

Short Takes on Suicide Prevention

Episode: Modeling to Learn (Test. Don't Guess.)

Dr. Lindsey Zimmerman

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(Text Transcript Follows)

[00:00:00] Music

[00:00:11] Interview:

Adam Hoffberg (AH): Hi, everybody. Welcome to the Rocky Mountain MIRECC *Short Takes on Suicide Prevention* podcast. I'm your host, Adam Hoffberg. We are touching in from the Dissemination and Implementation Conference here in Washington, DC and I'm joined by Dr. Lindsey Zimmerman who's gonna talk to us a bit today about her work. So welcome, Lindsey.

Lindsey Zimmerman (LZ): Good morning, Adam. Glad to be here.

(AH): Great, as we always do, let's just have you start just telling us a little bit about yourself and also where you come from, why you got into this work and a little bit about the center that you work in.

(LZ): Well, I am a clinical and community psychologist by training. Most people know what a clinical psychologist is and I'm licensed and could be providing individual therapy but community psychology is, I think, probably the bread and butter of what I do in my job as an Implementation Scientist at the National Center for PTSD. And we're out in- well, my branch of it, is out in California. There's five locations and the National Center for PTSD was established by a public law by Congress nearly 30 years ago. And, at my division out in California in Palo Alto, we focus on dissemination and training activities. Which really incorporates a lot of implementation science, which is what I do and what brought me to this meeting, as well as lot of really technologically advanced projects including some apps that listeners might have seen that focus on PTSD and mood and mindfulness and other things that come from evidence-based place but also are trying to get out into the community and out to Veterans who might benefit from them so it's a great place to be as a clinical and community

psychologist because we're doing a lot of partnership based work and that is a lot of what you get trained to do as a community psychologist.

(AH): Excellent. Fascinating. I didn't realize that the National Center for PTSD has been around for 30 years already.

(LZ): Yeah, it's actually a really exciting place to try to build from what people have been doing for a long time because some people were there when PTSD was just becoming formalized as a diagnosis in the Diagnostic and Statistical Manual. And then we're the ones fighting for a center that really was focused on the need of people to have state of the art science research, education initiatives. And increasingly what I do is actually a lot of consulting with frontline staff, managers about what they could do to reach more of their Veterans in their community with the highest quality care that the VA offers. And this meeting is here to remind us that these are not VA problems or Veteran problems but that these are healthcare problems and they're not easy to solve. And I like coming to a meeting like this where folks are from Kaiser and Group Health and all these other healthcare systems and we're sharing our best strategies for trying to make sure that patients can get whatever they may need at the right time.

(AH): Yeah, I've been experiencing that too. Where this really- this really beautiful exchange of ideas and people coming from different systems and even different parts of the world, not even just the US. So, very interesting conference so far.

(LZ): Yeah, that's right. We brought over a colleague for our session on participatory modeling from the UK and they were kind enough to invite me out to speak out at Exeter and at their health services research meeting in the UK last year. And for me it was really exciting and interesting, first of all, because it really is an international meeting that comes from a different point of view in terms of its scholarship and the politics around healthcare delivery, actually. But they share something in common with us in VA which is a desire to make sure that no patient falls through the cracks in the entire patient population. So, for a lot of healthcare, if you think about your typical private practice, like my brother has his own practice with his wife, and if their practice is full, then it's full. And if someone in the community isn't served by their practice, well that's just unfortunate but sometimes how things go. And some of the unique opportunity that we have and some of the unique need for what we're doing with participatory modeling is, I think, is because we are committed to making sure no Veterans fall

through the cracks and that we're really trying to make sure that any patient in our population, whether they be in Guam or Puerto Rico or rural Idaho or downtown Detroit, can get that same high quality care when they need it.

(AH):

I really like the way you put that and just, um, thinking about how we can come up with solutions to kinda add this safety net and catch all of the Veterans and all of the patients in our system. So, I wanted to dive into that with you a little bit more about this participatory modeling approach that you are innovating. First of all, could you tell us a little bit about what participatory and engaged research and what that process looks like before we move into the modeling piece of it.

(LZ):

Well, so I chose to go to my graduate program at Georgia State University in Atlanta to work with a mentor who formed community advisory boards to guide every stage of her work. And that was something that she was doing related to HIV in urban communities in Southeast US, in particular the African American community. And by the end of my graduate training, my dissertation work was in South Africa, similarly working with families to try to prevent the rate of incidents which was growing fastest among youth. And I think that there's something really, um- I guess I really am drawn to the conceptualization of the participatory method as a fundamental questioning of your philosophy of science and what your- I do like to use the jargon- what your epistemology is. About where knowledge where comes from, who creates it, who is maybe absent or whose knowledge is not privileged in our current power structure, actually, and our systems. And I think that a good scientist is always looking for what's missing from truly understanding and conceptualizing a problem. So, I was really drawn to these methods and now I'm several- more than ten years into trying to engage in participatory work. And part of what that- what the gift of being in the VA actually enables me to do is to be committed and, in my setting locally, building partnerships over time. Because respect and trust and true synergistic partnerships take time to develop. It takes a lot of time to engage stakeholders and have more folks catch on to what you're doing and to make the mistakes and repair them and all of that work.

So, I think- I think that for the participatory part, what you're really trying to do is locate any activity that you're doing at any moment in time on a continuum of "who's at the table" and being at the table is really not enough. You actually have to be focusing on "are we equally benefiting all partners and increasing their capacities in relationship to

their own goals every step of the way?" So, I'll give an example. When we first started with our research program, I was going around trying to figure out who would make sense in addiction and mental healthcare to be the patient perspective. And it actually brought up a lot of interesting almost ethical questions because I was feeling that when a patient is sort of making that critical moment of coming in and saying, you know in the VA for example, "I need help. You know, I'm ready for help for my substance misuse or my depression. I got up and out of the house and made it over here to this clinic today." I think that that's maybe the time for them to just focus 100% on their treatment and their recovery and making it through their program or their treatment plan. And in the VA, we have this amazing cadre of patient navigators and advocates known as Peer Support Specialists who play a lot of roles. In my healthcare system, the Palo Alto Healthcare System, the leaders in the social work program, some have moved on, [unintelligible] Adams is now over in Charleston and Jill Hudson, so leaders really focused on the professional development of Peer Support Specialists.

And I went to this townhall and ran into some of them and I was like "Listen, I'm a new investigator at this place called the National Center for PTSD. I've been trained- my whole professional training has suggested that what I would never want to do is start up a research program for Veterans in the VA without Veterans at the table helping me select the right research questions, the right methods, the right grants to apply for to make sure that whatever we're pursuing really matters to Veterans. And some of the Veterans that were there, Eric Ontaveros, Ren Kramer, we just basically started talking about how there was something really important for Peer Support Specialists to be able to take their boundary spanning role. Because, if you think about it, they play the role of staff and they're practiced at their experience of disclosing their recovery experience. They're practiced at sitting in their multi-disciplinary team and trying to explain to other colleagues from psychiatry, social work, nursing, etc. what the Veteran perspective- what Veteran-centered care would mean. And nobody else really has that role. It's like a very unique, if you back to the epistemology idea, it's a very unique set of knowledge and lived experience that they have. You could have Veteran patients who have never played that role of staff and they would have one experience but not the other. Or you could have as many staff who are Veterans or who are staff, but they haven't practiced their disclosure stories, they haven't- There's really just a unique role that Peer Support Specialists have. So, we formed, about four years ago now, from a blank sheet of paper and those early conversations what we now call VAPOR. V-A-P-O-R. And it stands for

the Veteran Advisory Partnership for Operations and Research. We have a board and an alumni network. And we- Again, the reason I emphasize the blank sheet of paper is because we really did co-create what that would look like from the ground up. And we continue to consult, we meet twice a month and go through every decision that we make as team about where we would go.

So, the story, to bring this back, about why its important to build capacity of each partner is- at different points throughout the partnership, we didn't know what would be needed to make it work. And I remember DC Barlow, Veteran of the Marine Corps, he said to me "you know it's really cool, Lindsey, that we're sitting at the table with the deputy director of blabbity blah and this and that but we're not speaking this language. We don't speak research. We don't know what you guys are talking about. What can we do so that we can really hang at the table and in these conversations?" Just being at the table was the first step but it wasn't enough. So, over time, we've come up with a lot of different things to do. For example, it includes all the peers taking the CITI verification that most researchers will be familiar with in human subject protections. But, for me, it was really important that it be something that DC and others felt they needed, and we were responding to what they wanted to do and not some sort of requirement that I dreamed up or something like that. And every step of the way we've really tried to negotiate what they really think would, um, be valuable to, you know, really contribute to the partnership. And another flavor of that was actually- we were talking to the national leader in VA of Certified Peer Support Specialists, **Dan O'Brien Massa**, and the peers on VAPOR (our advisory partnership) really wanted our program that I'm talking about at this conference, to be co-facilitated by peers everywhere in VHA. And we actually took that for about a year all the way up to the leadership as an idea until we realized that were sort of two things that we wouldn't be able to. One, we didn't actually have enough peers to probably support that and scale that. And we learned that peers are in a different, um, state of implementation as a program and as a service line across VA. So the idea that everybody was ready to take on this new role of Peer Specialist, not just being a patient navigator and advocate, not just being a member of a multidisciplinary team, but actually being a VA quality improvement advisor in national quality improvement initiatives was something that for their- Kind of reduced the number of peers who would probably be ready for that. So, as a result, what we ended up doing is taking our own VAPOR Peer Support Specialists who've all been in the roles as Peer Specialists for 4-5-6-7 years now and we've incorporated their stories about, you know,

what was it like that first time that they came into the VA. When we're focusing on access initiatives at VA, for some staff who are tired and burned out it sound like "access, eh."

And to remember, you know, there's one of our Veterans on the VAPOR board who tells the story of the day he know he was done using and how he walked by this stop sign where he used to buy drugs and just started crying and running to the VA. He's been in recovery for over 30 years now. And those kinds of stories are really compelling so we've incorporated videos of the Veterans talking about their experiences in VA that fit whatever the kind of quality improvement problem is that we're focusing on because stories remind us and motivate us about why we do this work. And sometimes, as one of the videos- **Timmy Thompson**, an Air Force Veteran said "I think this will remind everyone and keep Veterans at the Center," which was our goal of incorporating. So even if they're not cofacilitating live every session now, although we could maybe do it in the future, we are making sure that Veterans are, you know, at every- At all these meetings, helping us make all these decisions, thinking about ways to keep the Veteran perspective at the center of what we're doing.

And, since I've taken so much time talking about one stakeholder group in our work, I haven't even talked about our other partnerships. I don't know. We're just kind of going- doing a deep dive. But, I think that probably rather than doing a skim off the surface of who we're all working with and all the acronyms involved since this is VA, it does help to think about back to the time it takes to really do participatory work and locate each activity on a continuum of engagement and kind of think about what that looks like and means. I really have learned a lot about how much time it takes because- we have one Veteran, **EJ Edwards**, who said "you know, it took me probably a year of realizing that you were telling us 'you're up here with me at the podium'" and he's like "even though we were working together, I was so used to sitting. Feeling like I was sitting in a seat as an audience member listening to the researchers, listening to the leaders and you kept telling me that, like, 'hey, Leroy, what do you think?'" and you know, what he and **Wren** were saying at one point was that it's actually not just being invited, it's not actually just increasing our capacity. It's when our ideas get acted on and followed through and we see that impact happening that we really- that's what motivates and energizes the ongoing partnership. And its probably more helpful for listeners to just hear, even if it's only one of our larger coalition of partners, to hear some in-

depth talk of what that has looked like over the last several years than to just hear a brief overview of who all we've been working with.

(AH):

Yeah. Sure. Thanks so much for that. I really- I mean this is a huge fundamental paradigm shift in the way, especially historically, that research has been done and the process with which to, like you said, even develop a research question and make sure that Veterans are at the center of that. So, um, yeah, it's very exciting to hear, you know, how you've taken that model and really brought it forward in the VA system.

(LZ):

You know, it's interesting- you say the paradigm shift. I do think it comes from a different paradigm. But for somebody who sort of sat out that training from the beginning of their grad school, it's really interesting for me to- like the first day I got to my job and I had this implementation- I think my actual job description was Implementation Scientist, for those who may or may not know listening in, this is really the study of how there could be some sort of scientific consensus about what is most likely to work for patients and why it takes so long for patients to actually get it in the real world. It's a huge problem we have in research and that's what these meetings are about and what this whole field of discipline has been about. But from a sort of dyed in the wool participatory person, when I got there to my job there was no doubt that I had no idea how to solve their problem. Meaning, I knew the literature, I knew the research methods, I had something to contribute. I'm not saying I had no value to add but I definitely wasn't the person at the point of care making EVP decisions in the clinic, evidence-based practice: EVP decisions, over and over again every day. I wasn't the patient trying to get those treatments to meet my need. So it's very obvious that there's- that there was a missing chunk of expertise. In fact, the expertise closest to the problem most likely, I would argue, to have new insights that haven't been considered before. And I think that what people I think find daunting sometimes is how do you synthesize all the types of expertise and how do you set up structures to navigate the missteps you'll inevitably make. And you know, the confusion that can occur in a process. And, for me, it has to be something that you do over time because the idea that someone could just pop in at the last minute and help you make sure your grant with Veteran's Center or something like that is just not how things work. I've taken to calling it the "lasagna problem."

(AH):

Okay. Tell us about the lasagna problem.

(LZ):

Well, the lasagna problem, to me, is that ideally if you're a programmatic researcher who's really following a line of inquiry. Then when you really propose a grant, you've been building up preliminary data, you've been reading literature, finding the right team of investigators to focus on it that bring the right methods to bear on the problem and all of those decisions along the way are charting the course. That, unless you have all your partners at the table for all those little decisions, then the lasagna is that you're basically trying to change what's in the lasagna five minutes before it's ready to come out of the oven. You can't do a drive-by at the last second and change that course. So you really do need, from the early research question and the early grant and methods and "should we use this measure" and all of those things. And sometimes, we've had some really intense conversations about researchers reaching out and saying "we hear you have an advisory partnership and we'd like to run our recruitment strategy by your partnership and something about the recruitment strategy really offends and upsets the partners" and we had to realize that really we couldn't be people's catch-all as like a patient panel to get their perspective. We really- we're a strategic partnership. We're trying to work with a lot of other partners in the VA. And I'll at least briefly mention them because there's so many of them. VA Employee Education Services which is making sure that all the disciplines in addition mental healthcare can get accredited training from learning from our program, *Modeling to Learn*, in their own existing workgroups, their teams. And that includes Certified Peer Support Specialists, nurses, psychologists, social workers, and psychiatry. Also, we've been working with the Veterans Engineering Resource Center Office of Strategic integration. It's a new entity that I think is gonna start being called, um, the Institute for Healthcare Quality Improvement or something like that. So, we've been working with engineers there, and then, of course, most importantly I think, perhaps, is our operations partners at the Office of Mental Health and Suicide Prevention. Again, formerly known as Mental Health Services, Office of Mental Health Operations, and the Office of Suicide Prevention now sort of zippered into one singularly focused group of experts and colleagues.

I think, I think that I was trying to articulate how funny it can sound that it's so surprising to incorporate experts at the point of care and consumers of our healthcare and also just kind of, again, come back to the, in describing the lasagna problem, come back to the idea that you make a lot of decisions along the way and you really do need to keep those partnerships going all along the way. Otherwise, you'll end up at some sort of place and you can't easily change course at that point.

(AH): Right.

(LZ): So, lots of iteration in our work. Pivoting! Lots of pivoting in response to new incoming-

(AH): -very agile kind of responsive and proactive in some ways and even less reactive once you get in from the ground up and you're taking this is. You maybe won't get thrown as many surprises along the way.

(LZ): Yes, I think you do have to be ready to continually, um, refine what you're doing in response to new information and feedback. Over and over and over again. And that is really sort of common in my milieu over in Silicon Valley where everybody talks about doing that sort of thing. But not necessarily how a lot of academic research typically goes. And we've even taken to embracing, that I think is related to this participatory research, the open science movement. And, including- we have something- if anybody goes to Github, of the most common open source platforms used around the world, they can look up my username: Lzim. L-Z-I-M. And then, there's two repos. One is our *Modeling to Learn* repository which we're handling more like a sort of release. So, every new release of our Modeling to Learn program, all the session guides and, you know, updates or any refinements or fixes we've made based on user feedback are there. And then we also have our Open Science repo Team PSD which stands for Team Participatory Dynamics. And then you can actually see all of our discussions, all of our iterations, all of our design reviews. We have workgroups for everybody who's working on the simulation user interface we've built, the quantitative workgroup, the qualitative workgroup, the modeling workgroup. And it's all open source, all there so you can really see that deliberative iterative process happening online and all the- the pull requests, all the issues discussed and...

So, we really think that one of the great freedoms we have is to try to contribute to the public commons. Yes, the public good but the public commons contributing these types of methods and ways of working. And so, our code is up there, our models are up there. People can download the session guides for a program and we hope that they do because, as I mentioned earlier, we know that the problems we are trying to address with our program aren't just VA problems or- they're not even really addiction mental health problems alone. Some of what we're working on and what we presented at the conference, um, what I'm really excited about it is that we're pursuing methods and of course

sharing them but pursuing methods that could really be helpful in any area of healthcare, I think.

[00:25:01] Music

(LZ): And we've emphasized the participatory part but maybe not the modeling part.

(LZ): I was gonna say that sounds like a great transition. Tell us more about what we mean by participatory modeling and also a chance for you to tell us a little bit more about the participatory system dynamics group and also your system, the *Modeling to Learn*.

(LZ): So, we- we've moved from having a participatory system dynamics approach, which we studied and NIDA- National Institute of Drug Abuse- funded R21 to actually building a program called *Modeling to Learn* that we think will be more accessible to everyone and they're benefiting from our hundreds of clinic meetings and getting to a more refined program that they can kind of pick up and run with for their own studies, their own local needs.

So, *Modeling to Learn*- we call it that because we don't have any solutions already baked up and in our back pocket that we're trying to get people to buy into. So, if everybody was hoping- I would stop talking and just tell them what works to get patients the right care at the right time. I would tell them that we have resources that are free and online and accessible to you. But we don't know right now, you know, in advance without partnering with you and working with you with your own data and these tools, what is likely to work in your local setting.

So, what drew me to this modeling is actually a community psychologist by the name of David Lounsbury who works at Albert Einstein College of Medicine in the Bronx in New York City. I saw him presenting at a conference, the Community Psychology Conference, a few years back. And he was showing how improving health services delivery in the New York Health Departments could actually lead to population level viral suppression by engaging and getting HIV positive persons through the healthcare system, through health service delivery better and it was actually leading to this fairly important quality of life, you know, improvement. And when he presented this talk and then he sort of mentioned at the end "and we've been building this the entire time with patients who use the health department, frontline staff from the

health department, etcetera.” For me, as a participatory researcher and a mixed methods (meaning qualitative and quantitative) researcher, this was like mixed methods on steroids. I was like- I couldn’t believe it. I was like “what are you talking about? Please meet with me.” So, we had lunch, but I was not at the National Center for PTSD yet.

I was still at the University of Washington on a T32, a fellow- research fellowship funded by the National Institute of Health. And I was working in the emergency department with stakeholders and we were needs assessment focused on this other policy in, um, trauma centers and a- up at Harborview, it’s a level 1 high volume urban trauma center. And I was sort of having this feeling like if my career development award, this 5-year type of award, a Kay award that you try to get when you’re on fellowship and you think you’re gonna do academic research. This doesn’t fund. Then these people from the community who’d been wanting to partner with me, and we’d been collecting this data and so forth. It’s like a fiction, it’ll just, like, disappear. Because that’s what the soft money medical research environment can be like. So, when this position opened up at the National Center for PTSD and it was positioning to do implementation science full time and I knew I would be there and my ability to be there and partner with people was not gonna just vanish-

(AH): Sure.

(LZ): -grant by grant. I jumped at the opportunity to really live out those scientific values.

But, I didn’t- I wasn’t collaborating with David. I literally did start this process of, like, working with VAPOR that I’ve already described, being in the setting, and just getting a sense of “what’s the need here?” And I’m really standing on the shoulders of a lot of folks at my center, the National Center for PTSD, who’ve been leading this training programs and dissemination efforts for years and really evaluating what gets in the way. So, for example, prolonged exposure is a psychotherapy that can really help patients struggling with PTSD and it’s been- they’ve trained thousands of providers to deliver it out of my center for years. And when I arrived and they were asking folks “well, what gets in the way from you getting it to more of your patients?” They were saying “well, they’re describing it as ‘system factors.’ They’re describing it as there’s competing priorities in their setting, they have multiple roles, they have to get folks into care, they have to focus on access, but they also want to get the EVPs. We know that it actually- they sort of had what system dynamicists would call feedback thinking.

Like, we know if we don't actually meet their need and that people aren't actually getting better, that over time it's actually going to make our access problems for new Veterans worse because they won't actually be able to move on and get their treatment needs met. But they were still, sort of, the main mechanism or intervention to help people was really training and consultation and not how to address these additional factors in their setting. And, after sitting in clinics a lot, I've really come to realize what most people mean by "the system" is "the thing bigger than me that prevents me from getting my patient to the care that I think that they should have."

[Laughter]

(LZ): And people even kind of get to the- to sort of like splitting on the system and being like "I'm the good provider that's gonna help you navigate this bad system." And that was something I saw in the emergency department outside of the VA. It something that can happen anytime that people do sense that these larger dynamics are kind of determining the types of care they can get their patients to.

So, that was when I reached back out to David and said "David, that modeling thing that you were doing that mixed methods on steroids where you working with people from the beginning and building models. I think that's what the VA needs for frontline staff and providers to be able to manage what they're calling 'system factors' but I'm not sure what they are." So, David and I started sitting with clinics, we actually got invited by a clinic manger who had recently done a lean redesign [unintelligible] cycle and it succeeded and failed depending on what variable you looked at. So, they set a goal to increase the number of patients to 40% who moved straight from their intake to getting at least two psychotherapy visits within their first month. And then- from certain acronyms we like to use, like making a SMART goal, a goal that is specific for the S, measurable, action oriented, realistic and timebound. They definitely did a good job of making it specific, measurable and timebound. 40% will get this two visits within 30 days and they set a goal of getting it "by April, we'll do this." But when April came around, which is when our project started by the way because they reached out to us after that, they were finding things like "yes, we're increasing our scheduling but then no one's actually completing these visits." Like it was dropping right back off.

(AH): Mmm hmm.

(LZ):

And from system dynamics terms, when you're looking at a whole system, then you can look at things like how you could schedule in a way that leads to a peak where lots of people are waiting but they can't actually get in to complete those visits. And you can start to look at the whole patient flow from referral to waiting to start to the starting rate in patients per week actually moving into a service to how many are in service and how quickly are they leaving that service.

And- So, David and I came in and sat down with folks, again with a blank sheet of paper and started with some very basic questions like "how does a Veteran's need get met around here? What happens before that? What happens after that? How do you know if it's gone well? How do you know if it hasn't gone well? What evidence is there that it's gone well?" And we just kept iterating and iterating and iterating until we now actually have, in the *Modeling to Learn* program, a data user interface where frontline staff, based on their security clearance that they already have- their badge for actually accessing the electronic health record- they can put that in, type in if they're internal to the VA, MTL.how (Modeling to Learn - MTL), MTL.how/data and it will take them to a secure website where they can query their own data and pull together their own team's data looking from today, the moment they click the button, back for the last two years and see what happened to all their patients and their team. Where did they end up? Where did they go? And we were looking at trends because sometimes, for example, we have these benchmark performance measures in VA that can create a lot of anxiety for staff. And part of the frustration with them can be you might be maintaining the same level of quality in terms of you're still at the median for something for VA nationally. But maybe you're serving twice as many Veterans as you were before. And Veterans can tell when they're moving through a clinic like that. Patients- I'm sorry, providers can certainly tell when they're kind of pushing it to try to serve twice as many folks while keeping the standard of care at the same level. But the measure looks like they're treading water, which can be so dispiriting, especially when you're in the difficult high-pressure work of addiction and mental healthcare. So, these tools- you know I had providers say really notable things to us before we got started like "we're swimming in VA data. How can you and your new data tools do anything but hurt us?" Really, the idea that data becomes just like another measure that they have to meet.

(LZ):

Right.

(LZ):

And by the time we built this data UI so that people could query their own data and so forth and it was at this hyper local level of them saying “this is my team, and these are my patients.” Then we were hearing words like “this is really validating” or “this is really much more transparent to me because now I can see how my charting is becoming VA data.” Whereas without that step it was sort of like they were spending the majority of their day charting since we now know that in healthcare, again, in all healthcare systems providers are spending more than half their time charting rather than face to face with a patient. Um, you know, all that time I was spending charting was like going into the ether and it wasn’t feeding back to me and giving me any useful information.

And so, we built the ability and it’s something that providers really asked for. Just to get within a couple of clicks, reports of patients, for example, have a high risk flag for suicide or whether they have an open safety plan. We’re changing some of our measures for suicide prevention in VA right now. But, all of the historical data that they have in the chart as well any new measures that have been put in place because they’re directly querying the VA corporate data warehouse, a giant enterprise-wide [unintelligible] data store in the VA. They’re actually- if there’s a new measure, they can get it. So, if we just changed to the Columbia or if we’ve changed from PHQ-9, these are all standard measures for listeners that are really related to suicide prevention. If it’s in the chart, if it’s every been charted, they can query it and pull it up and it’s in real time.

And by partnering with the Office of Mental Health and Suicide Prevention, we’ve also made sure that their data are completely consistent with any performance measures like our quality measure system known as SAIL. So, they can be sure that in real time, if SAIL changes anything about how they’re defining something in any way. Again, at the backend level in the corporate data warehouse we’re making sure they can stay synced and up to date. So, we’re really as part of our participatory principles, trying to put the frontline staff in the driver’s seat stitching together their own hyper local data of their own team so that they can query it and understand what’s going on. And they asked for these abilities to find a single patient because program managers and researchers seeing like trend lines and so forth might be, um, you know, the most compelling thing. But for a clinician, it’s like “let me find that patient that I can picture how their care went” and then look at their data and see how that becomes these data systems and kind of follow that through. And we, again, we iterated to building that tool to that point in the clinic with our teams.

But I still realize that what is so frustrating about data is that, um, it- if you see what you like, like your like “this is a good measure, we’re doing really well” but you don’t know what explains it, then you might undo that measure tomorrow and not even that you’re doing that. And similarly, even if you see something you don’t like, like “all our decisions around here are adding up to something that nobody wants,” you need to understand causes. You need to understand why the numbers are what they are to do anything about it. And so I felt that we were sort of getting into a space where- the analogy I’ve used is if your son or daughter brought you a C on a math test and all you did was send them away and say “we get As in this family.” You know? Performance measures can be like that. They can let their very important role in helping to understand where we are as a system and locate yourself against other clinics and facilities around the country. But, they can “hey we just get As in this family” and when people are struggling and they’re getting that C on the math test, actually what they need are action-oriented insights about what they can do about it. And the data don’t often tell you what you could do about it and that action oriented.

So, when this clinic invited us in and we started helping them coming out of their SMART goal that it maybe lost the art of it, the achievable action oriented realistic timebound piece. We started being able to experiment with their data and capitalize on this giant data store and I realized rather than doing what a lot of, it seems to me, my colleagues in Silicon Valley are doing and saying “we’ll take our single solution and just scale it really, really fast.” But I was realizing we could actually scale the complete localization and tailoring because with just a couple tweaks in our code, we made it so that they could drive and have a data user interface and query their own data. And with our simulation models, then they are simulating from their own data to find solutions. So, it- people are almost always in healthcare at the local team level flying blind with regards to, like, “well, what is our supply demand ration of these disciplines of providers?” Because for listeners who may not be in healthcare, you may not know that operating a top of license for a psychiatrist who can provide evidence-based medications is different than a social worker, psychologist operating a top of license and may be focusing on an evidence-based psychotherapy. Like cognitive behavioral therapy for depression or other treatments we’ve rolled out in VA. So, the staffing mix that your team has and how well that matches or doesn’t to what your local community needs may be is something that most people, like they know it matters, like “we’re short a psychiatrist” or “we’re short a doc over here.” Teams know it

but then don't then have any way to quickly and efficiently optimize it to make sure that they could still find good ways to make sure their Veterans in their local community can get the right care at the right time.

So these tradeoffs of fears that people have, like if we really focused on people getting through a full course of some of these evidence-based psychotherapies, cognitive processing therapy for PTSD, some of these things, if we really focus on getting them through 12 sessions of psychotherapy, well, over time, how much payoff does that give us in terms of their needs actually being met and them actually being able to step back down out of treatment and go to their kid's soccer games and not be doing avoidance and experiencing hyper-arousal and nightmares and intrusive symptoms and all of these things that can come with Post Traumatic Stress Disorder. If we really met their need upfront, like at the beginning of their own engagement in care, over time how many new seats that does free us up to serve new Veterans who might benefit from these treatments? Those are the kinds of things that somebody won the Nobel Prize for saying "we can't do, we're minimal satisfiers." Herbert Simon, you know, coined this idea and the academic principle that he modeled was that we're not perfectly rational decision makers, we have bounded rationality and we have limits on our ability to run through the mental simulation of this truism that any clinician out there knows "well I can't start a new patient if I'm full." Right? Everybody knows that.

(AH):

Yeah.

(LZ):

So, the question becomes "well, what's going on overall on our team and what's our typical proportion of services in our team?" You know, most people don't even know that my local team, because the data isn't that localized, what percentage start medication? What percentage go to group? What patients benefit from an adjunctive service of some kind? Peer support, etcetera. So, that hyper locality at the place where people are making those care decisions is critical to them making better decisions. And a lot of the data systems doing it through management from a system perspective just leads to delays in getting the information you need to improve care and delays in the system can lead to more extreme peaks and troughs and oscillations and instability. Which then can lead to systems actually, literally, doing more harm than good or making mistakes in terms of chasing their tail trying to find an improvement. For us, we're often looking at tradeoffs like- Can I give another one? Yeah? Can I give another one?

(AH): Yeah yeah yeah. We are- we are rolling

(LZ): Okay. I'm sorry. I'm like look at how little-

(AH): Don't apologize. This is great.

(LZ): -coffee I've had actually and I am still going on.

[00:43:22] Music

(LZ): So, another concern of ours has been the opiate epidemic. So- Part of the reason that NIDA has really been supporting our work is because there's really a- a limited understanding of how to better get access to some of the most effective medication assisted therapies for opioid misuse that have actually been show in a lot of research to prevent relapse, to prevent overdose, and death. And, um, one of the issues is that one of the more effective treatments that is part of our clinical practice guidelines requires an X waiver from the Drug Enforcement Agency in order to provide it. And, again, a lot of teams are flying blind with "how well are using our X waiver provider?" Of our total pie of supply of appointments that we have to offer medications, a typical team is actually responsible for making sure that Veterans who are depressed, who are on antidepressants are being followed up, having therapeutic response, they're being evaluated every- no more than 90 days. We have evidence-based pharmacotherapies for alcohol use disorder, opioid use disorder. So, what we're finding with *our Modeling to Learn* simulation tools from the local data is that, for some teams, they are having all their patients come back at the exact same return to clinic visit interval. Like, the number of weeks between when you- when you're supposed to come back and see your doctor. But our VA quality standards would suggest that you should be coming back more often if you're on one of these medication-assisted therapies for opioid use disorder than, perhaps on an antidepressant. It takes a little bit longer for it to come on so you can tell it's having a therapeutic response. So, we have different standards. Just helping teams optimize their return to clinic visit interval for each patient population helps them optimize their existing staff and it's like magic to them because people can't waive a magic wand and come up with new staff often, at least not quickly.

So, realizing how those rates, the rates of patients coming back, the frequency of those return to clinic visits, can really empower a team to optimize their local resources, something everybody from the taxpayer to the Veterans that need the care is really interested in. As well as in VA from VA Central Office on down to the frontline staff. For some teams, it shows tricky things because, depending on what the local need is- some communities are experiencing an absolute opioid crisis, opiate misuse crisis, but some communities aren't. So, looking at how the local- what's the proportion of patients with each of these needs for medication and thinking about how you allocate your, um, supply of providers based on whether they are an X waiver or not. That can be where they get the bang for their buck and their community is thinking about the size of each patient population and how they allocate their hours. Sometimes it can be exciting. A principle of systems is nonlinearity, thinking about runaway growth, exponential growth, or decline are some of the things people think about. So, sometimes what can also happen is that people are finding that they could get the payoff that they want with a much less difficult **pain point** than they imagined. So sometimes, for example, if you're the only X waived provider on your team, it may be difficult to manage all opiate, um, patients struggling with opioid use disorder as your primary thing that you're doing all the time. So sometimes we can show for a team that maybe if you were just doing half-time focused on patients with OUD needs, then you would actually no longer have a backlog of patients waiting to start medication-assisted therapy. So, you don't have to do it 100% of the time all the time to actually meet your local community's needs and that can be really relieving because they can feel under pressure, um, to do something that they may find would be unsustainable from a quality of work life kind of perspective.

So, those- All of these tradeoffs- Or another version might be, you know, if we did- changed our referral rates to OUD by changing their return to clinic visit interval and adjusting our appointment supply base with an X waiver or not. Then we'll get all of these new patients for OUD in. But, as we feared, it will increase wait times for our depression patients as we, you know, switch over. And so, finding those tradeoffs and optimizing them- I'm gonna sound like a preacher or somethings- but you can get insights about which- about what those tradeoffs are as quick as you learn not to touch a hot stove. And the reason I say that is really because within seconds the simulation will tell "if we did with our appointment supply and this with our return visit interval, what effect would it have on each of these patient needs. You can learn it <snaps fingers> like that. I'm not sure <snaps fingers> if that's coming through on a mic.

(AH): I think we got it.

(LZ): And that is, from a frontline staff perspective, um- That is a real value-add. It does not mean we have to pick this one measure that we're gonna try to move the needle on as if that's the only thing going on around here. And just pursue it for the next 6 months and see if it works when what we know is patients have more than one need, usually.

Those needs change over time. Teams change over time. Staff turnover. No single provider provides every single treatment that a Veteran may need. Again, I've already given the example. I, as a psychologist, cannot prescribe a medication so it does require a team. The team sees the patient, decides when the patient should start a new plan. That means that there has to be coordination for how those referral decisions and other things are being made. And all of those factors in a system model can be accounted for in real time and give you feedback about not only what's going in our data UI from today looking backward two years, but from today looking forward two years. What are the possible scenarios that we could get? How could we better get a high yield improvement? How could we choose an action plan more likely to work? Sort of place a better initial bet about what would actually improve things for our local Veterans.

So, um, I really think that what it's helping us to do is better realize those participatory ideas that we were talking about earlier. I think for a lot of people, depending on their training, they may not realize that the real idea there is, you know, whose questions get answered? Who has access to the resources and benefits of research? Who gets to make decisions about how it gets used? These are some of the principles that we really think, you know, certainly local control is a participatory principle. The ability of us to make sure that all these resources are used to whatever question local clinics or teams would like to ask. That we go in without a prebaked solution, but actually learn together. That's why we call it "modeling to learn." That the decisions that people might decide to implement are theirs to make. People have a right locally to decide what would make sense and what would be best. But that we could actually add value in our roles as researchers and improvement and implementation scientist by giving them resources for that transparent, equitable access to their own data that they're charting every day. And to stay to the science tools to improving care. And I think, you know, most people maybe still

struggling a little on my quick-as-a-hot-stove simulation kind of example so I'll just give, if I can, just a super brief example.

(AH): Please.

(LZ): If you ever hop on an app to find out, like, can I lose ten pounds by my wedding in June?

[Laughter]

(LZ): That's a stock and flow model system dynamic model that's trying to help you think through your typical caloric intake, your energy expenditure and run that sim out through whatever your end date is to see if "okay, if every day were like today and I ate like this, then by the end of the summer, I could lose ten pounds" or whatever that may be. And it's up to you to use that simulation input that you can get, again, really quickly that simulation result. And think about the input decisions like "well, am I really willing to restrict my calories to 1000 calories a day?" or- You know, kind of think about that or another analogy, of course, is if you've ever hopped online and used some- usually they'll just be called a calculator to figure out if you can pay off your mortgage or your car note. Right? So, it's using rates like "I saved this much per month and it was growing at this percent..." Well, that's what systems dynamics models do. They're not that statistical models, they come, actually, out of calculus. They're coming out of integrating these flows of patients and accounting for where patients accumulate- states where they accumulate, places where they have transitions or rates of change between these different states. And so, like a car note, again, I may simulate it out and learn "oh, wow. The nonlinearity, the high-yield payoff is when I can up my savings from... or my payment on the note from 100 to 125 dollars, not 100 to, like, 500 dollars, which is what I feared." So, that kind of thing can help you find that little space for even a small change gives a, again, you know nonlinear and exponential increase in the amount of money I would have, you know, to help me pay down the debt or how much savings I wanna have when I retire. Those are all examples of simulation that help you inform your decision making today so that you can then have your new mental model like "well I'm just trying to come up with that extra twenty-five bucks a month. So maybe I'm not get the five-dollar coffee." Like, a new rule of thumb in your mind.

[Laughter]

(AH): Absolutely.

(LZ): Well, that's what we think we're doing with *Modeling to Learn*. And it's actually quite different than most of what people talk about at the conference. Which includes, like, months and months of implementation planning to, like, you know, change and restructure systems and pursue change. And people are getting, you know- a lot of good work is going on. But the idea that we have by focusing the models on those decisions that frontline staff make several times a day, like "when should I see this patient in front of me again?" And typically, in the past, they were, as I said, flying blind.

(AH): Mmm hmm.

(LZ): Like I don't know what that accumulates up to. And now, you know, I had one team, for example, that learned that if they pushed their return to clinic interval from four weeks out to five weeks, which is from their historical average, they could serve (this is a small team) five new Veterans per week in that particular service. Well, they're like "well, clinically, most patients that I could see in four weeks I could see in five weeks." I mean there's gonna be a rare of example of a single patient. But now that I have that new mental model of what that is, if I'm with a patient that I think I could see in five weeks then now I know that the win I could get for those Veterans waiting for care is up to five new Veterans per week that could get into care. And they would have never known that they could get that much bang for their buck.

(AH): Right, small little tweaks.

(LZ): From that one- that small little tweak. Same kind of idea. So, I think that what we're really trying to do is rather than just big long strategic planning processes. Somehow, just changing all those little decisions all throughout the day that add up. So, that's why *Modeling to Learn* really focuses on. The decisions that frontline staff make and learning from simulations so that they might have a different rule of thumb when they make some of those decisions, informed because the model is at a higher level of aggregation, of the team, and all the patients are by their team of what would better would better for most. And, again, the decision is still a decision between a patient and provider of, like, what's right for this Veteran right in front of me? But, now I'm sort of not flying blind. Now I have insights about what that's likely to lead to, including scenarios like "well, this is gonna look worse at first. Like, a few more Veterans will be waiting for the first three months but then

it's gonna get way better and stay better for the next years." Well that can really help stay the course for three months if you can really see in the simulation the benefit that you're likely to have for your patients. And so, we're sort of trying to take the advantages that we all enjoy, like all of us here at the meeting. Adam, you, and I took planes here and we probably were really glad that our pilots had trained using simulation before we hopped in their plane and, for anyone who's had a surgery out that there, glad that their surgeons used some simulation learning before they hopped under the knife or on that surgery bed. And the same thing here. We think that frontline staff are the ones making those appropriate clinical care decisions at the point of care. And we wanna empower them to make more optimized decisions. And if, you know, we've gotten used to using simulation for surgery and, you know, um, flights, I think that's probably the most apt analogy than the, um, you know financial situations. Although those are very pragmatic health and financial concerns. And the reason is because when you're talking about, um, suicide, when you're talking about overdose, when you're focusing on people who are struggling with lapsing back to alcohol or other types of substance misuse and the chronic impairment that can be associated with PTSD, then the cost of learning by trial and error in the real world are not just chasing your tail and demoralizing staff. And it really is that you could do more harm than good in pursuing an effective strategy for patients who are struggling and in need. So, we really do think that the health impact is sort of the same. You simulate when it would be risky, expensive, unsafe to learn in the real world. I think that, again, helping people to quickly model to learn to find what was- is likely to work locally for their patients has advantages for staff. Has advantages for patients and could be something that really moves the needle in the area of implementation science, which is why we're all here at this meeting.

(AH): Absolutely. Yeah. I mean you said so much there but I just wanna-

(LZ): Sorry! Didn't let you get a word in edgewise.

(AH): No! No, no, no. I'm so glad you did and I'm glad that at the end you circled it back to patient-centered and what it really meant at the end of the day to use these kind of advanced modeling and dynamic systems to really say "this is gonna help our patients. This is gonna help the Veterans that we serve." I think that, you know, that brings the whole package together nicely in terms of a participatory approach and really why you're exploring this work is because you want to improve the care for our Veterans. I really admire that.

(LZ): Well, if you picked any restaurants via Yelp while you were here in DC as we did, then you know that you go to a restaurant to eat and a Veteran who's struggling with any of these addiction mental concerns is coming in to stop suffering. So, they want the most effective treatments that we have shown through decades of research, through lots of randomized control trials, then meta-analyses and systematic reviews, then effectiveness studies, then rolling them out in the VA nationally. We've shown that sometimes depending on the treatment, fifty or sixty percent of Veterans who get these treatments in the real world can be asymptomatic and these treatments are, some of them, shorter term treatments. I mean that is a headline news story that many Veterans don't know. Um, but like Yelp, even if that's what a Veteran is coming in for, when you read the restaurant review you don't just think about the food. You may check out those photos. You think about the service. How long people had to wait to get seated. To get their water even. Every little piece along the way. And what a system model can do is help you account for all those interacting variables in real time so that we no longer are doing worse in healthcare than a four-star restaurant can do on Yelp. We can make sure that that full experience from the moment your need is identified and you've taken the big step of walking through the door to get help. That the way you're referred to get your needs. How long you wait to get the right treatment to meet your need. All of those parts are as optimized as they can be. That's what we're trying to do with Modeling to Learn.

(AH): And I love so much that you highlighted this idea of hyper localization and really optimized a strategy based on that particular clinic and those particular set of providers, travel times to that particular clinic, you know all these variables that are gonna change depending on where you're at.

(LZ): Yes. All the more reason why this sim and getting real time from your data is really important. Because I think it's reasonable for frontline staff in Cleveland to say, "well just because it works in Houston doesn't mean it's gonna work here." I mean that can be completely reasonable as a question and often what we are doing is trying to take something that works somewhere, figure out why it worked, and use it somewhere else. What this is doing, this reason I did go ahead and spook everyone by mentioning calculus-

[Laughter]

(LZ): -is because... Well, the thing is we do rely, back to that, we do rely on our engineers when we are in these tall buildings downtown in DC. When we get in these planes. And if I were to take my coffee cup and you were to take your pen and we were gonna throw them across the room from where we're seated now, Adam, we should, again using calculus, be able to know exactly where our pen and cup are gonna land. And its gonna vary as a function of their mass, their size, their aerodynamics, my arm versus your arm. So those local details, the actual measurements of the weight of my item and your item, that matters. But, the fundamental math of knowing what it's trajectory should be and where we'll land is something knowable. It- some people might even consider it a mathematical fact that you can chart that course and understand it. And that's what we're doing with our modeling, actually. Saying "okay, well the fundamental math of things is always the same no matter where we try it." But those local details like "well, how many staff do you actually have" and "how many- how are you using your X waiver appointments relative to your local need for opiate treatment." Those kinds of scenarios, the local- it does matter a lot just as your arm and my arm might be different as we pitch our items across the room.

[Laughter]

(AH): Exactly.

(LZ): Right. So, it's really a combination but it doesn't mean then that the strategy people would do once their armed with that insight. You know, what- how does this work in my local- from my local team data. Whatever they might need to do from their simulation learning will be hyperlocal again. So, it's not shoehorning the same solution everywhere you go. It's just making sure everyone has the resources, equitable access these resources to run the sims from their data to figure that out.

(AH): Yeah. Yeah, I can see how that can be really revolutionary in a system as large as the VA. When thinking about implementing these really promising and evidence-based interventions is "how can we do this at a local level to meet the needs of the local patients?"

(LZ): Yes, and I'm really honored to be part of the VA mission and to try to tackle this problem first in the VA. And one of the benefits to all of us in the US, of us doing that, is that these resources are public domain

resources that they could apply in all the other healthcare systems to help other patients who might need it in other healthcare settings as well.

(AH): Mmm hmm. And I also like that you brought up that idea of calculus and engineers and just reminding us that this is a multidisciplinary approach. This is not a, well first of all, obviously with the Veterans, with the providers, with the implementation scientists, with the engineers-

(LZ): The educator accreditors-

(AH): -the educators. So, I mean it's a very multidisciplinary- and I also appreciate that about it.

(LZ): Yes, it's true. We definitely are learning a lot from doing a true team-based science. And I'm full of analogies-

[Laughter]

(LZ): -as you can hear. But there's something really interesting about, like, without the engineers, you know we wouldn't have the models. So, my analogy for this one is potato salad. Right? Like it's only potato salad if it has potatoes in it, otherwise it's some other kind of salad.

[Laughter]

(LZ): Right? But then all the other pieces like do you prefer a mustard- like all the other ingredients really make it a salad you'd recommend. That you'd be proud of. That you wouldn't deviate from for years. You know, etcetera. And we have, again, each little piece from the aspect of focusing on design to making the videos available to focusing on making sure every discipline at the frontline can get accreditation towards their licensure for doing the program. Like, every little piece of that is what's turned this into we think will, um, really have an impact and so that's where we are now in really calling it an accredited program. And even that, I think the ability to get licensure credit during your normal staff meeting with your existing team across all the disciplines that you work with. We often train in silos, you know. I train with other psychologist, psychiatrists train with psychologists. So to train in quality improvement with your team at scale nationally is also a little bit different and new for us to pursue it that way. So, yeah, I hope it really could make an impact. For sure.

(AH): Yeah, yeah. And I know we've been chatting a lot but before we just wind down, I feel like you've painted this picture for us about what you've done and where your research is and kind of help us see a little bit more about how you are now sort of beginning to scale this up and implement across the VA system.

(LZ): Yeah, so we trained up the existing quality improvement needs in the Office of Mental Health and Suicide Prevention, also known as Technical Assistance Specialists. And they are ready to facilitate-cofacilitate it first with us, the program *Modeling to Learn*. So, we aren't participating starting in 2019 to actually scale it and go through the learning bumps of working with a lot more clinics that we started with in our R21. So, this R21 mechanism from the National Institute of Health, for listeners at home, it's actually an exploratory developmental grant. It has language in it like "high risk, high reward" types of funding. And the clinics that worked with us to develop the program have actually doubled the number of Veterans in one clinic that are getting evidence-based psychotherapies for PTSD and depress. And actually, another clinic has had an increase of sixteen fold and they've been able to sustain those improvements respectively, for a year. In one case, and now we're about 8 months of follow up for the others. So, these are preliminary results and I do hope to, as we launch to more clinics and learn more, I do plan on continuing to model to learn.

(AH): Sure.

(LZ): Because there'll be more to learn as we work with lots more clinics around the country. But, those, I really wanna thank all the frontline staff in my own healthcare system that were part of our pilot studies that really helped us get to a place where we could build resources that were more responsive to their needs at the point of care. And, um, I hope that we can continue to be responsive and I think working in a participatory way is why we have continued to take traction every step of the way. I mean, I know that, uh, I may have exceeded some folks' interest, but I just want say one super critical thing that is one of those moments where stakeholders really align. It's when you can show when a clinic is doing the best they can with the resources that they have. Which our program and simulation models can show, so our I gave a bunch of scenarios where people could find the improvement that would work for them locally as a function of their local staffing and patient needs. But, sometimes what it actually shows is "yeah, you guys can't respond any more than you are. You're already fully optimized

locally.” And it turns out that that is something from our leadership who interface with Congress and are here in DC all the way down to the frontline staff are really interested in knowing. And scientifically, a lot of times the improvement or implementation strategies that people may be testing, when they hear that the barriers “we don’t have enough time” or “we don’t have enough staff,” those things are not quantified and accounted for. And indeed, you might be pursuing that inadvertently assumes that your staff have, like, 200% of the time that they actually have. So, system dynamics has this idea... I heard John Sturmond at MIT say this at a training I was at: “You’re getting too far away from the physics of your problem.” By which, he meant conservation of things like time. So, we’re able to work with our frontline staff and make sure that what we’re looking at is optimizing their existing total pie of time. Maybe slicing it up differently or something like that to better optimize for their patients’ needs. But we’re not inadvertently growing the pie in some sort of fantasy way and pursuing strategies that are unrealistic. So, even those kinds of things are really innovating value adds for a frontline staff who’s like “maybe if I just duck on this next quality improvement initiative.” That can be really empowering as well. Okay, maybe I’ll stop to just come back and let you know once we launch nationally.

(AH): We would love to have you back.

(LZ): And once we have the final results. We can talk about what we’re learning at that point, too. But it’s really an honor to be asked, Adam, to be on the podcast and talk about what we’re up to.

(AH): Lindsey, this has been really remarkable session. I feel like I’ve learned a lot. I feel like our listeners have hopefully learned a lot. And also, maybe just letting some ideas marinate a little in their brains to continue the food analogies.

[Laughter]

(AH): But, um... Yeah, really thank you so much for joining us and really sharing this knowledge with us. And we would love to have you back and touch back in about how this line of research, line of implementation is going.

(LZ): Well, thanks to you, Adam and Joe and everybody at the Rocky Mountain MIRECC for not only putting the podcast together but for trying to make all this stuff accessible to anybody out there who might

not be at the conference through the podcast and through Twitter, you guys are doing a really great job, a great service. So, I appreciate what you're doing.

(AH):

Excellent. We appreciate that. Well, everybody, that's gonna do it for this special edition podcast from the Dissemination and Implementation Conference in Washington, DC. Until next time, join us for more innovative interviews and important research and work in Veterans health.

[01:10:23] Music

(Text Transcript Ends)