Prevention - Nyaku

Fri, Jul 21, 2023 10:12AM 43:25

SUMMARY KEYWORDS

interventions, individual, substance use disorders, substance, naloxone, alcohol, opioid use disorder, tertiary prevention, prevention, public health, framework, policies, shown, talk, impact, drug, increase, decrease, harm reduction, mortality

---

00:00

This presentation is entitled Prevention and Public Health: From Theory to Practice. I will now pass it over to Dr. Amesika Nyaku to begin our presentation.

00:09

Hello, everybody, I'm very happy to have the opportunity to present to you today on Prevention and Public Health: From Theory to Practice. My name is Amesika Nyaku. I'm an assistant professor at Rutgers New Jersey Medical School, and also co-director of the Northern New Jersey Medication Assisted Treatment Center of Excellence here in New Jersey. I am very pleased to have this opportunity to come and do this talk. Again, I'm my primary training is as an infectious disease specialist. And so there are many intersections of public health substance use, especially from the framework in which I do this. And so I think that this applies across all of the different disciplines that we all hold.

01:00

So first, I want to start by saying that I have no relevant financial disclosures for this talk. And then before we move into starting with the learning objectives and launch directly into the talk, I want to just make sure that if you have any questions to please put that in the chat, which should come up on the right side of your screen, so that I can be able to answer your questions as we move through the presentation.

01:28

So the learning objective for this talk is to explain the ways the principles of prevention can be applied to addiction medicine, and the impact of prevention on public health. And so for this presentation, the way I'll take you through this is first we'll talk about the scope of substance use on public health. And then we'll talk about commonly used public health frameworks of prevention. And then lastly, I'll touch on some because there are many, some evidence-informed prevention interventions as they applied to substance use.

02:03

So first, let's start with the why why are we even having this as a part of the lectures? Why is this important? So it is important for you to remember what is the purpose of public health. And the purpose of public health is to promote health, prevent disease, and to improve the quality of life of individuals that are have any sort of chronic condition, and really thinking about this as it relates to conditions that impact a broad swath of individuals. And so from some estimates, when we take all of our substance use disorders, collectively, they are as prevalent, the totality of substance use disorders are as prevalent, as diabetes mellitus. And so we're all aware of the all of the different interventions and kind of public health significance that's given to a condition such as diabetes mellitus. And similarly, that similar kind of attention, is is something that addiction, substance use disorders, also warrants. And so to just break this down a little bit more. Here- let's look at the ways that substance use disorders impact public health.

03:13

So we can talk about mortality. So for instance, here for alcohol related deaths, we have at least 140,000 deaths per year, when it was looked at, from 2015 to 2019. We're all aware of the precipitate rap- precipitous rise in opioid overdose deaths that we've been experiencing in the last couple of years. And if we look at that, just doing kind of a snapshot in time from 2019 to 2020. Specifically, we saw that there was an increase by 31%. When we think about the economic impact that substance use disorders have, and in this case, we look at, we're looking at figures that are specifically related to alcohol use, it resulted in $249 billion related to excessive alcohol use. And then we can talk about, and which has been covered in other talks, about the impact of substance use disorders on other chronic diseases. And then we also know about the impacts it has on social problems. So incarceration, that we have disruption to families as a result of substance use disorders. And so we see that really the reason why this is of significance is because of the magnitude of not only the deleterious effects, but also the broad scope of people that are impacted, and really the and the kind of multi-level impacts it has on our society.

04:48

So with that, how does it work to try and approach substance use disorders using a public health systems approach? So there's a lot of texts on the sides and this is really for your reference. And so if you kind of focus actually on the figure to your right, this really summarizes the points that are enumerated in the bullet points, that there are really four components when we're trying to approach something from a public health kind of framework.

05:17

So one is to define the problem. So through that, defining the problem requires data to be collected, and that data to also have as much nuance as possible so that we can understand who was impacted, what age groups, what is kind of the, across the time, the lifespan or time course, those kinds of details to be able to start to then try and develop interventions.

05:46

The second component is to identify risk and protective factors. So because those then become targets for interventions, so if we know what are the risks, then we're going to try and put in mitigating interventions that then decrease the risk of someone potentially having whatever negative consequences it is that we're trying to trying to intervene on. And if there are protective factors, that we're going to work to strengthen those protective factors. So again, we can decrease the impact of substance use disorders on the, on the public health.

06:26

The third part of the intervention, or the third part of this framework is to develop and test the prevention strategies. And as we go for it, I'll define- I will go through the definition of prevention, because this is really thought of in a very broad way, what prevention strategies look like.

06:43

And then finally, the fourth component is to ensure that there's widespread adoption. And so once these evidence informed or evidence based prevention strategies have been identified, then it is now making sure that there is widespread implementation of the- of these interventions and sustainment. So that then we can start to see the changes and improvement in public health, which was the ultimate reason of embarking on this in the first place.

07:15

So the goals of prevention are to preserve or improve the general health and well-being of the population. It's to reduce mortality, reduce comorbidity, and then overall is to improve public health, as we kind of think about this from a societal standpoint.

07:34

So now I want to move into two of the very commonly used frameworks when we start to think about public health, about public health and prevention. So we have our tiers of prevention and our social ecological model. And so first, I'll start with the the tiers of prevention. And so here we see that a primary, secondary and tertiary tiers of prevention, and now we'll go through and define those.

08:04

So primary prevention, so primary prevention aims to prevent disease or injury before it ever occurs. And this is done by preventing exposure to hazards that cause disease or injury, altering unhealthy or unsafe behaviors that can lead to disease or injury, and increasing resistance to disease or injury should exposure occur.

08:25

For secondary prevention, this is defined as aiming to reduce the impact of a disease or injury that has already occurred. And this can be done by detecting and treating disease or injury as soon as possible to halt or slow its progress, encouraging personal strategies to prevent re-injury or recurrence and implementing system- excuse me- implementing programs to return people to their original health and function to prevent long term problems.

08:52

And then lastly, for tertiary prevention. This aims to soften the impact of an ongoing illness or injury that has lasting effects. This is done by helping people manage long term, often complex health problems and injuries in order to improve as much as possible their ability to function, their quality of life, and their life expectancy. Tertiary prevention interventions are essentially forms of treatment that are aimed to prevent the worsening conditions and the emergence of secondary problems.

09:22

And so here I'm going to show you what this looks like. And this, this came from a report that was done, or that came out in 2017, that looked at local or state health authorities kind of convening to think about how they would be able to use these tiers of prevention and think about the different prevention intervention strategies that existed and shown- we have organized it here kind of the summary from this convening, to show which fall into these primary, secondary, and tertiary tiers of prevention, and so here are some of these things that are enumerated here. We'll talk about in the second half of this lecture, some of the evidence base behind this.

10:15

Now, let's move to the social ecological model, that becomes an important framework because it really is, thinks about the different levels in which our society is composed from the individual, relationships, community, and our overall kind of broader societal level, and the interdependence of, of these different levels. And as we think about our public health interventions, really thinking about what level of this interdependence are we addressing, or potentially multiple levels, when we start to think of our strategies.

10:51

So just to give a little bit more definition to that, so for the individual, and we're thinking about the individual biology and other personal characteristics such as age, education, income and health history. For when we think about relationships, so that's going to be the person's closest social circle. So friends, partners, family members, and because all of those individuals may have an influence on a person's behavior, as well as contribute to his or her experiences, so the way that they may be willing to receive an intervention, for instance, who can- who can be enlisted to help that that individual that has the condition of interest that we're aiming to intervene on.

11:35

So for the community level, this is thinking about, very broadly the different settings in which people have social relationships. And so those can be schools, workplaces, or neighborhoods. And it seeks to identify the characteristics of these settings that, that affect health, and those can be positive effects on health, or they can be negative effects on health. And so again, as we think about this, from the standpoint of thinking about substance use, you know, we can think about interventions that happen at bars or clubs, right, as well as we can think about interventions that can then be deployed in schools. When we think about the societal level, as a part of the SEM framework, this is really thinking about broad societal factors that favor or impair health. And so really, I think it's important for us to understa- think about kind of the societal level is really about our policy and our laws. And so this can include culture and social norms, as well as the health, economic, educational, and social policies that create maintain, or lessen the socio-economic inequalities between groups. So it's really, like I said, about our policies, but we can also think about kind of culture, broadly speaking, in terms of what that looks like.

12:53

So just as before, here's another example of, of how we can organize interventions for substance use using the using this framework. And so this was taken from a paper, and this is really focused on opioid use disorder and using the SEM framework to, to map this out.

13:19

So some other frameworks that are talked about, this is what we'll kind of go through. So harm reduction, especially now is really been kind of thrust into a lot of popular discourse, there isn't one specific definition of harm reduction. And so here, I've taken, taking one definition from Harm Reduction International, that states that policies, programs and practices that aim to minimize negative health, social and legal impacts associated with drug use drug policies, and drug laws. Harm reduction is grounded in justice and human rights. It focuses on positive change, and on working with people without judgment, coercion, discrimination, or requiring that they stop using drugs as a precondition of support. So this, from thinking about harm reduction from as a form of a public health intervention and framework is not only focusing on the individual, but also thinking about, again, the social, legal impacts of the way that we've kind of organized our society around how we address individual substance use and therefore the interventions that need to happen at those levels. As people will often will kind of say, in the harm reduction world, this is really about meeting people where they're at, especially when we think about this in terms of interactions on the individual level. And so we can see that this is a very this can be a very broadly encompassing strategy that it operates at multiple different levels for for the different kinds of interventions that are then deployed.

15:05

Quickly, I want to go through some other prevention concepts. These concepts, in many ways have been more integrated into thinking about our tiers of prevention, or our social, Social Ecological Model. And so they, they've been kind of reorganized, but sometimes these concepts will come up, such as environmental prevention or environmental interventions, demand reduction and supply reduction. So here I've got some of the definitions. And then on the next few slides, I'll go into a little bit more detail.

15:40

So let's talk about environmental prevention or environmental interventions. So these are actions to minimize future hazards to health, and then therefore inhibit the establishment factors. And so those can either be in environmental, economic, social, behavioral, or cultural factors that are known to increase the risk of disease. And so some examples would be purchase laws, price controls, restriction on retail, or density, and then controls on advertising. And so those have previously kind of been organized as being examples of environmental interventions,

16:17

Demand reduction, so that prevents the uptake and or delays the onset of use of alcohol, tobacco or other drugs, it can also reduce the misuse of alcohol, tobacco and other drugs, in communities, as well. And then this can also they can also be thought as interventions that support people in their recovery as well. So it does across, you know, all of the different spectrum of when we think about substance use, this kind of demand reduction interventions apply. And so this can be things like criminal sanctions, so our- so drug policies, these can be drug treatment, which includes kind of forced or involuntary drug treatment, as well as voluntary. Drug Education programs and different kinds of persuasion programs are thought to be under promoting demand reduction through education. And then things like drug testing or non criminal sanctions. So civil liabilities, and those things are, are kind of thought to be interventions that would fall under kind of demand reduction prevention interventions.

17:35

And then lastly, kind of a, an older concept that sometimes will come up is the idea around supply reduction. And so the idea around supply production is that it prevents, stops, or disrupts, or otherwise reduces the production and supply of illegal drugs, or it can control, manage, or regulate the availability of legal drugs. And so some of the things that have been done specifically for illegal substances is around crop eradication, or then doing crop substitution. And so part of that crop substitution can be to incentivize farmers to plant other crops instead of for instance, poppy as being an example. There can be disruption of transport or domestic enforcement, and then regulation of our pharmaceuticals. And so part of that being, you know, our drug classification, or controlled substance classification, and then some interventions such as youth employment programs, so again, providing viable alternatives, so that then individuals may not engage in either the production or distribution of, of illegal substances.

18:50

So, this first half, like I said, I'm now taking you through kind of broadly how we think about how we organize interventions from a public health standpoint. And now I want to drill down more deeply and to give examples of what these interventions, these public health interventions look like.

19:13

So basically, what we know works well- it has been shown through the evidence. So before I start

launching into this, I just want to draw everybody's attention to kind of how I've organized the slides going forward. So on the right side, you'll see both your tiers of prevention here and indicating what level this is. This, whatever the intervention is that I'm talking about, where it acts as well as where in also here, then we have the social, Social Ecological Model, and then at what levels of the SEM model is this intervention focused on?

19:53

So first, we're going to go through a series of behavioral interventions. And so, here I'm going to talk about some school based interventions. And so those are for primary prevention. They're focused on the individual, and then also, and then they're deployed in the community setting. And so that involves, you know, the schools being actively engaged in thinking about drug prevention.

20:19

So some of these school based interventions, these are focused on groups that are high risk for the development of substance and so either have early initiation of substance use or developing a substance use disorder. And it aims to strengthen those protective factors. And so some examples of interventions can be the Good Behavior Game, classroom centered interventions, the Fast Track Program, or LifeSkills training. And so the idea is that these, these different interventions have been shown to delay the early use of alcohol, tobacco and other substances or so in addition to delaying the early use of it, they also have been shown to reduce the overall rates of use.

21:11

Other behavioral interventions, these we broadly grouped them as family strengthening, family strengthening interventions. So again, their primary prevention focused on the individual and the relationship. And so these focus on enhancing parenting skills, and then for those of these interventions that are focused on older kids, also on helping adolescents to develop refusal skills when offered substances. And so there's a Nurse Family Partnership, it's really an early childhood intervention for has primarily focused on mothers that may have been identified as subsequently kind of not having enough support or needing further strengthening of support. So then the children don't subsequently develop subs- or are engaged in substance use or develop substance use disorders. There's a Strengthening Families Program that is for- that's different and is focused on for parents and youth. Then they have things like the coping power, I Hear What You're Saying. So that ends up being kind of a guidebook for parents trying to talk to their children in kind of older adolescent age, older adolescent age, and helping them to engage in active listening and understanding what may be some of the social pressures that their, that their kid, their teenagers are encountering, and how to actively work with their teenager to strategize and kind of game plan- what they're going to do. And then there's also something similar called the Parent Handbook. And so these have been shown to to be effective in reducing early alcohol and other substance use.

23:03

And then another behavioral intervention, this one is now focused on the medical setting. So again, we're it's a primary prevention focus on the individual, and then again on the community but a different venue within the community. This one, I think many of us, these types of interventions we

different venue within the community. This one, I think many of us, these types of interventions we are maybe the most familiar with already. These utilize motivational interviewing, and then especially when they kind of look at buildin- Brief or frequently Brief Interventions have shown that the effect of these Brief Interventions can last up to 12 months after they've been delivered. So Brief alcohol interventions for all ages. So this is one of the reasons why the U- US Preventive Services Task Force gives it a Grade B recommendation for adults 18 years or older. And then it does have an indeterminant recommendation to do Brief alcohol intervention for adolescents between the ages of 12 to 17.

24:05

There are Brief alcohol screening interventions for college students that have been shown to be effective and then there are other medical based interventions like Project Share and Computerized Alcohol Related Problems Survey that- then kind of going through and then discussing the the results of doing the survey have been been shown to be very- to be effective in reducing alcohol use in the population that then ends up being surveyed.

24:42

Other behavioral interventions now these are community based so really kind of been driven and developed by the community and and so they actually end up encompassing the individual, the relationships that the individual has, and then across, and then apply across several different settings. So for instance, the Communities That Care- this was something that was developed through kind of community stakeholders assessing and deciding which of the various interventions to prioritize for middle and high school kids, and had been, has been shown to lower alcohol and tobacco initiation rates. And then there's the PROSPER, which was the PROmoting School-community-university Partnerships to Enhance Resilience. And so this ends up being a collaboration between a university, schools, and families to implement a family strengthening and school based intervention. So hence, why it encompasses both the community and relationship. And then this has been shown to be effective and lowering marijuana, methamphetamine, inhalent, and prescription opioid use in in the youth population that received this, this intervention, this community based behavioral intervention.

26:07

For societal based interventions, we kind of had talked about this, or briefly touched on this when we talked about some of the demand reduction interventions. And so really, we can re-package these using our tiers of prevention and our SEM framework. So for instance, so here, these societal based interventions can be considered primary prevention. And like I said, on the SEM framework, it's at the level of the society. So for instance, pricing and taxing. So this, the largest evidence basis for alcohol to show that this is, has been the most effective, and it in the evidence shows that a roughly 10% increase in alcohol price results in a 5% decrease in drinking on a population level. Increases in alcohol taxes has also shown to have a large effect on morbidity and mortality, moderate effect on traffic crashes, and then there's a smaller though, at least statistically significant effect on crime violence, and acquisition of sexually transmitted infections.

27:23

27:25

Other societal based interventions here is around, we have outlet density. So fewer, like liquor stores, for instance, or restricting where cigarettes can be, can be purchased, has been correlated with a reduction as it relates to alcohol and alcohol related crimes.

27:47

Having commercial host liability policies. One estimate show that there was a 6.4% decrease in alcohol related motor vehicle fatalities, if you, if you- so basically, this is if someone owns an establishment in which they are serving people alcohol, and then someone subsequently has been, you know, what we call over-served, you know, colloquially, and then they get into a motor vehicle accident, and then there's a fatality, if that host then also has a liability, then you're going to have another level of intervention, right? Because then the these various establishments are going to be paying attention to how much people are consuming, or at least kind of looking for higher degrees of impairment. And that that is an effective way to, to reduce that the negative consequence, in this case of alcohol.

28:48

And then limiting the days and hours of availability. And so there's been a clear correlation between more availability of alcohol, you've gotten increased alcohol related harms. And so you know, some places may have dry counties or be unable to purchase certain types of alcohol either on certain days of the week, or you have to go to specific venues to be able to for- for instance, to be able to purchase liquor, but you may be able to buy beer and wine more, more easily. Those types of interventions have been shown to be effective.

29:24

Another societal based intervention that's important is policies that are specifically targeting reducing drinking and driving and so those policies may be around impaired driving laws. So specifically around blood alcohol level, that those have a positive, results in a positive reduction in impaired driving, having in some places, and this is not so prevalent anymore, kind of checkpoints to assess around people's levels of blood alcohol for someone who has subsequently had a DUI, or other such type of offense. Having the ignition interlocks so that then people aren't able to activate their vehicle and then having treatment programs so that if someone does have a substance use, specifically alcohol use disorder, being able to get into programs and receive adequate treatment are having that kind of widespread availability and scale up have positive impacts on reducing drinking and driving.

30:41

Similarly, having policies that reduce underage drinking specifically, such as raising the minimum legal drinking age, having zero tolerance for youth that are then found, you know, you'll lose your license, if you're found to have consumed any alcohol, and then having any of these social host liabilities. So we, you know, we'll see often campaigns that are advising and warning, you know,

parents and adults that are over the legal drinking age about how it is a crime for them to purchase and distribute alcohol, to minors. And so these all these types of policies have been effective in reducing motor vehicle accidents and deaths related to alcohol.

31:33

And so this is what this chart here is showing. And so in the dark purple here is showing alcohol related motor vehicle deaths. And then this is overall motor, or excuse me, non-alcohol-related motor vehicle deaths. And so we see roughly kind of a plateau here. And whereas we see that there's a clear decline, and this is just showing, over time, these types of policies have been implemented, and in, are thought to have been the significant drivers in the decrease in alcohol related motor vehicle deaths.

32:13

So now I'm going to shift and focus on interventions that are related to opioid use for you know, roughly last 10 minutes of this discussion. So first, I'm gonna start with naloxone. And so naloxone distribution, or- so- Naloxone can be thought as being a component of secondary and tertiary prevention, and being something that can be in the way that it is implemented as across all levels of the SEM framework.

32:48

And so let me explain a little bit more what this what that means. So first things naloxone is an opioid antagonist, which rapidly reverses opioid-related sedation and respiratory depression. And it may, and as a result may also cause withdrawal symptoms. And so it can be administered by a medical professional, but as well as community members. And so what the evidence has shown is that there can be anywhere between roughly can be anywhere between 11 to 21% reduction in opioid overdose deaths by making sure that there's broad accessibility of naloxone. So in order to get that broad accessibility, we have to make sure that there are no policies in place that may either actively or give the perception that then inhibit people from wanting to be carry around and administer Naloxone. And so that's where a Good Samaritan laws come in place. So Good Samaritan laws, being able to shield someone who tries to intervene on someone that they think may be having an opioid related overdose, administer naloxone, whatever ends up being the outcome for that individual, knowing that somebody who tried to help is not going to then end up prosecuted or have liability over those of that sort. Having those Good Samaritan laws in place actually results in a 14% reduction in overdose deaths because more people are then likely to say, Okay, I'm willing to, to carry the naloxone and use naloxone when I see someone that is that they may, maybe experiencing an overdose.

34:34

Another another component of seeing that naloxone has such a potent is such a potent intervention strategy is in the co-prescribing of naloxone for individuals that may be at risk for overdose and so that varies state by state in terms of who's considered at risk. So that can be someone who's on chronic narcotics and have varying thresholds for what the morphine milligram equivalents are for their, for then that to be in place it can be for individuals that have had prior overdoses, or may have

an opioid use disorder, or maybe using other substances. And there's a concern about cross-contamination with fentanyl or other fentanyl analogs, those types of scenarios. And so that varies state by state. But implementing those kinds of policies, we see that then that results in in one study was able to show that that decreased opioid related emergency room visits, and that was specifically co-prescribing for individuals that were were on chronic opioids for the management of their chronic pain.

35:58

Now let's talk about syringe service programs. So syringe service programs are- are forms of primary as well as secondary prevention, and then again, are multi-level interventions across all of the different levels of the SEM framework. So their benefit and cost effectiveness has been well established with syringe service programs, we see we know that, that having syringe service programs resulted in at least 50% reduction of HIV infections in people who inject drugs, and then a 56% reduction in hepatitis C infections. And so the figure on the right is just showing you and this was taken from New York City from looking at the HIV incidence per 100 person-years, and then the number of syringes to exchange from 1990 to 2002. And there's a clear inverse relationship, that HIV incidence went down as the number of syringes exchanged increase, when they looked at a subset of individuals who were persons who injected drugs. However, we continue to have a lack of widescale scale up of, of syringe service programs. And that can be in part due to local regulations as well as community norms. And so for instance, some states and jurisdictions, this may be whether or not a syringe service program is able to operate maybe under local control those types of things. But the evidence is clear of the positive impact syringe service programs can have not only on on opioid use and overdose, but also as well as preventing things like HIV and hepatitis C infection.

37:59

And then there's some more data that I don't necessarily have here, but then also shows the impact that these programs have for assisting individuals who are- who do have opioid use disorder or maybe injecting other substances in terms of referrals to treatment programs, and increasing the likelihood that someone is going to accept that referral and actually move forward and engage in care.

38:29

And then, I'm going to focus these last few slides on thinking about medications for opioid use disorder, not as we- not only in the framework of the intervention as it impacts the individual, but thinking about it and more of a public health framework, and the kind of the broadness of how we can think about MOUD. So when we think about it as a tertiary prevention- it decreases mortality, if we think about it as a secondary prevention, so preventing subsequent harms, we can think about how it can improve HIV treatment outcomes. And then I'll give an example of it as a primary prevention and the evidence that shows that being on MOUD can prevent HIV and hepatitis C acquisition. And so MOUD, we can really think about it as impacting all of the different tiers of prevention, as well as all of the different levels of our SEM framework.

39:30

So let me give you- let's dive a little bit deeper into it as a tertiary prevention model. So if we so if we think about opioid use disorder as a chronic disease, and the goal of tertiary prevention is to prevent the worsening of the chronic condition and development of subsequent complications, then MOUD definitely fits the bill as evidence of a tertiary prevention. It decreases opioid and non-opioid-related mortality, increases quality of life, increases employee- employment, and decreases emergency department use as only a, you know, not all encompassing from the data, but just all, you know, examples of the evidence base of the different domains that MOUD has.

40:18

And then this figure here is showing. This is from one study in which they looked at the differential impact of having been on any type of MOUD for kind of any duration, on mortality. And so for people actively on MOUD, were on it but discontinued, versus no treatment. And so when we look at all cause mortality, as well as overdose mortality, that even being on any MOUD is of benefit in terms of reducing mortality, as compared to not having been on any MOUD at all.

40:58

When we if we wanted to think about MOUD as a form of secondary prevention, so there has been a systematic review and metaanalysis of 32 studies, looking... focused on people with HIV that have an opioid use disorder, and found that any form of MOUD, was associated with 69% increase in ART uptake, a two-fold increase in ART adherence, and as well as a 45% increase in HIV virologic suppression.

41:35

And then an example of MOUD as a form of primary prevention. So for- in persons who inject drugs, being on an MOUD resulted in a 54% reduction in HIV acquisition, and then being on MOUD resulted in a 60% reduction in hepatitis C acquisition. And so the and I'll just kind of give a little bit of the caveat is that in looking at this data, the strongest effect of MOUD was in the forms that were the agonist formulations.

42:12

And so, this brings me to the to the conclusion for my talk. So just to summarize, when we think about public health prevention interventions for drug use, and kind of using drug use broadly to encompass any substances, if we approach this using this tiered approach to prevention, that also considers the individual interpersonal dynamics, community settings, and societal aspects. There's been a- it has a well established body of evidence based interventions, and that what is critical to being able to achieve the positive effects. When we think about the public's health is really that it requires ongoing scale up as well as monitoring to make sure that we have maintenance of these interventions after they've been implemented.

43:03

And so with that, I'll stop here. I want to thank you all. Here's my contact information if you want to reach out and then here's more information for how you can stay in touch for with ASAM and again, I want to thank you for attending.