

Transcript for CAPES podcast – to publish on Dec. 6, 2023

The Center for Accelerating Practices to End Suicide through Technology Translation (CAPES) at UMass Chan is focused on figuring out how to accelerate best practices into clinical care across a range of health care settings.

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Jennifer Berryman

Today, in the Voices of UMass Chan podcast, we're exploring the promise of technology in America's health care system to prevent suicide. The challenge has been persistent and in fact is growing between 2011 and 2022. More than half a million lives were lost to suicide in this country. That's a 16 percent increase. You may be surprised to learn that many who die by suicide do interact with health care providers before their death. So, we're speaking with two members of the faculty here at UMass Chan who are working hard to integrate new evidence and new technologies and best practices to prevent suicide. Please welcome Dr. Edwin Boudreau, professor of emergency medicine and psychologist by training and co-director of CAPES, as we're calling it, but that stands for Center for Accelerating Practices to End Suicide. Also with us today is Dr. Celine Larkin, assistant professor of emergency Medicine. Thanks to both of you and for making time and welcome.

Edwin Boudreaux

Pleasure to be here, Jen.

Celine Larkin

Thanks for having us.

Jennifer Berryman

Drs. Boudreau and Larkin, before we get into your research, can you provide a brief overview of what we were just talking about this, this growing problem of increasing suicide rates in the United States and some of the specific challenges that people are facing in the healthcare system?

Edwin Boudreaux

Sure, as you said, the suicide rate in the United States has been steadily increasing for quite a while now, there was a dip, believe it or not a couple of years ago, so there's two years where the suicide rates actually fell. But then they tick back up the last time we measured it, which was in 2022, I believe. And then, of course, suicide attempts that aren't fatal that lead to emergency department visits have also been increasing steadily during that time as well. So, it's really a national problem. These rates have really been persistently elevated in most parts of the country. And what we know about suicide in terms of patterns of utilization is what you mentioned earlier, that prior to an attempt, and prior to death by suicide, people often visit health care settings. Some of those might be people who visit emergency departments, some might be primary care, some might be outpatient mental health, but if you look at the entire health care system, and you look at all of the different settings that a person might be able to, to be seen, the vast majority of people who died by suicide have been seen by a health care provider in the 12 months prior to their death. And most of those, however, haven't been identified as being

suicidal. So, we're not identifying these individuals so that we don't have an opportunity then to deliver an intervention or to prevent the suicide because we don't even know that they're, that they have suicide risk. Um, that includes not screening appropriately for mental health conditions, which is, of course, a major risk factor for suicide. So that lack of screening is not just that we're not asking people whether or not whether they're thinking about killing themselves, but we're also not even doing very good job with screening for psychiatric conditions, which could of course be the first step towards identifying if a person has suicide risk is first identifying whether they have a psychiatric condition or not. So, we're doing a poor job. And therefore, we really haven't been good at delivering interventions. And even when we do identify that a person has a mental health problem, or has been thinking about killing themselves, or has passed history of trying to do so, we don't really do a very good job at delivering interventions either. So, the screening is poor, and we don't really do a fantastic job at delivering interventions that can prevent suicide.

Jennifer Berryman

And we're going to talk in greater detail about all of those points that you've raised. Dr. Larkin, though, I want to ask you if you could just elaborate on some of the drivers of suicidality that that doctors do know about, like disconnection and burdensome, these kinds of feelings, and how are those currently addressed in the health care system?

Celine Larkin

Suicide Prevention is a really interesting area because it's what we call of trans diagnostics. So even though there are certain psychiatric disorders that are associated with an increased risk of suicide, a lot of the theory in this area is about identifying kind of what the common pathways are to suicidality across diagnoses and even in the absence of slight psychiatric diagnoses. So, one of the most common sort of models for understanding suicidal behavior is the interpersonal theory of suicide, which really talks about a combination of, belongingness. So, feeling sort of, like we don't belong, like we don't have community, like we don't have connection in our day to day lives, and perceived burdensomeness, as well. So, feeling like we're a burden on other people. And that really, suicidality will arise in the presence of those two risk factors, regardless of what psychiatric diagnoses the person may be experiencing, and that those thoughts will transition to suicidal behavior, like suicide attempts are fatal suicide, when there is an acquired capability, it is the term that they use. So really, it's about having the sort of physical availability of means to harm oneself, but also the cognitive availability. So that's why a lot of health care-based prevention and suicide also focuses on preventing access to lethal means - making sure that somebody who's experiencing ideation doesn't have ready access to harm themselves. When we think about the thought of belongingness and perceived burdensomeness. Within the health care setting, we really want to make sure that those factors are being addressed effectively, when a person seeks help, and that they're not propagated or you know, that the health care system doesn't contribute to, to those feelings that the health care system doesn't contribute to somebody feeling disconnected or feeling like a burden. And when people have really negative experiences within the healthcare system, that can often increase those feelings of burdensomeness. And, and a lack of belonging. So, we really want to make sure that the measures that we put in place in the healthcare system can help to address those factors.

Jennifer Berryman

Dr. Boudreaux, as some of our listeners may know, you've spent many years studying how to expand and improve early detection of suicide in the healthcare system? What are the challenges that are still standing in the way of this being better?

Edwin Boudreaux

That's a really good question, I think the challenges really fall into a couple of different domains. The first is simply getting health care providers to embrace the idea that screening improves detection, and that they're there, then we can do something about it to prevent them. So, there's a huge barrier right now, in most settings at the emergency department setting is the setting that we know the most about. It's the area that I've studied the most. And there's this phenomenon called Pandora's box that we've used to describe this fear. The fear is that if I start to ask questions around a person's mental health or their suicide risk, that that's just going to unleash this Pandora's box of skills that going to cause the emergency department to break down, why would it cause the emergency department to break down and it's because once you've identified that a person has suicide risk, you have to do something about that risk, you can't just ask them and then ignore it. Or really, you shouldn't hopefully, in the best practice, we wouldn't ignore it. But the problems emergency departments face with addressing that are enormous. What you would probably want an ideal circumstance is to have the person evaluated by a trained mental health provider, right? I mean, that's what we would think would be a logical next step once we've identified the person has the mental health or suicide risk. But that's a really scarce resource. Almost every emergency department in the country is understaffed by trained behavioral health specialists. So, you can imagine that if you start to do the screening, you start to increase your identification and awareness of people who have risk that you were ignoring before you were doing the screening. Now, if you have to get every one of those people evaluated by behavioral health specialists, which are already scarce, and which are already very slow to respond to evaluations, because there's just not enough personnel on sight, then you can end up delaying care and causing backups in the merger department. So, I think this is true in primary care as well. So, when we talk with primary care providers about their barriers to screening, it's the same, because even though you would think that outpatient care is different, in terms of the time sensitivity to emergent apartment care, everyone knows ED's are supposed to run fast and move people through. Well, it's true in primary care as well. It's just as true in fact, people will have to keep seeing patients at a certain pace in order to be able to keep up with the caseload. So this same fear, I think, is a major driver for why we don't identify people with suicide risk.

Jennifer Berryman

So, CAPES, I want to get back to your new initiative. It's the Center for Accelerating Practices to End Suicide. It's funded by \$17 million grant from the National Institutes of Mental Health. Can both of you share some details about the structure and the goals, how you're approaching this project?

Edwin Boudreaux

I can talk about the overarching view of the center. So, the center is designed to be able to identify best practices. So practices that we know are supported by research that are supported by, you know, the investigations that we and many other people have done that we've identified as being important for improving the care of suicidal patients. But they're not being applied, they're not actually being delivered in most clinical settings. So, there's this big knowledge translation gap. So that's what the center is really focused on. We know what we should be doing better, but we're not doing it. And we are

designed the centers designed to be able to pull together multidisciplinary teams that can study that gap, they can evaluate why the gap exists, we can design studies to try to address those barriers to translation. And to then study whether those those approaches that we have put into place, are actually accelerating the implementation process. So, they're, they're narrowing that gap. So that's what the center is really designed to do. And it's, it's funded in order to be able to build these multidisciplinary teams. So, we've already identified people within specific disciplines that are that can be applied to the these questions around translating these best practices to care. We built those teams and those teams work to both accelerate and to study that acceleration of translation of practice.

Jennifer Berryman

What are some specific examples of those? Dr. Larkin? Can you continue on Dr. Boudreaux's thoughts.

Celine Larkin

I can speak to maybe the particular kind of disciplines or approaches that I'm helping with in the center. So I'm co-leading the implementation science unit with Dr. Stephanie Lemon. So, what that unit really focuses on is ensuring that there is uniformity across the center in terms of the sorts of implementation outcomes that we're looking at the strategies that we're using, the measures that we're using, and frameworks as well. So implementation science is really about sort of rigorous scientific study of that process of uptake of new practices. And we know that it takes on average 17 years for an intervention to go from having an evidence base to really being routine practice. And actually, some of them never make it 17.

Jennifer Berryman

I just want to make sure, 17 years, 17 years?

Celine Larkin

Yeah, yeah. Which is wild, when you think about considering all of the, you know, research and work that goes into developing, you know, testing and providing an evidence base for interventions, and then many of them never actually make it into routine care. So, implementation science is really about the kind of rigorous study of that process and whether we can accelerate that process. So, the implementation science unit helps to consult with the individual research projects that were that are within the center. And it helps to ensure that we're able to create generalizable knowledge across the project. So, we're focused on particular outcomes. So, it's more than just looking at whether an intervention works clinically for the patient, it's also looking at well, how many patients who are eligible for that intervention actually receive it. Because if only 20 percent of patients who are eligible receive the intervention, then we're really going to see this voltage drop between this original kind of randomized control trials and how it's actually implemented in real life. So that's an example of a unit within the center that is kind of helping to provide some structure to some of those research questions. And I'm also involved in the dissemination and community engagement unit. And I really think that's a such a unique and interesting part of this center is the ability to engage people, particularly people with lived experience, and helping to inform the research methods, the research measures, helping us to interpret the data that comes out of the research projects. And I really think that participatory approach is so important, and it's, it's the right thing to do. So, I'm really excited about that.

Jennifer Berryman

And as we mentioned at the beginning, both of you are experts in emergency medicine, but what are some of the other disciplines within a healthcare setting that you're calling upon to make sure that hopefully we can get that 17 years until some of these best practices are implemented down to a much smaller number?

Edwin Boudreaux

Well, we have a host of specialists, we have clinicians who work within those settings who are part of our teams. So those are what we would really consider the subject matter experts. But we also have methodologists. For example, we work with Worcester Polytechnic institutes. WPI is part of our center. They bring to the table a really rich group of people who focus on the technology and the digital health side. So, for example, we have projects that focus on using machine learning and artificial intelligence to be able to identify individuals who might be at risk based off of patterns in their electronic health records. So, one of the things that I mentioned earlier is that there's a reluctance to do the screenings.

In typically in our traditional approach, the screenings are performed verbally by a clinician, like a nurse or a doctor. But there has been a real increase in our understanding of how we can use data that's already locked in the electronic health record, to be able to pre-identify or develop risk panels of people who are at the highest risk for suicide, and then those people can be prioritized for action. So you can imagine, and this is already used in the VA, where they use the electronic health record data that's derived from the VA and risk panel is built and then updated every month, that indicates that shows the people who are at the highest risk for suicide because they're using a model, an algorithm that was validated through an extensive study that has identified people who are who are at higher risk. And so rather than waiting for them to come into the health care setting, and then to be screened, instead, these panels are shared with the local VAs, and there's a suicide prevention coordinator who's responsible for outreach and to try to identify new services, or to augment existing services that a person might be receiving to help to reduce that suicide risk.

Jennifer Berryman

That's remarkable. What is that algorithm combing through the EHRs, looking for?

Edwin Boudreaux

The original models were built using hundreds of indicators. So indicators you can think of as a data element within the electronic health record. Some of them are as simple as the person's age, you know, so their demographic variables. And then there are others that are mostly focused around diagnoses, mental health diagnoses, medications, psychotropic medications, and then there are patterns like, did the person come in to the emergency department in the past five years for a suicide attempt or for suicidal ideation. So, you can think of this, the electronic health record has all of this data that's locked in there, that basically reflects the patient's diagnoses and their medical utilization. And the algorithms tap into all of those different indicators. And they typically looked back at a window of time because it's retrospective data indicators that are used to be able to predict whether the person has suicide risk. And those two indicators have been validated through a series of studies that have demonstrated that they can, in fact, improve our ability to identify people who have died by suicide. So, all of those formative studies were done. And then that was translated into practice. And the VA is a special circumstance, as you probably realize, because they have access to all of the claims data for veterans, even if the person has seen outside of the VA system. They have a really, really rich data set, a very comprehensive data set

on any person who is who is covered by the VA. And so that's how they have validated the algorithms and then apply that in actual practice. That's a good example of that translation that I was talking with you about, that was very, very rapid, because they developed and, and, and validated this algorithm. And then within a two-year period of time, it was being used clinically, that two-year period, like what Celine just mentioned, was a real rapid turnaround. We don't have anything close to that. And the civilian populations because of a bunch of challenges, because we're not a top down, you know, civilian populations don't work like the VA, the VA is very top down. And if someone at the top says, This has to happen, it has to happen now, then, if they have, it can happen. But in the civilian population, like here at UMass (Chan), we're trying to do a similar kind of thing here. But it the speed has to rely more on our ability to be able to implement it without having this real structure, hierarchical top down approach. So we have people who are developing the machine learning algorithms. So that's one of those specialists we were talking about. And then we have people like Celine and others who are saying, Okay, now that we have these algorithms, how are we going to situate them for maximum adoption in the easiest, most quickest way within a civilian population, like patients who might be seen at UMass (Chan).

Jennifer Berryman

And Dr. Larkin, I would love for you to talk a little bit more about that. How are you doing that? How are you getting the word out to other health care systems that this exists, that it can be implemented? And that it's effective and culturally sensitive and a good thing for their, their providers and their patients?

Celine Larkin

Yeah, so within the new center, there are a couple of resources that really can help us do that and that are very novel. So, within the dissemination community each unit there is a health care consortium, which is comprised of representatives from dozens of health care systems across the country. And our idea is that during the running time of the center, we'll be able to engage with those members of the healthcare consortium to really have their input on what are the main barriers and facilitators to implementation within their system. What are their biggest concerns you can imagine, there being billing and reimbursement concerns, litigation, safety concerns, again, ethical equity concerns, so really understanding a little bit more about what the barriers might be, and then really developing implementation strategies to address those various barriers. Another really important and novel part of the center is the LC units, which is the ethical, legal and social implications unit, which is really all about examining what are the potential ethical impacts of some of the technologies that we're interested in, in some of the interventions that we're interested in? I think, particularly within suicide prevention, the stakes are extremely high. So obviously, on one hand, you have the ethical responsibility to prevent suicide, you know, because of all of the heartache that goes with completed suicide, on the other side of it is the is patient's rights and patient's right to sort of the least restrictive care. So, I think balancing those things is always very tricky, within the mental health sphere, but I think particularly in terms of suicide prevention, the stakes are very high. So, we're very lucky within the center to have that unit, which will be focused on the ethical and legal and social implications of the work that we're doing. And that might be one example of this.

Jennifer Berryman

But are there any pitfalls of using technology in this way?

Celine Larkin

One of the issues around algorithms that we've seen is the potential for racial and ethnic inequities in algorithms. So, we see this in other areas outside of suicide prevention, even outside of health care. So especially thinking about maybe the differential data collection in different groups, who might get asked screening questions versus not asked screening questions, and so on. So, I think there are some constraints around, for example, algorithms that we want to be very mindful of, both in the generation of an algorithm creation of an algorithm and also in the translation and implementation in real world settings.

Edwin Boudreaux

As in the rest of society, when we start to rely on technology, there's a potential for losing the human touch, and to losing the human connection. And one of the major theories of why people become suicidal is they become disconnected and disenfranchised, from their communities, from their families, from friends. And so, you can imagine that if we have an over reliance on technology, and we sort of triage people to a technological intervention, because we don't have human beings to be able to connect with the person, then you might rely overly on the technology at the sense of alienating it with the at the risk of alienating the person. People come to the emergency department, they come to health care, because they want care with the person with the human being. And I think there's a risk that if we rely too heavily on technology that that it disenfranchises patients. And I think the second big issue is what I mentioned earlier, there's a there's an ethical obligation to respond to a person who is suffering a person who is sharing with us that they're thinking about killing themselves, but we don't have the capacity to really do the job that we should do. And so, there's an ethical dilemma there. Because we know we should act, but we often don't have sufficient resources to provide the best care. And I think that puts the health system in a bit of a bind. I think the alternative though, which is what we've done in the past, not just around suicide, but other issues as well, is to bury our head in the sand and to say, well, we can't possibly provide the services we need to so we're just not going to ask you about it, which is also an ethical dilemma. It's a way that people and health care systems tried to address these problems. They they narrow the scope, they say, "Okay, well, we're not going to ask you about all these things that we can't solve. We're just going to solve this one problem." That's also an ethical dilemma. When we know that our patients that we're seeing have problems that need help and we ignore them, because we can't help them.

Celine Larkin

Can I add one more thing, I think, sort of that sense of being cared for that you mentioned as well. And I think there are technologies that can create that sense of being cared for. And we've seen that I think with a couple of the interventions that will one that we developed here and one that we're implementing as part of the CAPES center where if you're able to incorporate, for example videos of people with lived experience, if you're able to present the intervention as something that is, you know, has been created specifically designed for you, you know, there are lots of people like you who come to the emergency department feeling the way you're feeling, and this is something that we've developed, that we hope can help you, I think that we can create some of that sense of being cared for, even in the absence of a specifically trained mental health clinician, we're able to maybe approximate some of that that feeling of connection, which may be counterintuitive. But I think that's kind of some of the feedback that we've been receiving with the interventions that we've worked on. So it's really, it can be really hard

to make it that way if it's designed, but I suppose, in collaboration with the people, who are the end user, if there's a shortage of feedback from the community, and I think you're able to get closer to something that approximates that feeling of, of caring/

Jennifer Berryman

Thank you for that. All the more reason to have the technologies flag those who might be at greatest risk, right, so their resources can be devoted to their care.

Edwin Boudreaux

That would be the holy grail. the holy grail in this area is if we can design interventions or care procedures, that technology is really good at doing that human beings aren't very good at doing. But we're asking human beings to do it anyway. So, if we can take that group of work and push it to the, to the machine, and it actually reduces the burden that the clinician has in terms of doing some of these tasks, and they can then focus on connecting with the patient that will be ideal. That's really what we're trying to do is figure out what should the computer do? And what should the patient the clinician do? And how can we maximize both of those? As an example of an intervention that we should be doing with all of our suicidal patients that we know is a best practice is called safety planning. Safety planning is a pretty simple concept where you're working to build a stepwise plan for what the individual should do whenever they encounter a risky situation that has in the past, elicited suicidal thoughts. So, the safety plan is a there's a structured intervention, we trained clinicians on how to do this. But because it takes anywhere from it could take up to 45 minutes to do a really good safety plan, at least 25 to 30 minutes to do a really good safety plan, well, clinicians don't have the time to do it. So, they don't do it. But we've established both with several different projects that you can have a computer through a chat bot, kind of a chat-oriented way of doing it, you can have the person build a safety plan, or at least the draft of one on the computer. So that takes some of the responsibility from the clinician. And if then the clinician is able to review that with the patient. And to use it as part of their clinical engagement with a patient, you had the best of both worlds. The clinician didn't have to spend 20 minutes building it, the software helped to get it down the path. And then now the clinician is basically the person who's going to walk through it, make sure it's complete, emphasize its importance, reinforce it to use and have that conversation with the patient, so that it wasn't just something that they did on the computer. Because you can see it that's those two things are disconnected, the patient doesn't really pay attention to it because the clinician didn't talk with him about it. And then the clinician just sort of ignores it if it's not integrated into care. So that's really what we're working on is trying to figure out how we get the best of both worlds here. Right and where that balance is.

Jennifer Berryman

Well, Dr. Ed Boudreaux and Dr. Celine Larkin, thank you so much. We're going be watching really enthusiastically and eagerly to learn more about what comes out of the CAPES center. So, thanks for making time to discuss it with us.

Edwin Boudreaux

You're welcome, Jim.

Celine Larkin

Thanks.

Jennifer Berryman

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