really think this speaks to the nature of the illness. And in in these patients case, not only are they do they have any say renewal disease, but when you combine that but lack of access to housing and barriers to transportation, you can see how that creates kind of a perfect storm of needing to be hospitalized and show up in the emergency department.
- So kind of understand, we haven't been able to meet this monthly benefit here.
- So, as you may be thinking, there may be some problems with a pre post analysis for various reasons. And there's this phenomenon of regression in the means. If you think of are these patients, as you know, as a as a high utilizer organization, basically, our goal is to detect people when they're using the most health care and enroll them in our study or in our complex care program. And if you think about it that way? We may be just capturing patients at their most vulnerable state, at their highest state of exacerbation. And actually, Stevie, perhaps they resolve in that state of exacerbation afterwards and maroon red that they're replaced by new high utilizers. So, more or less, there's a constant fill of different patients meeting this high utilizer status over time interestingly handy yellow. These are patients that have maintained that high utilizer status persistently over the years, and actually similar to our own data. There's active disproportionate amount of patients with instrumental disease that fit this category.
- And so I think this helps us understand that. Well, there is certainly a phenomenon and regression that means that there are different types of high utilizers, and certainly II cannot miss the whole story.
- So how do we figure this out? Randomized control trial? Right? So I would say, this is a really hard area to do a randomized control trial in. And so
- I'll you know, bear with me here. We're gonna get to the most famous one which is again, based on the Camden coalition, and in this case
- kind of some bum results. We we did. You know, despite what that video showed in their pre pre pre post analysis that met high utilize their criteria. 400 and treatment control group and you know, patients receive similar interventions. To what do we do? Which is case management help workers following along with them and they define their outcome as readmission rate at 180 days. And there was really very little interest to do these populations, and certainly not statistically significant, so kind of a blow when this came out in 2020 to find compliance out. But of course there are some problems with the study, and it doesn't count sorry.
- And so, first of all, we didn't know in the control room any of the interventions that those patients received. So we can't really compare in terms of touches in the primary care, setting touches with so for etc. But in addition to that, there's no sub group analysis. And so I think one of the most interesting questions here is, who are the patients that are most responding to this intervention. Acknowledging this is a very heterogeneous group of patients, and they may not all respond same way. So that last day I needed, you know, unless some questions.
- I knew all the times more of a question than a critique. But I guess what I would say, is acknowledging the fact that there, perhaps multiple types of high utilizers. That perhaps we're really studying the regression to the need short term high utilizers very well in this study, but missing the patients that have barriers that are more imposed by social determinants to help.

- And if you think of things like housing. Stability can take months and months and months to tackle that. And so perhaps we're missing as the wall here and so the rest is. There's actually a subsequent analysis that just came out a month ago, and they threatened my patients in the same study. Basically, they took all day from the same study and tried to create 2 groups, one group that they classified as high engagement, and one group that they classified as low engagement and when they create that, you know eye engagement group, which is defined largely by the amount of touches they have with a complex care group, they start to see benefit. It's not physically significant for the primary outcome, but 90 days and 30 days. You're starting to see a significant benefit in terms of 30 day admissions.
- Of course there are some problems here, too. And so there's really some statistical wizardry that they did to get to this point, and that has to do with the fact that our control group did not have engagement measure. And so, really, what they had to do was this sort of Covariant Association of taking the group that we didn't measure engagement and extrapolate their demographic factors out to the control group and try and make some prediction. So I think you really have to take this great solve.
- Interesting what it did, though, is it identified demographic factors that were associated with engagement. which is interesting, and I'll tell you what they found. They found that disproportionately a Latin X population that had lots of family support at home. Multi comorbidities were more likely to engage in complex care. And then you look at the flip side of that, and patients with substance, use, disorder, and prior history of incarceration and cirrhosis were less likely to engage with complex care.
- As I see this data, I think it's interesting. I worry about the dangers and the implications of certainly acting on any of that saying that we are going to take demographic factors and try and predict predict who is engaging. I think it's a terrible slippery slope, I think. What this study actually does, however, is that perhaps engagement is important, and we find ways to measure engagement, that it does at least predict some degree of epic. For this intervention.
- I'm gonna organization at Northwestern Memorial Hospital. It's a hospital based program and have another bummer. Not an improvement. Comparing control to the treatment arm. I bring up the study because I think it it similar to what Amber said it. It really influences a major challenge with conducting research, which is if you look at your data from one hospital system, you're missing a big part of the picture. And so in this case they looked at everything in Northwestern Medical Center. If you think of the fact that we're in Chicago, and there's many different hospitals to choose from. And if you think of a patient that knows that they have an you know, multi disciplinary care team, taking care of them at Northwestern Medical Center, perhaps the more likely return to that institution.
- And so I think you really have to kind of go above and beyond. Look at things like insurance claims, data we're trying to analyze. We're trying to analyze utilization.
- And I'll bring up one more study in the Rtc category. I bring this up because it's an intensive primary care intervention, which is a little bit of a contrast to the 2 programs I previously described, and they actually did show a benefit. So a reduction in total medical expenditures is significant as well as inpatient days. There, of course, some flaws here. You're gonna see that need? So in this case, I really think blinding is very important. You know, all these studies are not blinded. But if you do this kind of research in a primary care clinic, and you have primary care, clinicians taking care of patients in the control arm and patients in the Treatment Army can easily see how that creates bias. And so it's another reason that I hate to sit there with a grain of salt, but I think it certainly is encouraging, and and perhaps speaks to the unique role for a intensive primary care based intervention.

- So some take away from randomized control across. There's lots of problems. In this. In the field of research, we have a lack of blinding. We have issues with how we measure data where we measure data from like the follow up remains ongoing question, especially when it comes to measuring things like social determinants. How heterogeneity is the big thing? Obviously right? So you know, every complex care organization is unique. Every geographic area is unique. Every population is unique. And so really, how do I generalize that data about something that happens in Chicago and bring it to Charlotte? Oh, it's a big challenge.
- Finally, you know, with all this in mind. Kind of the question is, is, is this all we should care about? Should we all only care about utilization, proving that we can reduce the frequency of admissions. I hope I agree with you that it's not all that matters. And so we're gonna go over some other types of things programs without including our own.
- And so this is just kind of a a general list of others, studies and the interventions they tracked, not going to go through each study. But you could see there's a range of things like Phd, 9 scores, patient engagement scores. Things like diabetes, specific metrics like email and see the frequency of diabetic foot exams, and all these but have more or less universally shown improvement with complex care.
- Perhaps most powerful, I think, are the things that are not kind of part of that you know, sexy data measurement, and more so in the form of narrative, which is to say, patience.
- Patients are highly impacted by this and perhaps seen their words. This Rodney sort of the meaningful impact is made on their lives. And someone on the healthcare system cares about them, perhaps, is even more powerful, though the data itself.
- So we're gonna move into some of our non utilization based data. And I just briefly mentioned this piece that came out and journal medicine a couple of years ago, which is things we do know for no reason, discharging patients against medical advice and really kind of, there's 2 major points of this paper which is to say, from a medical legal standpoint having a patient sign, an ama discharge form really may not add
- very much in the quarter. Law and malpractice suit, and really the discharge summaries in your document documentation are doing most of the work there. But when you go that extra step and say, Hey. you're wrong for doing this, it shows distrust. It. It causes discharge. The same discharge level of care may not happen for these patients. They feel homeless minority population. And so really are, maybe, in fact, low value care depending on the situation.
- So that reason in our care plans we had a little zipper that says, Consider not using this paperwork. Consider going to the bedside and doing the discharge prep. That you would do for any other patient.
- And really it's shown a big improvement. So this is again, kind of free post analysis. 12 months before, 12 months after enrollment, you can see a big change and the frequency about 50% reduction in terms of any discharges in our enrollations.
- This is other kind of non utilization data from our program. That this is focusing specifically on our type, one diabetes cohort, and so kind of a mixed bag here. Icu reductions that I will, I see, make events look very small that you have to think the relative reduction. It's about 33. So in my mind, still impactful. What I think is similar idea to our ama pair plans where we basically say endocrinologies associated with reduction in adverse events in the hospital setting as well as increase things like medication, accurate medication rate
- conciliation after discharge, and we would suggest doing it. As a result, we have seen a massive change in the frequency end of a consult pre post enrollment.
- This next slide is one of the things that I think is more fascinating. Really, we've tried to create a mechanism for identifying the people that don't respond for interventions. And so

what you need to know is X-axis y-axis, most enrollment, but even more simply. Anyone who's above the diagonal line is worse after intervention and better. And so really, what we can do is say, you know who's not responding and why. And so in in one case we found a patient hypervis in the hospital. We go further into this and actually identify this phenomenon of hypoglycemia fear where this patient actually, when he was a child had a a seizure, events associated with hypoglycemia, which gave him a fear to take his short acting insulin, and resulted in gradual hepatitis, long acting insulin, and thus more hypolycemia in a vicious circle. And so we actually talk with this patient talk with his mother as well. Who's really driving this phenomena here, and we are actually, through that counseling and education of a base of almost regimen able to reduce is able to see over time.

- So the last piece today, I'll show you is kind of new thing we're doing. And so this is based on the determinants of help screening questionnaire that we do and it really was just rolled out 2021. So we don't. And social work does. And we don't actually have that pre post analysis to show you. Yet this is talking about patients that identify housing instability. And this next is lack of access to transportation. And I think what stands up to me. Here is the same patients that are our highest, our have our least improvement after our intervention. Intervention also screened with the highest degree of housing instability as well as live access to transportation. And so to be really says, you know what? What's the chicken in the IQ. Here, what's the underlying driver? And I think in this case, certainly social determinants of health or driving their situation. You could take this step further. You can think about all of the other interventions where social determinants of health may prevent sort of the cutting edge of therapy home dialysis being an example. Things like a continuous insulin pump things where you have to jump through a lot of hoops and patients with impair social determinants. How are ineligible for. And so it really to me cease to determine. I'll be the bedrock or dry utilization. Many of these patients so track patients for a longer period. Time.
- Obviously heterogeneity is, the big challenge is, you know and then I'm just close by saying that what is the burden of proof here, you know, is going to patients house and helping them with their medications and helping did helping them get their get their appointments. Is that really something we need to prove in a randomized control trial. To know is the right thing to do. I would argue, not but I would say that this kind of research help helps us figure out how to do these things better.
- And we want to make sure that our interventions are effective, and so I think of it as more a quality, improvement, exercise and with that I will pass it back to Amber to pull this out right?

  Getting a mitigation for him, doing bed box. Fill that things like helping him with other social needs, like securing furniture for his house transportation to and from appointments was trying desperately to get him back into addition medicine here. He didn't go to any addiction medicine point for all 2,020 and then was finally able to reestablish in 2021 and unfortunately, he died in our interview in September 2021 of COVID-19.

- This is a photo of that patient and permission by his mother and II need us with this because I think you could view what I just shared. As the program didn't work right. This utilization went back up. But I think in our minds and building what on what Ian said. He never lost his housing, so this gentleman, who was full when we first started taking care of him.

- Didn't have really any health care team member that he trusted or rely on until the day he died, including on the day he died. Was surrounded by healthcare team, members and family who really cared about him and remained in housing for the rest of his life. And that's as long as well with a partner for mental health navigator.
- So if you're wondering, Calendar, do I refer a patient to the program? You're welcome to try. And if you are code. There is a red cap referral form. It's pretty simple. It's being more than a few minutes, and as I'm sure many of you are well aware, if you forget to use this form or the QR code, you can always email me or Teresa Radford, and you can send them a form your way. We do have capacitor. We are often active referral and both close over questions on. There's a ton of people we could say, I think, largely, we health as well as funding and support from the Department of Medicine in the Medical Center? I really see a part of the team, and you don't normally acknowledge someone who's on the team. And III can't help but call out Theresa again. I'm the one that you're talking about this program only because she doesn't like public speaking. The program really is her work, and she is the hardest, all of it. She's one over the past 2 years numerous awards from the health System, recently member of the month award. She's a 2 time, Daisy award winner for this book nursing, and one of the winner, senior task teaming, also sending contributor, award winner and the mic right?
- Which makes work looking at the data, I guess when you think about costs and readmissions. One thing I didn't see, and they didn't there. But mortality, differences or patients, and ending up going to still their 0 long term care, I would imagine both of those like the folks who are getting more care may not die as quickly. And so they're gonna have greater healthcare costs and readmissions, and or folks who are going to long term then not gonna fall out of that population group a little bit with that. Yeah, II think the data is a really hard thing. And I think what we have learned is that and other programs like ours, that some of you are increasing with your patients receive. And yeah, maybe if you're benefiting them, and we haven't looked specifically at the question of mortality. And you know the impact that's had on cost in our patient population. But what we certainly have noticed is that there are instances in which, because, you know, Theresa May is like in frequent contact with a patient that we actually are encouraging them sometimes to come into the meeting or come into the hospital or in the setting of this particular gentleman, and many patients with substance use order. We're actually encouraging them to stay longer for actually complement of complete and treatment in the hospital. Right? So that is increasing that days, and that is increasing health care costs. And I think that's where you know, moving away from just focusing purely on reductions and utilization and thinking through like, how are we impacting, improving the lives of these people? Not just reducing the number of times that they're in the hospital.
- Thank you. Guys. As you know, I'm one of your as you know, one of your most satisfied beneficiaries of your program. I absolutely love it every time. I don't have to reset the negotiation about a certain opiate dose, and I can simply point to the Icps. So with that, I'll say, perhaps provider satisfaction could be one of those outcomes you look at.
- So anyway, that's more of a comment. The question is you talk about burden of proof.
- It seems to me that this just seems like a self-evidently the right thing to do. And if there is any good enough proof, it's because you have to prove that it's a net reduction in like some dollar cost or something like that.
- And to that end have you guys plan to bill for your services like. Maybe if you could, you could be a console service or a clinic, or something like that. That insurance is paying for some of it. Then that big pieces. I don't think the butter improves a little bit free, slash included, as part of wraparound services for the first 30 days, including, like the pharmacy

for all that stuff that is no longer true. As about 2 years ago, insurance companies are so there. There was an interest is an interest in us moving in that direction. Theresa, who already stepped out, and I think ultimately part of that being in negative, because one of the things that we really want is to build that trust with patients, and to make sure that we are as low barriers possible. And so even the act of sort of like having the patient sign up to sort of have their insurance bill, or, you know could be a barrier to them engaging in the care. So we haven't done that. And if you look at probably what we would be able to, Bill, compared to the cost of the program it has not yet felt like it would be worthwhile. But I do think that I think that billing revenue could be a part of the equation, for how you do this. The other one would be philanthropic dollars. So I would be remiss if I didn't point out that the Virginia home program is also a complex care program here at Uva. Run by fully home, based primary here for elderly patients of high risk for admission and a lot of their funding is grant and philanthropic funding. So that is not something that we've done. We benefited from more direct funding for the Medical Center, but that would be an option as well in terms of funding for group.

Thank you, guys, I'm gonna just end this in the comment from Dr. Andy Wolf, who? The Residency as an expert in taking care of patients who are high utilizers. I would say he says great presentation spearheading this program, and said Theresa, but he said, I also want to give out. Shout out to Teresa Radford, Aka! He's having her say, Teresa, who is single, handedly hit most of my patients alive. And comment on medicine business that has also worked very well. And then you have some other comments in the chat. Thank you guys so much.