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Unidentified Female: As we are at the top of the hour now, I do want to introduce our speaker today. We are very lucky to have Laura Damschroder presenting for us. She is the Co-Implementation Resource Coordinator for Diabetes QUERI and a Research Investigator at the Center for Clinical Management Research located in VA Ann Arbor Healthcare System. At this time I would like to ask Laura. Are you ready to share your screen?

Laura Damschroder: Yes, I am here.

Unidentified Female: Okay. You should see the popup now.

Laura Damschroder: Okay. Hopefully people can see my first title slide.

Unidentified Female: Yeah.

Laura Damschroder: Alright, well, thank you very much for attending the Cyberseminar today. It is on a fairly specialized topic in talking about and focusing on specifically, the consolidated framework for implementation research. First of all, I would like to start off by asking whether – who is in the audience in terms of the listeners? Are you a researcher, a practitioner, or both? There is a poll that should be showing up on your screen. If you could select one of those that best fits.

Unidentified Female: Thank you. For attendees right now, you should be seeing a blue screen with the poll question on it. Are you a researcher, or a practitioner, or both? Please select one option. Your answers are; – I conduct research studies. Or, I am a program implementer and/or a conduct

quality initiatives. I do some of both; or none of the above. Simply click the circle next to your response.

It looks like we have got a very responsive audience today, which is wonderful. It is always good to know who to direct the presentation more towards. We have already had 85 percent of our audience vote. That is great. At this time, I am going to ahead and close the poll down, and share those results. Laura, you can talk through those real quick, if you would like?

Laura Damschroder: Well, it looks like we have mostly researchers. Forty-three percent indicated that you conduct research studies. Not far behind, 36 percent of you indicated that you do some of both, which is fantastic. Four percent are implementors or quality – do quality initiatives; which I am really happy to have you in the audience. Then 17 percent of you are none of the above. I appreciate your responses. That kind of gives me a good feel for the range of participants in this talk.

One of the things that I really emphasize in the work that I do is that I am a real believer in doing research that is rooted in practice. I believe that we can accomplish practice, and be practical, and produce practical tools for people to use in clinical settings or out in the field while at the same time being scientific; and advancing scientific knowledge of this topic that we call implementation.

Today, and I am just showing this. This is a general – this is not specific to implementation. Just that there is a proliferation of trials and reviews, and research studies that are being published every day. There are 75 trials and 11 systematic reviews a day according to a 2010 article that was published in PLoS Med – medicine. But with all of this knowledge and all of these papers, and all of these articles, what is the state of our knowledge?

There is an increasing number of articles that are really kind of recognizing that even though we have a lot of volume of information, if the science stagnate – that there, because there are persistent gaps in knowledge that persist especially in the domain that implementation research or implementation \_\_\_\_\_ [00:04:11] is very concerned with. That is how do we get these evidence-based programs, initiatives, improvements into practice so that patients and Veterans – in our case, Veterans within the Veterans Affairs – actually benefit from all of this knowledge that we are generating? \_\_\_\_\_ [00:04:30] Larsen actually had an editorial that proposed that maybe science is even going in reverse because of our inconsistent use of terms and definitions; and all too often in my expertise, theory is used as kind of a heuristic.

I am a big proponent of the use of theory. I am going to talk about the role of theory before I dive into CFIR. Because really this kind of provides the foundation for why a framework like the CFIR is not only advancing the science by providing a foundation for producing theory; and generating knowledge through the use of theory. But also generating practical tools for the field. But using the theory regardless of how, and whether it is a high level theory or a very micro level theory where you are indicating the interrelationship between multiple constructs to describe a phenomenon. It provides an organizing framework for research studies or for any kind of evaluation. It helps to build a scientific knowledge base by defining or embedding context and mechanism, or acknowledging context and mechanisms of actions.

We can generalize through theory; which then allows us to be able to synthesize knowledge across disparate settings of studies. Theory provides a set of common terms and definitions, at least this is in the ideal sense. Then it is an efficient way to systematically build collective knowledge rather than having to do repeated trials, varying every construct that may be involved or on the \_\_\_\_\_ [00:06:20] pathway. Then I just want to say so what is theory? A lot of us researchers use theory as these are tested or testable general propositions. They are often regarded as correct that can be used as principles of explanation and predictions.

We have big T. What I call big T theories like the theory of evolution; which is an accepted theory. Well, actually it is then exhibited and demonstrated many times. But a theory is also just more loosely any account that asserts a meaningful interaction between two entities. If I do this, then that will happen. Even if you are doing a quality initiative within a clinic, you are doing things because you expect a response. You may not always be right. You are not. I am often wrong. But I started off. My actions are guided by my theories about what I think will happen in response to my action or, maybe looking back. Let us say we have got a failed quality initiative, or a failed implementation, or even a successful one, of course.

But we look back. We say, well we were not successful because. Or, we failed because. Those are theories as well because we are not able to necessarily, explicitly show, or to prove that. When we come to implementation science, there has been a lot of different models, frameworks, and theories that have been published. This is a listing of just five relatively recently published articles that kind of did a survey of the landscape and created a compendium of these models, and frameworks, and theories within the realm of – or at least related to implementation science. In 2009, we developed this framework called the Consolidated Framework for Implementation and Research. The reason, our motivation for doing this is that we wanted to create a framework like a one stop shopping place so to speak where we could go to, to look at all of the different constructs, and all of the different factors that might influence our efforts to implement programs successfully.

 We also wanted a framework that could provide kind of a common language, a common way of conceptualizing these factors, these very dynamic and complex factors that are in the context in which we do our implementation. We wanted a framework, kind of a foundational framework to help promote consistent use of construct; which is our term for factors that influence our mediators and moderators; that influence implementation. Using consistent labels and having clear definitions, operationalized, or relatively operationalized but adaptable definitions, we consolidated what we saw – what we found in the literature in terms of models and frameworks. Like I said, we wanted it to be comprehensive in scope and also give people the ability to tailor use of the framework to their particular setting or scenario.

Now, I am just going to give a quick overview of the CIFR – of the framework. There are five domains within the CIFR. Because the idea is that characteristics of the intervention, of the intervention itself that is being implemented. That will influence – those characters will influence the ease or the complexity of implementation. For example, complexity like I just said. The more complex an intervention is, the more difficult it will be to implement because the more steps that it will take. The more cooperation that you will need for a successful implementation. People's perception of the evidence of the underlying or providing the rationale for why we should be implementing that intervention in the first place.

Those are important factors because if people do not believe in the evidence, then they are going to stymie or resist implementation or use, or using whatever the new practice is that you are implementing. Then we have the individuals. We have the human beings who are involved in the implementation. They may be – these are people who we want to use or to change their practice and change the way they are doing things. Their attitudes, their beliefs, their confidence in being able to do things in a new way are very much factors that we need to consider in our implementation efforts. We also have to recognize that those individuals are embedded within an inner setting or often referred to as the organization.

We use kind of a broader term of inner setting; meaning within the clinic. What are the structures? What are the communication channels? Do people talk across departments or are there really strong, firm silos? The answer to that question will very much influence the viability of an implementation effort. It will also guide how you need to accomplish that implementation. The fourth domain is the outer setting. The idea that the inner setting is embedded within an outer setting. For example, within the VA, we have a whole slew of performance measures that primary care clinics have to answer to and many other service lines within Veterans Affairs entity, a healthcare system, a clinic, a medical center.

Those, if you are attempting to implement something that undermines one of those performance measures in some way, then that will be a really important consideration in your implementation approach. For those outside of the VA, considering payment schemes, for example. If you are trying to get a lifestyle program, which is the area that I do a lot of work in. If you are – if we are trying to implement a new lifestyle or a weight management program within let us say a clinic setting. That may be very difficult. If the insurance, or Medicare, or whoever the paying entity is will not pay for those services.

Then the fifth domain is the process domain. Within the CIFR, there are many models of framework that have prescriptive sets about how to do implementation. Like maybe a 12 step, or a tenth step, or for example. The CIFR kind of melds all of these down into – or collapses all of those models down into planning, engaging, executing, and then reflecting and evaluating. The tenth, the 12th step, the eighth step really kind of boil down to activities within these kind of broad sets of – or parts of the process of implementation.

We really need to be able to characterize that process. Because of course, the quality and exactly what is happening in that implementation process will influence success or failure. Now, I want to ask whether we have a poll and asking whether you have used the CIFR. In this case, we give five responses, I think. There are five responses and check, you can check multiple responses. Because you may fit under more than one category.

Unidentified Female: Thank you very much. Our attendees now have that poll up on their screen. Have you ever used CIFR? Am I pronouncing that right? Or, is it CIFR?

Laura Damschroder: CIFR….

Unidentified Female: Okay, CIFR.

Laura Damschroder: CIFR, that is \_\_\_\_\_ [00:14:12].

Unidentified Female: The answer options are this is my first time hearing about CIFR. I am familiar with CIFR. I have used the CIFR to guile a research study. I have used the CIFR to guide quality improvement or implementation of an innovation; of none of the above. It might have been quality implementation. I am not sure which.

Laura Damschroder: You have got it. You have got it.

Unidentified Female: Okay.

Laura Damschroder: A lesson back to me not to use acronyms.

Unidentified Female: Many acronyms, so many acronyms.

Laura Damschroder: Yes.

Unidentified Female: Great. Well, the audience is still being very responsive. We appreciate that. These are anonymous responses. You are not going to get graded on your familiarity level.

Laura Damschroder: Exactly.

Unidentified Female: IT looks like we have had about 80 percent of our audience vote. The answers do not seem to still be coming in. I am going to go ahead and close that now and share the results.

Laura Damschroder: Yes. It looks like just less than half of you, 49 percent are already familiar with the CIFR. Thirty-one percent, almost a third of you, this is your first time hearing about the CIFR. That means that you appreciated my overview and maybe I did not go into enough detail. But hopefully you will pick up on a few things as I progress through the presentation. Almost equivalent number of you have used the CIFR actually hands on to guide a research study. That is great.

I will be talking about a lot of tools that will help you do that through the different phases of a research or an evaluation. Then 14 percent of you, which I am really happy to see have used the CIFR to guide a quality and implementation or implementation of an innovation. I recognize that some people may have checked more than one box. Then there are three percent who have done none of the above. Presumably, I am presuming that you are interested in this topic because you are here.

Hopefully, you will go away from this with some new information, new and useful information. Just in talking about the CIFR in terms of – since the first paper. Was it the foundational paper presenting the framework? It was published in 2009. There were 364 articles. This was as of around the end of last year. Eighty six percent of what we call incidental references. People might refer to the CIFR just to say that context is important; or, as an example of a framework, or related to implementation. Fifty-two of those articles are what we call significant. The large – the majority of those articles, 25 percent of those 52 articles citing the CIFR in an empirical research study; then 15 percent in syntheses.

This graph shows that it was actually made Cytoscape, which is an open source tool kind of visually displaying the network of citations from a specific article. The big blotchy red dot in the middle is the CIFR, original CIFR article. Then what the diagram shows are all of the articles that have cited this, the CIFR article; and then, the articles that have cited those. They are kind of like parent citations and then child citations. This just shows kind of the spread, I guess, or dissemination of the – or the diffusion, I guess of the CIFR framework through the literature. What did we learn from that? People are just – I feel like we are still kind of at an nascent stage of people really using and hands on using the CIFR in research studies or for syntheses.

We have gotten a lot of positive comments or positive kind of responses to the CIFR within the literature. People appreciate that it is useful. It is comprehensive and consistent; taking and kind of bringing a whole system approach. These are adjectives really that go right along with our goals. It is really nice to see these. We have also – there have also been papers that have suggested improvements or gaps within the research; or within the CIFR. For example, and this is one thing that we have recognized ourselves and on our projects, too, is that we need to better recognize the role or engagement of citizens, patients, consumers. Our case for those of us who work in healthcare – of course, the focus would be on patients. But engaging, the importance of engaging patients within the implementation and process. Some of the constructs are under detailed, or could use some better operationalization. It gave some suggestions about how to do that; which we really appreciated.

Because yes, some of the constructs were intentionally less well defined as a reflection of what we knew at the time. They are challenging to apply over time; which is a topic that, and kind of methods that have yet to be developed about how exactly to do a longitudinal type analysis. Then adding other domains, some people have suggested, more coding guidance, and then some gaps, and other constructs. We are looking at all of this and planning a version two. In our original paper we talked about and kind of positioned the CIFR as a living framework. It was not just going to be this static thing. More coding guidance to improve reliability was one of the recommendations.

I am going to go through pretty much a series of screenshots on our updated website; which was launched late last fall, and at www dot CIFRguide dot org. That is the URL at the top of the slide. This is a screen print of the home page of the website. One of the things that I wanted to highlight just because I was talking about citations a moment ago is that we do have a Zotero bibliography database that we will keep updated over time. If you are writing proposals, or you want examples of how other people have used the CIFR, you can access this database, this library of citations to help you do that.

For those of us within the VA, we do not always have a reliable connection to Zotero. We created a PDF file that will also be updated, although less often. One of the functions on this website is to show the list of constructs within the CIFR framework. There is a Wiki. We call this kind of the Wiki's component of the website. Our original website only had this Wikipedia piece of it, or the Wiki piece of it. It is modeled on Wikipedia. For those of you who used Wikipedia a lot, you may recognize the format.

If we were going to, for example, just pull up one of the constructs within the inner setting domain, leadership engagement. You click on that. We do have qualitative code book guidelines for every construct. Some of the constructs are better flushed out than others. What we really look for is a community of users to come on to this website. If you want to register; which of course, it is a free and pretty straightforward process. Once you register, you can actually post suggestions, questions, issues that you may be, or challenges that you may be encountering in coding a particular construct. Give us your suggestions about how to improve, or maybe some more detailed coding guidelines. This is a screen shot of the discussion tabs.

You have the same functionality in Wikipedia as well where you are able to select for each construct. Then is where you can put in your comments. This has been a useful tool for our own team and certainly for myself when I want to. Or, I see a gap in a construct, I write notes in here. For example, you see some more detailed notes about how to distinguish leadership engagement from the champion construct. Some of our projects have had some challenges in doing that. We provide some extra guidelines here for doing so. Another part of the website shows a number of guidelines or just, I guess tools, and help, and support for using this CIFR in an evaluation or a research study.

We have a matrix that kind of follows along the structure from Cheryl Stetler's paper that talk about formative evaluation. There are articles. We kind of talk about the main objectives of each kind of evaluation. Then provide an example of papers that we think may fit that particular type of evaluation that you can refer to. As you find out papers that are good exemplars of each of these types of evaluations, do let us know. We can add those to this list. We hope to update these over time.

Then if you are planning on collecting qualitative data, let us say through interviews, we do have some notes about doing observations, and meeting notes. But focusing on creating an interview guide for collecting qualitative data, and using the CIFR as a guide. We have an interview guide tool. You can see on the left there in the red circle. Click on that, and that will take you to our interview guide tool. Here you can see each of the five domains of the CIFR. Let us say we wanted to focus on constructs within the inner setting. You click on that. You can click on that. Then it accordions out, or it unfolds into all of the high level constructs within the inner setting.

Then within each one of those constructs, if you select, for example, the quality and nature of networks and communications; we have eight different questions that we've used versions of in different projects. We have used in our interview guides. Then also, we kind of maybe added a few more questions, too based on our experience. You can either choose to collect – to select all of those questions or just maybe two out of those questions.

In this case, I am selecting two, let us say. You can step through each construct within CIFR. Select the questions that you think apply best to your project. Then at the end – you do that with each of the domains. Then at the end, to produce your guide, just click on the Get Guide button here at the top. Then it will come out with a formatted version of an interview guide. Then you can cut and paste; just kind of select all of these elements. Then paste them into Word. The formatting will be retained. Each of the questions also includes some probes where appropriate. Not all of the questions have probes. But for some of these, you can see that there are some sub-bullets. Then of course, you are free to mix, and match, and move these around, and reword them as appropriate for your particular needs.

I guess what I want to also ask is that if you have any questions, please do go ahead and enter them into the chat box, I think or the question box as part of the webinar. As I cover these various topics or these domains, I can answer these. I do not have to wait until the end. Just let us know. There is also a section in the website related to quantitative data. A lot of people – I mean, there is a big need for quantitative measures. There are not quantitative measures that have been published yet at this point. But I know that there are several teams that are working on developing and validating quantitative items.

Our team, we have collaborated with other people within the VA and outside of the VA to take two instruments; the Organizational readiness, and the change that was published by Christian D. Helfrich, et al, and colleagues. Then the Organizational change manager that was published by David Gustafson and his team at University of Wisconsin. We have taken those instruments; and item by item mapped them to CIFR constructs. In this case, you can see that the CIFR construct related to evidence, strength, and quality, that there were two organizational change manager instrument items that map to that particular construct. This begins to give us the ability to be able to do cross walk between different measurement instruments and using the CIFR as kind of a common foundation.

Now, designing an implementation strategy…. Now, I am going to be getting into the part of our work and the website that really is our future plan. These tools are not yet available on the website. We do have this page. This is a screen shot of the design and implementation strategy page. But we do not yet have tools to actually help you and give you guidance about what strategies to use to accomplish implementation. However, so one thing I just kind of want to build the kind of premise that we are working from. That is that each of these constructs within the CIFR can be quantitatively assessed or given a quantitative rating that indicates the extent to which that factor. For example, goals and feedback is a construct that talks about the alignment of implementation goals with organizational goals; and the articulation of those throughout the organization, and then the data to support progress toward those goals.

The extent to which that is apparent or present within organizations is thought to influence implementation. Sure enough, in one of our studies, we found that the lower implementation in \_\_\_\_\_ [00:29:33] sites and implementation had lower scores for that particular construct versus the higher implementation site. Then if we were to look at that, we can see that exactly what the issue is based on our qualitative data. Then we can begin to focus in on some change techniques or some implementation techniques to address the gap in goals and feedback, the construct or the idea that – or the factor that the goals and feedback construct address – represents or conceptualizes.

Right now, we do provide links to existing clearinghouses of evidence based strategic that would be useful for implementation. One, of course, is the Cochrane collaboration. Then there is the McMaster University Health Systems Evidence site. We do provide links to those. But then we also present ideas on our site of where we want to go. The one that I am going to highlight now is taking – we recently – we actually collaborated. I collaborated with a group from Mental Health QUERI in Little Rock, Arkansas with Eric – I am sorry – with Tom Waltz and with JoAnn Kirchner, and their whole team. This is based on Byron Powell's work that published the list of strategies, 68 strategies. Then this ERIC study expanded that list.

What we planned to do this summer is to map those implementation strategies and map the strategies that are appropriate for addressing each of those CIFR constructs. Our idea is that the outcome from this work will be to create a tool, a tailoring tool that will help you select the strategies based on an assessment of your context. For example, if you wanted to look at or address reflecting and evaluating; which is a consistently very important construct for implementation success. One of those strategies in the list is to facilitate relay of clinical data to providers.

This would be a strategy that you could choose off of the list of three that we list here just as an example. Then again, stepping through each of the domains and each of the constructs within the CIFR, you can create your own tailored implementation strategy that is – a strategy that is tailored to your particular context. What we plan to do is link information about the evidence-based, and then also where available, information about how to actually do those strategies. Then we have other future plans for the CIFR in terms of collaborating with others or linking our site into other efforts that are creating quantitative measures. The mapping that I just talked about of the strategies to the construct.

Then, really this is just a screen shot of kind of very much pie in the sky at this phase. But it would be really cool, if we knew like the shape or the profile of our particular context. From that, being able to tailor an implementation strategy with the highest likelihood of success. That is where we hope to go in the future. But that is not going to happen in the next year certainly. But it is kind of a longer term vision that we have. Now, I would like to open it to you all. We have a few minutes. If you have any comments or questions.

Unidentified Female: Thank you very much. Yes, we have plenty of time for Q&A. I know a lot of our audience joined us after the top of the hour. I will ask that you use your question section of the GoToWebinar dashboard to submit any questions or comments you have. To open up the question section, just click the plus sign next to the word questions. That will expand the dialogue box. We will get to those in the order that we have received them. The first question we have. Can you share the link to that open source networking tool?

Laura Damschroder: Yes. I was trying to think which one. I think you are talking about the bibliography visualization tool, the data visualization tool. I do not have the exact URL. I can certainly provide that after the fact. But it is called Cytoscape, which is c y t o s c a p e. I would imagine that if you Googled Cytoscape, you can find the URL for it.

Unidentified Female: Thank you. The next question we have. Considering the increasing importance of online social networks, including at work in the VA, should you include some network and communications section questions that directly address the method of directly sharing professional knowledge and skills?

Laura Damschroder: I am not sure if you are talking about a construct within the CIFR or a capability on the website. I am going to assume. It sounds like maybe it is basically getting at the question of – and this is very much on our radar as well – is how do we create a learning community of users where we are all kind of committed to moving the science forward? In this case, using the CIFR as a foundational set of concepts that we kind of agree and use on our studies; and then give back to the community in terms of how is it working? What kinds of improvements or changes do we need to – do we need include? Also, creating a repository of findings so that we can really begin to hone down into what are those pathways of change across – by learning across many different studies.

We actually got caught up in the QUERI changes with the sweep of funds and so forth. But we did have an aim and a approved, but not funded \_\_\_\_\_ [00:36:18] project that had specifically building that knowledge community capability. We have a little bit of that in the Wiki part of the website like I talked about with decisions or the discussion tabs. I am just going to go online here real quick. I am just showing you a live website; which I am hoping you can all see. But the idea is that there are these discussion tabs within each of the constructs and so in that way. But it is not very user friendly. Because you have this drill down.

You have to really understand the process of how to contribute. We really have not succeeded in kind of getting past that barrier. But we are very interested in linking in with other efforts like the Seattle Implementation Consortium – well, I am sorry. It is the Society of Implementation Research Consortium that is in Seattle, linking into that group.

Then also the GEM, or the Grid Enabled Measures that is being funded by NIH. Or, I think it is the National Cancer Institute that has an implementation component to that initiative. We have had conversations about that. But we have not been able to get that or, actually implement that capability. But I really appreciate the question because it is so important. If you have ideas about how to do that, please e-mail me.

Unidentified Female: Thank you. We do have some other excellent pending questions. The next one; we are trying to use CIFR for a longitudinal analysis. I know you \_\_\_\_\_ [00:38:14] said it is underway, but can you think about some ideas and challenges that you have faced when attempting this?

Laura Damschroder: I can certainly talk about challenges. I will start with those and then hopefully end at a positive note with some ideas about kind of going forwards. Our limited experience in using qualitative interviews and getting at these constructs over time has been challenging because…. Well partly, and well actually we have several things that are really challenging. One is that the context is just plain changing. We expected – I mean, if the world were a perfect place, we would go in at baseline.

We might find some gaps or some issues, and then address those. Then go midstream or at the end; and we would assess those theme constructs. We would find that our efforts made all of these constructs better. We went from negative to positive or weak to strong. That really is what we are kind of gearing for. But the reality is that sometimes those constructs go backwards. Like what started off and what seemed to be starting off really well at baseline ended up really not panning out later in the process. Maybe because they actually lost the key person; or there was a major reorganization that conflicted with the implementation.

There is that issue. How to characterize that. How to make sense of that. The other issue is indeed a collection. What we found is that we do not always get the same people that are available for interviews. We are not always able to do site visits and get the same depth of information at each of the time points. For example, if you have more depth of information at the baseline and then kind of a shallower information let us say as a follow-up time point, it is hard to tell whether the differences you are seeing between those two time points is a function of the depth of information that you have and the people that you talk to. Or whether it is a real difference in time.

Certainly, there are some places where we have, I feel that it is successful in getting kind of comparable depth of information. We had sufficient information where we felt like we could characterize the trajectory between the two time points. That might be a strategy that could be used is not only coding and understanding the two time points in isolation. I am just narrowing it to two to kind of simplify. But also characterizing then the trajectory between those two time points as a way of expressing, I guess the change over time.

Those are just some ideas. I do not know. I am not a qualitative researcher. I mean, I have got a lot of experience in that domain. But it is not necessarily my area of expertise. But I think it would be important, if you are using qualitative data to also kind of query the qualitative, the deep expertise in the qualitative realm to see how they handle that as well.

Unidentified Female: Thank you for that reply. The next question; the methods outlined on the website presumes that you select certain CIFR domains to focus on in your research. Can you speak to how you go about selecting which domains to focus on?

Laura Damschroder: Great question. We actually have some guidelines on the website. It is very important how you select those. You really want to make sure. You really want to be careful about how you select those constructs. I am trying to remember where that is on the website. But we had it somewhere. Alright, I am not going to try to bumble my way through. But what we have done is we have administered surveys to kind of key stakeholders who are knowledgeable and engage kind of up front like our operational partners who are key people at the local level.

Ask them, literally, just ask them for each of the CIFR constructs. How important do you think this construct is going to be in influencing implementation? If you have got your own experience, then working in these domains, you can use that to guide focusing on – which constructs to focus on. The third way of determining or kind of narrowing the kind of number of constructs to assess is that if you have got a theoretical model about either an explanatory model of what, of how you think implementation is going to progress or an explanation of how it did go, then that may guide the constructs that you use or that you focus on.

But regardless of how you hone them down or which constructs you choose, it is really important to ask those open ended questions. Really to kind of begin with those to make sure and as you are doing your coding and analysis, to really make sure that you are not limiting yourself to specific themes or constructs at the expense of other, maybe very important themes or constructs that you did not include in your original focus.

Unidentified Female: Thank you for that response; the next question. It seems unrealistic to try to test the CIFR model as a whole. Would not picking elements of the CIFR that best fit the circumstances be best so that we can determine the degree to which these elements actually promote implementation?

Laura Damschroder: Really, I see this question as being related to the prior question. Again, I mean, it would be really a great world, if we could focus in on just the smaller sample of the 39 constructs and sub-constructs. I absolutely agree with that. What I have found and my experience is that the selection of those constructs is also context sensitive. Constructs that come out repeatedly as being important within the VA for lifestyle programs are not necessarily the constructs that are most important in a non-VA – in a yeah, in a non-VA and kind of fragmented healthcare type setting. Or, let us say in a cost constrained clinical setting. Although we are all cost constrained, but even more so. Also, whether it is a medical center behavior change within a medical center. Or, like a device or a technology within let us say community clinics or something. I think it is important to really approach a new setting and a new context with a very open mind before you hone down to a narrower set of constructs.

Unidentified Female: Thank you. What is the intersect between knowledge translation and implementation in terms of the CIFR? Where does knowledge exchange and knowledge translation fit into the CIFR, if at all?

Laura Damschroder: Some people ask the terms of knowledge translation and implementation research. Many people use those interchangeably. Some people use those terms to mean different things. I see the CIFR as a framework really being kind of a practical tool; but then also helping move the science forward by providing more consistent definitions and hopefully more consistent applications of those constructs within the implementation sphere.

In terms of knowledge translation, there are many levels of knowledge translation. But if you are talking about how do we take what we learn I guess and translate it into the real world, that kind of knowledge translation. Like how do we get nurses in an ICU to actually take up what we have learned?

I think that is where it really comes to emphasizing I guess the tools. Really, as really having a mind; I mean, I think that we as implement – those of us who are researchers within the implementation realm. It is really important that we not lose our practice base. Using the CIFR allows me, let us say, if I am using it in my project. It allows me to exchange my findings, either through by reading a published article from other studies that have used the CIFR.

We can make those connections much ore easily. When we go to users, and we are trying to translate what we learned to the clinic setting, we have got a much more to draw on in terms of sample size, and diversity of settings. Really honing in on okay, maybe there are three constructs that really consistent regardless of setting and construct. I just feel like that really kind of streamlines I do not know knowledge translation; both among researchers, and then also out to the field. I do not know if I am getting at your question or not?

Unidentified Female: Well, thank you for the reply. They are more than welcome to write in for further clarification. The next question – I have some code. I have some questions about coding. How to capture knowledge/awareness, for example, health literacy at a group, clinic, or an organizational level? What code do you use?

Laura Damschroder: Health literacy to me is implying that this is a construct or a measure that we often use with patients. The whole conceptualization of kind of the sphere of implementation and research; and then most certainly the assumption within the CIFR is that there are intervention trials within kind of more traditional health services; research that may be developing and testing let us say a lifestyle and change intervention among patients. That an important measure might be health literacy in terms of how you interact or how you tailor that intervention to specific patients. We really kind of – we really conceptualize that as within the domain of the intervention itself or the innovation that is being developed and tested, let us say within a randomized control trial. But then when we build the evidence base for that particular innovation that may have learned that patients with low literacy; it should be delivered one way. Or maybe it is targeted to patients with low literacy \_\_\_\_\_ [00:50:10] specifically. Then we go into the implementation realm. There is a good evidence base now for this innovation that is targeted towards this particular low \_\_\_\_\_ [00:50:19] – low health and literacy population, let us say.

The implementation is concerned with, or the research of implementation is concerned with how do we get that program into practice? How do we intervene? What are the strategies we use? What are the mediators and moderators that are going to effect my ability to implement that program that is targeted to those patients? Maybe one of the outcomes of that program would be like, for example, \_\_\_\_\_ [00:50:54]. Let us look at a\_\_\_\_\_ [00:50:55], like a RE-AIM outcome of reach. You want to reach as many low literacy patients as possible. That is one of the goals. By doing that, this program will help this clinic do that, let us say. Now let us go to the implementation piece of that.

What the implementation piece is concerned with is how are the clinicians going to take up and use that new program to deliver to those low health and literacy patients? In the like individual characteristics domain of the CIFR, we have things like knowledge and beliefs of those clinicians or of those community health workers who are actually working with patients, not the patients themselves. It is more within the sphere of it is like a – it is like more of an intervention outcome, not an implementation outcome per se.

Although, having said that, we have to recognize that implementation will influence the outcomes of that intervention or of that program, of course. Because poor implementation means that the program is probably not being delivered as designed. Therefore, you are going to have poor outcomes. All of that is to say that health literacy, really it sounds to me like that is a patient measure. It is not really within the realm of a framework like the CIFR, which is focused on implementation.

Unidentified Female: Thank you for that response. We have about five pending questions left. What influence, if any has change management and process improvement models such as Lean/Six Sigma for healthcare settings had in relation to CIFR bridging any gaps between research and clinical practice? I am happy to reread that, if you need me to.

Laura Damschroder: Yeah. Can you reread the first part?

Unidentified Female: Yeah. What influence, if any has change management and process improvement models such as Lean/Six Sigma for healthcare settings had in relation to CIFR and bridging any gaps between research and clinical practice?

Laura Damschroder: Yes. That is a great question. I really appreciate that question. That is another kind of frontier that we are very interested in, in kind of melding or making – bringing in, I guess. Those system redesign and approaches like Lean; and using PDSA cycles and those kind of traditional quality improvement techniques. Those are very important strategies I feel like at the local level, and really have a lot of value in thinking about how to approach implementation.

I know that our colleagues within Stroke QUERI have collaborated with systems engineers and systems redesigners with the VERC program; and in incorporating and really kind of embracing those QI techniques in with the implementation science. What we plan to do is actually include some of those techniques; and linking them in with that list of strategies that I talked about; so, the list of 72 and 73 strategies. For example, one of those strategies has something to do. I cannot remember exactly the label. But it is something to do with initiate quality management or something. That is obviously a place where these QI techniques can help to inform. Well, how exactly do you do that? Well, there are run charts. There are root causes analyses. There is logic modeling and so forth that can be done, that the QI techniques really bring into the picture.

Unidentified Female: Thank you, the next question. Could you say a little bit more about how to manage individuals and the inner setting when implementation may involve more than one institution such as VA and a community based organizations like the Alzheimer's Association, or a c-based local hospice provider? It seems like there is more than one inner setting.

Laura Damschroder: Yes, that also is a great question. It is a very complicated question. What I do want to say is that when we first conceptualized the CIFR, the boundaries between inner and outer setting are purposefully, if you look at additional file one in the 2009 published article. There is that kind of crazy diagram where the boundaries are very squiggly and very fuzzy. We did that purposefully. Because well, for one thing the boundaries are often porous. For another, the boundaries are different depending on your particular context.

I think that the easy answer to that, which may or may not be helpful to you. But it might be helpful in terms of giving you permission to establish those boundaries in a way that has most value and usefulness in your particular study or your particular scenario. If you conceptualize the Alzheimer's Association as maybe there is like part of the milieu in the outer setting. They are one of maybe several entities that you would talk to. If you are talking about a healthcare system that might be implementing an Alzheimer's program of some sort, you could – and you are doing this across maybe many medical – or many healthcare systems. You could conceptualize each of the individual systems as separate inner settings. Or, if each system has let us say a dozen clinics, each one of those clinics may be an inner setting so to speak.

Really, this is a gap. Or, we need more conceptualization. We need some examples of how to conceptualize these. It is really like inner setting embedded within maybe an inner setting embedded within an outer setting. Like you have units within hospitals. Then you have got the hospital at large. The inner setting constructs really apply to both of those individual in this case – like let us say ICUs within, and then also applied to the hospital.

The same could be said for the individual clinics. Then depending on how tangible or how concrete the health system is or amorphous the health system is, that could either be part of the outer setting along with the Alzheimer's Association as being influences on these individual clinics. Or, maybe the healthcare system is an inner setting in and of itself. I mean, it really depends on how they are organized.

Unidentified Female: Thank you. I apologize, I started this session late. Can we use CIFR to do a primary care questionnaire for our patients?

Laura Damschroder: Yes. If you are asking for a permission, I mean, absolutely. We make the CIFR freely available, the website; any of the tools, any of the information on the website is free for you to use. Conceptually can you use it as a questionnaire. We have used it with some level of success. But I think that people have to be relatively sophisticated and knowledgeable about the questions that you are asking.

Like I said earlier when I was talking about narrowing down to the construct to use; like which of the 39 constructs can we narrow it down to, just ten, or six, or something? We have sent out a questionnaire literally based on those short definitions that are in additional file three from the 2009 published article. We just had a scale. I think we had an important scale. I am not sure. But if you e-mail me, I can send you a link to that survey that was used in that one study. But we have not used that study with individual users within the organization. We are hoping, it will actually change what they do. This was more targeted towards more knowledgeable people like maybe leaders or the implementation leaders.

Unidentified Female: Thank you. Before I get to the next question, speaking of your e-mail. Can you put up that last slide in your….?

Laura Damschroder: Yes.

Unidentified Female: – PowerPoint?

Laura Damschroder: Yes.

Unidentified Female: Great, thank you; the next question. You mentioned leadership as an underdeveloped construct. Can you further explain this?

Laura Damschroder: Yes, a good question. We talk about leadership only in terms of their engagement with the implementation. The construct within the CIFR is literally called leadership engagement. What we have not addressed; and I am actually on the fence about whether it is appropriate within the CIFR to address this or not. But the idea of the quality or the nature of leadership itself at being a separate construct from – or, a related construct to the engagement of leadership within – with the specific implementation…. I think it was in Ilot, I-l-o-t. It is in that Zotero library that is on the home page of our website. If you just look up that author, I-l-o-t. I think that it was in that paper. One of the papers that suggested that.

Unidentified Female: Thank you. We do have two more pending questions. Are you available to stay on and answer those?

Laura Damschroder: Yes, I can.

Unidentified Female: Great. If any of our attendees need to drop off since it is the top of the hour, I ask that as you exit today's session, wait just a moment while the feedback survey pops up on your screen as we do look closely at your responses. It helps us improve sessions we have already done as well as it helps us decide which sessions to support. The next question; the pre versus post implementation division at times seems artificial to us when examining a construct such as planning in a facility where the innovation continues to be a work in progress. How important is it to maintain this separation when it is important for us to capture the construct at all levels of the innovation?

Laura Damschroder: I agree with that. I think that – I think that the pre, post is kind of a convenient thing both in terms of how we write our research proposals, and the time frame that we are allowed to conduct this work. All too often, we are not embedded. I think it is really challenging to get that kind of information in an ongoing basis. We are actually experimenting with the use of journals and asking people involved with implementation to provide journal entries about how things are going.

There is a great paper written by Deborah Cohen and colleagues that talks about actually online journaling. It does not have to be online. But it is just kind of one way of eliciting that information. We also use project notes, meeting notes. We try to look for artifacts to gather information about that in a more continuous way rather than…. I think the pre, post, or midstream nomenclature is really just kind of assuming. I mean, a lot of our data collection is around interviews. We have only got the capacity to do maybe two or three interviews in a series over time. That is where that comes from, I think.

Unidentified Female: Thank you. The final question we have. Do you have suggestions or advice on applying CIFR constructs to pass implementation projects or implementation evaluations that have already happened? In other words, is there a value in using CIFR framework as a lens to look at implementation studies that have already occurred?

Laura Damschroder: Yes. Also another context where this is really helpful, this is an interpretive formative evaluation. If you go to – I am just going to break out of this slide real quick. But if you go to the design and evaluation; and go to the overview in this matrix. There is actually an interpretive evaluation component. There are three listed studies that use the CIFR in that way.

I also want to just make a plug for those of you doing hybrid trials that a hybrid type 1 where you are doing kind of more of a traditional randomized control trial. But you incorporate a process evaluation. Often very valuable information is collected, if you do interviews and site visits at the end of the trial looking back. What worked? What did not work? How did it go? What was the process?

Unidentified Female: Thank you. Well, that is our final pending question. But I would like to give you the opportunity to make any concluding comments, if you would like?

Laura Damschroder: No. I am good. I just really appreciate the interest and the attention to this seminar. Really, I just want to urge people to contribute and to go to our Wiki site. If you have got experience using any of those constructs, tell us about it. We really would love to hear from you. Also, any ideas that would be helpful for us to develop to help you do your work. Thank you.

Unidentified Female: Excellent, well, thank you Laura so much for sharing your expertise with the field. Thank you, of course, for our attendees for joining us. I do want to plug the QUERI implementation series which does occur every first Thursday of the month at noon Eastern. Please keep an eye on our registration catalogue and sign up for those as you would like. As I mentioned before, when you exit out of this session, please wait just a moment while the feedback survey populates on your screen. There are just a few questions. But we do look at your responses closely. It helps us guide where to go with our program. Thank you so much for everybody for joining us. This does conclude today's HSR&D Cyberseminar. Have a great rest of the day.

[END OF TAPE]