

Transcript from RHIhub webinar: Rural Mortality and Preventable Deaths – Insights from the CDC MMWR Rural Health Series

Kristine Sande: Hello, everyone. It looks like it's 10 o'clock. We'll get started. I'm Kristine Sande. I'm the director of the Rural Health Information Hub. I'd like to welcome you to today's webinar, Rural Mortality and Preventable Deaths - Insights from the CDC MMWR Rural Health Series.

I'm going to just quickly run through a few housekeeping items before we begin the webinar. We hope to have some time for your questions at the end of today's webinar. If you have questions for your presenters, you can submit them at the end of the webinar using the Q&A section that will appear on the lower right hand corner of the screen following the presentations. We've provided a PDF copy of the presentation on the RHIhub website. That's accessible through the URL on your screen or by going to the RHIhub webinar page which is www.ruralhealthinfo.org/webinars. Then, clicking into today's presentation.

If you decide to go out and decide to download the slides during the webinar, I'd just advise you to make sure to not close this webinar window or you'd have to log back into the event. Also, during the webinar, if you do experience technical difficulties, please contact WebEx support at 866-229-3239.

At this time, I'm going to turn the webinar over to our guest moderator for today's session, Mr. Tom Morris, who directs the Federal Office of Rural Health Policy. Tom?

Tom Morris: Okay. This webinar, we're really happy to have it happen. It kicks off the first in a series of webinars that you all will be doing. It's going to focus on rural public and community health issues over the coming year. This is part of what I think is an exciting new initiative from our colleagues at the Centers for Disease Control. Many of the folks on the call today are likely familiar with CDC's Mortality and Morbidity Weekly Reports. I think if you read those, you know they're the gold standard for health service and public health research within the Department of Health and Human Services.

Back in January, CDC kicked off the first of a 17-part series using the MMWR banner. This is really quite a noteworthy initiative. The CDC leadership in the late summer and the fall decided that they wanted to take an extended look at some real issues. They put the call out for research ideas across their offices and centers. They got a really amazing response. The folks that are taking part of this are really going to cover a broad range of rural research topics over the coming year.

In addition to the MMWR reports, they're also going to have, in some cases, companion pieces and journals like the Journal of the American Medical Association or The Journal of Rural Health and the Journal for Health Care for the Poor and Underserved.

It really is a very interesting initiative they have underway. I have the pleasure of going down to Atlanta and meeting with CDC staff back in December. I was

really impressed by the enthusiasm for this effort and the broad level of interest in rural health issues. It's really been a great collaboration.

Our office also funds a fair bit of rural health services research. It's been a really great opportunity to partner with CDC on this and more importantly, to bring what I think is a needed focus to these rural health issues. RHIhub I think will be doing a number of webinars where they'll bring together CDC researchers to talk about their findings but in each case, we're going to try to pair them with an innovative project that are working in the same topic areas to make sure that we get the community perspective in addition to the research perspective. That's what you're going to hear today.

Let me turn it over to our first speakers. We're pleased to hear from Dr. Ernie Moy, who is the Medical Officer in the Office of Analysis and Epidemiology at the National Center for Health Statistics at CDC. He'll be joined by Dr. Macarena Garcia, a Senior Health Scientist at CDC in the Center for Surveillance, Epidemiology, and Laboratory Services, Office of Director. They're going to share with you some of the findings from their research on rural mortality and preventable deaths. When they're done, we'll then hear a community perspective from Dr. Timothy McKnight but I'll do a broader introduction of Dr. McKnight after the CDC researchers.

Then, we'll leave some time at the end, as Kris noted for you to type in questions. Then, we'll have the experts answer those questions. With that, let me turn it over to Dr. Moy and Dr. Garcia.

Macarena García:

Good morning, everyone. My name is Dr. Macarena Garcia. I will start the presentation although Dr. Ernie and myself will be co-presenting this presentation. We have approximately 25 slides. We will hand over to each other as we progress. I did want to say something about the introduction to the Rural Health Series and give just a bit more information which is that we have currently approximately 16 papers that will be published this year. Those are scheduled. There may be one or two additional ones but for now, there are 16 that have been scheduled. Those include the ones that have been published in January and February.

Dr. Moy's results from his paper is an analysis. The way I'm going to present this presentation is, I'm going to give some historical perspective. We can go to the next slide. I want to present the outline for the presentation. We have a study on the five leading causes of death and potentially excess deaths. At CDC, we had an original study that was published in 2014 by a group of collaborators in CDC that included NCHS and CSELS and other groups across the centers and CDC. That was one of the first papers published in MMWR on potentially excess deaths within or from the leading causes of death for 2010 using that specific methodology.

We wrote an update paper November 18, 2016, which was comparing potentially excess deaths between 2010 and 2014. That is also going to be

presented here. I'll talk a little bit about what potentially excess deaths are. I'll present the national findings from that November paper and then, when there was a call for the Rural Health Initiative by Dr. Frieden and the call for studies for the Rural Health Series. Dr. Ernie Moy took the data set that we had analyzed for the national findings and applied the disaggregation by county of rural and urban, and he'll talk more about that, but based on a classification that NCHS uses for rural and urban counties in the United States. Dr. Moy will present the rural urban findings on potentially excess deaths as well as mortality trends over the last 15 years.

I will then talk about taking action and talk a little bit about those disparities that we noted and the things that can be done. Dr. Moy will end our presentation with some next steps and showing some data visualization tools that he developed to query our data analysis. Next slide, please.

This is an example of that data visualization that I mentioned, developed by Dr. Moy. What I'm presenting here is the number of potentially excess deaths from heart disease in rural areas in 2014. This is just a snapshot. You see that the darker colors are where more of those excess deaths are occurring as well as the size of those circles. Dr. Moy will get more in depth into this data visualization and how it works but I just wanted to present the snapshot there.

I'll start with the national findings which are not disaggregated by rural and urban. The national report in November obviously found that the five leading causes of death were still deaths from heart disease, cancer, chronic lower respiratory disease, cerebrovascular disease, which we'll call stroke from now on, and unintentional injuries.

The death rates for these diseases varied widely across states. It's related to variation in the distribution of many things, primarily the social determinants of health, access and use of health services and public health efforts. Next slide.

What are potentially excess deaths? I provide a definition here and this is our working definition. This definition was developed across a broad range of stakeholders, a lot of discussion. There is really no gold standard for defining a potentially excess death. We had to clearly define it so that it was clear in our methods what we are talking about and how we're defining this.

In our paper and these studies that we've conducted and what's presented here, potentially excess deaths or what others may call premature death is defined as a death that occurred in a person under 80 years old based on the average life expectancy for the total US population which was nearly 79 years in 2010. That is the definition. When we talk about potentially excess deaths, sometimes also referred to as potentially preventable death, this is exactly what we mean. Next slide.

What did we find? Again, this is nationally before the disaggregation, we found that there was a significant decrease in the number of potentially excess deaths among three of the five leading causes of death. That was during the period 2010 and 2014 but in the same time period, we found that the number of potentially excess deaths from unintentional injuries increased significantly. This is mostly attributed to an increase in drug poisoning which resulted from overdose from prescription and illicit drug use and falls.

We have a lot of findings around unintentional deaths. We have one of our subject matter experts who is a co-author on this paper, Dr. Mark Faul. He's on the line as well. If we have specific questions on unintentional injuries, he will be our lead for answering those questions. Next slide.

The leading causes of death. The five leading causes of death for persons aged 80 years and under in 2014 represents 63% of the deaths from all causes in the United States. If we take that further, the estimated number of potentially excess deaths and the proportion preventable among the five leading causes of deaths in persons aged under 80 were the following. You see those in each of those circles there.

For disease of the heart, 30% of all of those observed deaths were potentially preventable based on our definition and our model. For cancer, it was only 15%, for unintentional injuries, nearly half, 43% were potentially preventable. For chronic lower respiratory disease, it was 36%. For stroke, it was approximately 30%. Next slide.

What has been this change in potentially excess deaths and where has it been occurring? Potentially preventable deaths from cancer declined 25% nationally from 2010 to 2014. Our subject matter experts that co-authored this document believe that this decline seems to be driven by a 12% decrease in the age-adjusted death rate from lung cancer. Again, this is national so we're not looking at rural and urban just yet.

Decreases in age-adjusted deaths rates from cancer were observed across all of the US states except for the District of Columbia. In both 2010 and 2014, the Southeast, which is the HHS Region 4 had the highest number of potentially preventable deaths for each of the five leading causes of death. There was no change. They still remain the region with the highest number of potentially preventable deaths in the United States out of the 10 HHS regions.

In 2014, the Northwest, which was Region 10, had the lowest number of potentially preventable deaths for each of the five leading causes except deaths from chronic lower respiratory disease and unintentional injuries where the lowest number occurred in New York and New Jersey which are in HHS Region 3. Next slide.

There was obviously an observed significant decrease in deaths from cancer. Not only was it observed. The change, it was also statistically significant. Again, we mentioned that the decrease in cancer deaths can be attributed in part progress and prevention, early detection and treatment.

Tobacco use is a risk factor for some of the deaths included in our reports such as heart disease, cancer, chronic lower respiratory disease, and stroke as well as some others which are included in the chart that you see there. Mortality from tobacco-related causes has decreased in conjunction with national decreases in tobacco use across the United States. Again, not disaggregated for rural and urban yet but an estimated 40 million adults smoked in 2014. Students will find out that a large majority of those folks are in rural areas. Next slide.

The role of tobacco control and prevention. Obviously, it was very important. Implementation of evidence-based tobacco control interventions including increased tobacco product prices, implementation and enforcement of comprehensive smoke-free laws, media campaigns and access to proven resources such as quit lines and others to help persons quit tobacco use varies among states and varies among regions in the US.

In addition to tobacco use, other health behaviors contribute to premature deaths and create opportunities for prevention. An example is that obesity increases the risk for chronic lower respiratory disease, for diseases of the heart, and stroke, in addition to some cancers. This will all become very relevant as we talk about our findings for rural health. Next slide.

Deaths from unintentional injuries are on the rise. This is the case, again, we're still talking about the national picture. Both observed and potentially preventable deaths from unintentional injuries increased between 2010 and 2014. Some examples of state actions to reduce drug overdose include developing or enhancing prescription drug monitoring programs, adopting clinical prescribing guidelines and increasing access to medication-assisted treatment for opioid use disorder and naloxone to reverse opioid-related poisoning. I include this slide early on because we'll start noting some trends in rural America and understanding that some of these interventions are not readily available in many of the rural regions in the United States. Next slide.

When Ernie conducted his analysis on our original data set, we found some very interesting things. I'm just going to summarize them here in one slide and provide a higher level impact. After the slide, Ernie will move into the details about the findings and present some really interesting graphs.

In 2014, there was a higher rate of potentially excess deaths that occurred among rural Americans compared to the urban counterparts. For each of the conditions we found in heart disease, for example, there were more than 25,000 excess deaths total but 42% of those were in rural areas whereas about 27% were in urban areas. That shows us that there's approximately 50% higher rate of potentially excess deaths in rural areas than urban areas.

If we look at cancer, more than 19,000 potentially excess deaths occurred from cancer. Overall, the cancer deaths declined 1.5% per year between 2003 and 2012. They declined much less in rural areas than they did in urban areas. For unintentional injuries, more than 12,000 occurred excess deaths but 57% of those were in rural areas whereas approximately 39% were in urban areas. Again, we see a 50% higher rate in rural areas than in urban areas. For chronic lower respiratory disease again, very much closely linked to tobacco use. There were more than 11,000 excess deaths in 2014, 54% of them were in rural areas whereas 30% of them were in urban areas. Again, approximately 50% higher in rural areas. For stroke, which is not listed here, there were approximately 4,000 deaths. Ernie will go into some of the details with stroke but the findings there were less diverge.

I'll hand it over to Ernie to continue with the details of the findings.

Ernest Moy:

Thanks, Macarena. I have to say, I feel like a bit of a parasite because you can see the Macarena and CDC did a lot of work developing these methods for looking at potentially excess deaths or potentially preventable deaths for the leading causes of deaths. Our basic study, as Macarena had mentioned, basically took this and divided it into those deaths that are occurring in urban areas and those deaths that are occurring in rural areas. The definitions that we used are based upon the NCHS classification scheme but we use it at the very highest levels. When we talk about urban, we're talking about residents of metropolitan areas and we're talking about rural, we're talking about residents of metropolitan and non-core areas added together.

But I'd like to take this opportunity to drill down a little bit into some of the findings in greater detail just so you can see what some of the text that Macarena went over reflects. This is probably not necessarily surprising to this group but it was interesting to look at in this way in the MMWR paper but if you just look at age-adjusted mortality rates or the five leading causes of death, here we showed the two largest, heart disease and cancer, we see that first of all, for all five deaths, the rural areas have higher rates for this entire time period but perhaps more disconcerting is that as we see these rates declining for heart disease and cancer over time, they're declining more slowly in the rural areas and so as a consequence, at the end of the time frame in 2014 here, the gap between urban and rural areas is larger than at the beginning of the time frame for both of these conditions. I'll also say, I didn't show stroke but stroke mirrors heart disease in large part.

We see something very different for unintentional injuries. Still, rural areas have higher rates of unintentional injuries but these are increasing over time from both metropolitan and non-metropolitan areas. The gap does not seem to be changing to any significant degree. Then, we see the perhaps worst pattern for chronic lower respiratory disease. Here we see, again, rural areas with higher age-adjusted rates but unlike urban areas where the rates have declined over time the rates are increasing in rural areas and so, as a consequence, you see the gap increasing dramatically over time.

Age-adjusted rates are interesting to use. We've used them a long-standing but I have to admit that, even for me, who has looked at disparities for many years and you see differences in age-adjusted rates and you see that it's terrible, what really was interesting about this approach was converting it into actual deaths, potentially excess deaths but in theory could be prevented if all areas has the rates achieved by the best-performing states. Converted in this way, first of all, you see that these are real numbers. These are thousands of people dying each year that, in theory, could have been prevented.

On the left are the non-metropolitan counties. On the right are the metropolitan counties for the nation as a whole. I'll point out one thing first as all. The scales are different. That's because there are many, many more people in metropolitan counties, roughly 85% of the population versus 15% of the population in non-metropolitan counties but even just counting the numbers of potentially preventable or potentially excess deaths in non-metropolitan counties is revealing to me. These are, again, thousands of people dying each year that, in theory, could be prevented.

Then, if you track this over time, you look at over time, we tend to see that, for most of these conditions, the numbers of potentially excess deaths seems to be falling in metropolitan counties at a faster rate than they are in non-metropolitan counties and again for chronic lower respiratory disease, numbers of potentially excess deaths actually show this positive slope so increasing in numbers.

The other way of looking at this that Macarena referenced was we can also look at the proportion of all observed deaths and differentiate the proportion that are potentially excess or potentially preventable from those that will be expected. Here, we're honing in on the proportion of observed death that are potentially excess. What we see is, again, of all the deaths that are occurring in rural areas in 2014, a higher proportion of them are potentially excess or potentially preventable for all of these five conditions and, in fact, for unintentional injury and chronic lower respiratory disease, the rates are over 50%. That means that more than half of the deaths that are occurring in rural counties for these two conditions in theory could be preventable if they were able to get the rural areas achieved in the best states in the nation.

We also looked at this by geographic region and observe those wide variation in these urban, rural differences across geographies but in general, the pattern of higher proportions of deaths being potentially preventable persisted for rural areas across the country.

With that, I'm turning it back to you, Macarena.

Macarena García:

Thank you, Ernie. As Ernie suggested or reflected upon, we have 46 million Americans, roughly 15% of the US population that currently live in rural areas but this 15% of the population is at a much higher risk than the majority of the population in the US that lives in metropolitan or urban areas.

Although urban residents far outnumber rural ones, rural Americans are at a higher risk of dying from a potentially preventable death which, as Ernie said, a death that could be prevented from the leading causes of deaths in the US.

It's important to note, however, that not all deaths can be prevented. Some areas might have characteristics that put residents at higher risk of deaths such as long travel distances to specialty and emergency care or exposure to a specific environmental hazards. There are lots of different types of cancer within the category and some cancers are more preventable than others so those are important limitations to understand. Next slide.

What are the reasons for these disparities that we noted in this report? We believe that there are several demographic, environmental, economic, and social factors that might be putting rural residents at higher risk. As we mentioned, there are higher rates of cigarette smoking in rural areas. There are higher rates of blood pressure and obesity.

On the right of this slide, you'll see that cigarette smoking is the leading cause of preventable disease and death in the US and prevalence is higher in rural counties than in urban counties.

The second bullet on the blue rectangle there is less leisure time, physical activity and there's lower seatbelt use in rural areas. Again, that often leads to obesity which is linked to a variety of serious chronic illnesses, a variety of these that were included in our report, diabetes, cancer, arthritis. From 1960 to 2010, the proportion of US adults who were overweight increased 45 to 69%. Obesity rates, as we know, are higher in rural areas.

Finally, there are higher rates of poverty and less access to health care in rural areas. Unintentional injury deaths were approximately 50% higher, as we mentioned, in rural areas and partly, that's due to greater risk of death from motor vehicle crashes and opioid overdoses and potentially, the inability to access emergency services. Next slide.

What can be done? This slide is based on our discussion as Tom pointed out that there are reports in the MMWR on rural health but there are also associated commentaries. For this potentially report that Ernie co-authored with many of us, we also had an associated commentary where we discussed by condition what sort of action can be taken for addressing these conditions and potentially excess deaths, lowering this rate in rural areas. We also talked about some sort of broader policy areas but this slot represents health care, taking action in the health care setting.

We don't talk about the social determinants of health, again. We're CDC and so we're really just focusing on the health care aspects here but it's important to note that there are other important actions that need to be taken across government. Health care providers, particularly in rural areas can screen

patients for high blood pressure and make control a quality improvement goal. They can increase cancer prevention and early detection. They can also encourage physical activity and healthy eating to reduce obesity. They can promote smoking cessation, promote motor vehicle safety and engage in safer prescribing of opioids for pain.

We go into each of these bullets and we drill down and describe and explain these programs and provide examples in the commentary. I highly recommend for any of those that are interested in learning more about the action items. They're found in the commentary and at the end of the presentation. We have citations for the three papers that are mentioned here today. Next slide.

Now, I hand it over back to Ernie who will talk about the next steps and introduce the data visualization tool.

Ernest Moy:

Thank you, Macarena. Wanted to talk about what some of our next steps, some of the spinoff activities that came off of the MMWR article. One, especially for this group, I know that people would tell me that not all urban areas are the same, not all rural areas are the same. We only presented urban versus rural in the MMWR article. What we are working on now is looking at these finer gradations and extending this over a longer period of time.

This shows some very interesting things. First of all, here we break out the metropolitan counties into four groups, large central, large fringe, medium and small. Then, we break out the rural areas into the metropolitan versus the non-core areas. One of the things that we see, in general, as bad as the rural areas does, compared to the metropolitan areas, the non-core areas typically have an even higher mortality rates. This just shows among the mortality rates, cancer and you can see that if you break it out, green is the non-core areas there on the top, it's slightly worse than the metropolitan areas. You'll see a lot of variation in the metropolitan areas as well. If you look at the best performing metropolitan areas and non-core areas, you get very, very large gaps. Indeed, mortality rates. The other interesting aspect of this is when we extend back before or shown in the actual paper which was starting in 1999 and roll it back another decade back to 1989.

We see that back in 1989, for many of the conditions, rural Americans actually had lower mortality rates than urban Americans. Looking at the 1999 to current period for that entire range, the rates were higher in rural areas compared to urban areas, though if we roll it back to 10 years, that's not necessarily the case, that for some of these conditions, rural areas actually had lower rural areas of mortality. This is consistent with the thesis of rural areas gradually falling further and further behind to urban areas as urban area mortality rates improved dramatically.

The next item that I was going to talk about in terms of next steps for our particular project is the actual data visualization. I'm going to go into experimental mode rather than showing you the placeholder slide. I'm going to

try to go and actually share the visualization. Okay. Hopefully, you are now seeing my screen which shows the splash page for the visualization. If you're not, then please shout. Otherwise, I'll be jabbering on and on about something that you can't actually see.

The CHS and CDC have a data visualization gallery. Our data visualization's posted on this site. This is meant to capture the very important concept of understanding what's happening at the national and regional level is interesting but what we really want to know is what's happening in our state. This site is dedicated to taking all the stuff that we looked at and much, much more and drawing it down to the state level.

The first is just a method kind of slide. This shows you the definitions for potential excess deaths, et cetera that we've used. I encourage you to come back and read it, if you want. Okay. The second panel now shows variation in potentially excess deaths for rural areas which is what's shown here and metropolitan areas on a map. You can see how your state is doing compared to other states.

I'm going to show you a slightly different view with is the bar chart view which sorts everything, so you can see how your state is doing compared to other states. I know our community speaker is from Ohio. I hope that he'll forgive me if I pick on Ohio but you can look at, so for instance, here's heart disease for non-metropolitan areas in 2014. You can see Ohio this year. You can actually also change the year so you can go back in time to 2005 and see that Ohio is actually doing worse back in 2005. They've made improvements between 2005 and now.

Perhaps the product of the interventions occurring in Ohio to reduce rates of heart disease. I was also going to show chronic lower respiratory disease because by my eyeballing, this seems to be the area where Ohio is having the most difficulty. We see that in 2005 in Ohio in rural areas, there were 496 potentially accidental deaths. As we scroll forward to 2015, these rates are increasing as opposed to decreasing.

You can also look at metropolitan areas for comparison if you want to click down on this and you can look at metropolitan areas and you can see that, for some of the states, the patterns are still similar but then for other states, these patterns are quite different.

I mentioned that we have a lot of other kind of options to pick from as well. If you don't like our 0 to 79 age range for counting potentially excess deaths, you can change the range to look at younger or older populations. You can also change some of the benchmarking techniques that we use. We use a fixed benchmark of 2010 and here you can pick different kinds of benchmarks that might be more appropriate for the timeframe that you're looking at.

The third panel now hones in on that concept of percentage of deaths that are potentially excess that shows them as account but then also shows them as a percent of observed deaths. Here, I'm going to scroll down to Ohio, again so that people can get a look at it. There's Ohio. This is the percentage of observed deaths for heart disease in non-metropolitan areas, 46% versus metropolitan areas, 43% so like the nation as a whole, the percentage of deaths that are potentially excess is higher in non-metropolitan than metropolitan areas. You can also do the thing like I did before and scroll back over time to see how it was in the past. You can see these rates were a little bit lower so they're increased over time.

Then again, I'm going to hone in on the one less so that seemed to have the largest differences which is chronic lower respiratory disease. You see that back in 2005, Ohio already had more than half of the chronic lower respiratory disease deaths in non-metropolitan areas being potentially preventable. Then, as we scroll forward over time to the current year, 2015 ... I guess it's not doing this for me but normally, you would see that the rates had increased. There you go. It's just lagging on me, so up to 59% and 48% for metropolitan areas. That is a quick demo of the data visualization. Again, trying to let state users hone in on what's occurring in their state.

Do you want me to turn this back to you, Macarena, for limitations or ...

Macarena García:

Sure. I think it's important just to note some study limitations and these are well-documented in all of the reports that are published. I mentioned before that not all deaths are equivalently preventable across the leading causes or within each leading cause. I won't go into the examples that are in the report for those who are interested. Defining potentially preventable deaths across the five leading causes does not take into consideration the fact that these are complex and diverse causes of death. They're all quite different.

Number two, the majority of risk factors do not occur randomly in populations. I mentioned that in the beginning. They are closely related to social, demographic, environmental, economic, and geographic attributes. The neighborhoods in which persons live and work so you can have some really high mortality in certain pockets in urban areas, sometimes higher than in certain pockets in rural areas. That's important to note.

Finally, the changes in the number of potentially preventable deaths by cause are not necessarily independent. For example, where some cancer deaths may be prevented entirely, some might be shifted into another cause grouping such as heart disease which means a person could have had cancer, not died, but then developed heart disease and died from heart disease. Next slide.

These are the three reports that we extracted our data from today in this presentation. The first one on the list is the paper that is in the Rural Health Series. The second bullet there is the associated commentary for those results. The last bullet is the November 2016 paper on potentially excess deaths among

the five leading causes for the nation. Again, not just aggregated by rural and urban. Next slide.

I would like to acknowledge some very important people. These reports were put together and they represent, I would say, more than a year of work across lots of different centers in CDC. We have some experts that co-drafted and co-developed these studies and papers. Many of them could not be with us today but I did want to mention their names are subject matter experts that sit in other centers across CDC. We have two for cancer, which are Greta Massetti and Cheryl Thomas. We have our unintentional injury SME, who's Mark Faul. He is on the line with us today so he can help us field some questions. We have our stroke SME who's Dr. Yuling Hong. He could not be with us today. However, he's willing to respond to questions via email in the next 24 hours, if they're stroke-related questions. Then, we have Dr. Michael Iademarco, who is the center director here at CSELS but he's also a pulmonary specialist. He was our CLRD SME for this project.

Then, there's our others that we also consulted with and supported this project which are Chad Heilig, who is our senior statistician, Paul Siegel, who is our deputy associate director for science, Peter Briss, also supported, Debra Houry is the center director, and Mary George also helped us out for the Center for Chronic Disease Prevention. Those are a few people involved in this work. Of course our colleagues at MCHS, many of which are on the line but are not listed here. Next slide.

I want to thank you all for participating. We hope that this information has been helpful to you all. We're happy and standing by during Q&A to answer any questions.

Tom Morris:

Well, thank you very much. That was really wonderful data and information and more importantly, I think, context. We read the briefs but to see the data visualization tool is really impressive. I think that's going to be an important tool moving forward. I think the first step towards adjusting the challenges you guys outlined is quantifying them and understanding what some of the contributing factors are. Then, I think you can take that data and really act on it.

Then, I think that leads us to our next speaker. We're going to shift gears and get a community perspective on these issues from Dr. Tim McKnight of Dennison, Ohio. Dr. McKnight's a family doc and founder of Trinity Hospital which is the Twin City's Fit for Life program. This was a rural health outreach grant that was supported by our office. It was a successful model highlighted by RHHub's Community Health Gateway's Grants in Motion series.

I think Dr. McKnight and his team are a great example of how despite the challenges of what we see and the data that our CDC colleagues has presented, that even with that, you can make a real change at a community level. He and his team were really creative in their use of the outreach funding to create a unique program I think addresses a lot of the contributing factors that were

highlighted that typically lead to higher mortality rates in rural America. I think also, it's a good example of how you can really move the dial in terms of some challenging issues in a small, rural community and do it in a way that I think is replicable in other communities.

Dr. McKnight, we'll turn it over to you and look forward to hearing about your project for the rest of this session. Then, we'll go Q&A.

Video:

Timothy McKnight: We are located in East Central Ohio in the northern tip of the Appalachian Mountains. We are a good slice rural America here. My reason for developing this program was to educate my patients and the community on healthy life styles. Seventy percent of all strokes are preventable with a healthy lifestyle. Just image that. Seventy-one percent of colon cancer is preventable, eighty-two percent of heart disease is preventable, and ninety-one percent of diabetes is preventable. If we can address these obesity issues, many times we can really have an impact on those four chronic diseases.

Marvin: They sign up for this class because they need help. Some people like me are incredible desperate. My lifestyle was just pretty, pretty miserable. Prior to taking the Fit for Life program, I didn't eat vegetables. I either ate fast food or occasionally I would eat something that my wife cooked or I ate out. I was embarrassed to come home at tell my wife that I was on insulin. I felt like I had failed in every conceivable way. It was probably one of the most depressing days in my entire life.

Timothy McKnight: It is really life changing to a lot of people. It is just amazing to see the transformation.

Marvin: I could not have done it any other way than the way this course was set up.

Timothy McKnight: Marvin's life has just blossomed. We asked him to start walking fifteen minutes a day. And he began walking around the local track and could only make two laps before he had to stop. Now he is running 2-3 miles 5 days a week.

Marvin: By the time the class was over, I was on no medication and had totally reversed my diabetes. I am the type of husband and father that I have always wanted to be, but was unable to be because of my health.

Timothy McKnight: This is so satisfying as a physician to do something like this because you see people heal. The dream that I had initially was to help empower people to take their own health in the own hands and that continues to be my dream.

Marvin: I don't think I could ever go back. Well there is no way I will ever go back. I guarantee you, I will never go back. Three driving forces in my life. That was these two little boys right here and my wife.

Timothy McKnight: And now he is confident he will be around many years to watch his kids grow up. And then that there's ...that is priceless.

Marvin: I didn't eat any cake at my kids' birthday parties, but I am going to be around for a lot more birthdays and that's the thing that matters.

Tim McKnight:

Okay. Hi. This is Tim McKnight. I just want to thank the Rural Health Information Hub as well as the CDC for this invitation to speak today. It's a real privilege and excited to share with you some of the general aspects of our program and some of the results that we've had. I'm going to try to control the slides here and progress forward.

You can see that we're located in the northeast central area of Ohio, the county is highlighted in red. This is our hospital. It's a 25-bed critical-access hospital. I have been here since the year 2000. As well as having a family practice here at the hospital and directing this program, I serve four to five days a week as a hospitalist. I just want to reemphasize some of the things that the data that were just presented by Dr. Kristie and Dr. Moy are very accurate in terms of what I see as a physician.

Last Sunday, I had five admissions, two of which had to be transferred. One was a gentleman who was having an acute coronary syndrome and had to be transferred for a heart catheterization and another one was perfectly in line with what we just heard. It was a 62-year old morbidly-obesity woman who smoked two packs a day for 30 years, came in with an acute exasperation of her emphysema, on top of which, she had influenza A and a right upper lobe pneumonia. About midnight on Sunday night, she crashed from her respiratory standpoint, had to be emergently transferred and put on a ventilator. I was really pessimistic that she would survive but a few days later, I was visiting the other hospital. I stopped by and she was in the step-down unit off the ventilator and recovering and telling me that she was going to quit smoking now. These are very real people that we're seeing. We're seeing just devastating consequences on their health.

You can see from this slide that our program history actually began in 2003 when I took it upon myself to try to educate our community on healthy lifestyles. This was just after the office. I was not making anything on this but to provide the education and the incentives and the services that I wanted for the participants. It was pretty cost prohibitive. We went through several rounds of classes but it was not sustainable. Fortunately in 2006, HRSA came to the rescue. We had a grant writer that was able to help us write this grant. We were awarded this grant. You can see we've had four consecutive grants for which we're extremely grateful that HRSA has supported us in this. We have taken this very seriously.

In 2006, it was a community program. We had seven classes. The classes began with probably 15 people in a class. The word spread and the classes started to fill. We started to fill to capacity 30, 40 people in a class. By 2009, we were awarded a second grant which was a work site wellness grant which allowed us to take this program into various work sites as well as hold our community classes. Again, this was successful. We were getting positive feedback from the community.

In 2012, we received a grant that allowed us to develop our curriculum with the help of an adult learning specialist. We made this curriculum available to physicians in other communities. They took our program and fortunately were able to get the same results that we got. There's something special, something effective about our curriculum.

Of course, the last grant is the one that we're currently on now, which is the diabetes prevention grant. That's the one that I want to share with you the results but I just want you to see that this is something we've been at for a while. We've been very fortunate to have the support we've had from HRSA.

Our current team is made up of three of us here at Trinity Hospital Twin City in Dennison, Ohio. All three of us, I think, play an important role. What I've learned over the years is I've done this initially, this started out as my endeavor but it has grown into a team effort. The more I have involved other people in this project, the more successful it's become.

I'm really proud of the group that we have right now. In addition to our group, we have the county YMCA and we have two local health departments, our county health department. The county seat is in New Philadelphia, so the New Philadelphia city health department has also been involved and health department has really supported us in helping us identify participants who qualify for our grant.

We're really looking for those who are at high risk for diabetes or are borderline diabetic or who just become diabetic within the previous year because we're trying to do something about this particular condition to reverse it.

Then, we have another partner from a counseling service. This is a mental health counseling service. We have found just great support from them. I'll explain their role here in a minute as we talk about the classes.

I wanted to share with you just some demographics in our community and our state compared to the United States numbers in 2013. You can see that Ohio has similar rates, at least when these data were compared from 2015 in Ohio to the 2013 numbers from the United States, the National Vital Statistics Report. You can see, we're very similar. We're very representative of cross-section of America.

As you move over to our county, which is a rural county, you can see that we're starting to see some of the numbers that Dr. Garcia and Dr. Moy's researched had indicated that we have more problems than rural America. We have higher obesity rates. We have higher rates of high blood pressure and high cholesterol and diabetes rates.

These are the things that I see as a hospitalist, as a family physician. This is what drives us to work hard to make this program successful because we see the impact on lives and families which can sometimes be devastating.

This is a quick outline of our 12-week course. You can see that we have a student workbook that's a spiral bound 200-page workbook that we use as a reference for the information that we present as well as a workbook. It's very interactive for the participants.

We asked them to make small changes every week. This is just an example. We have three areas that we focus on every week. One is nutrition or dietary changes, one is fitness and activity changes. The other one is wellness changes. I think this particular piece is really important because we're talking about behavioral changes. When we ask people to make changes in their lifestyle, changes in their diet, changes in their activity level, it can really shake them up emotionally. It can shake up relationships.

As much as we talk about the environment of individuals, whether they're surrounded in an environment that's very rich in the standard American diet and the wrong foods or they're surrounded by people who smoke and so they themselves begin to smoke or if they're in an environment where their thoughts are impoverished or their emotions are stressed and not dealing with the things that they have in their life or if they have strained relationships, all these things impact their health. All these things, we talk about epigenetics in our class, the fact that the environment really dictates the expression of genes. Whether the environment is the wrong food, smoking, environmental toxins or whether it's impoverished relationships, thoughts or emotions, it all has an impact. When we talk about these behavior changes, we're really getting to the root cause of how to help them overcome some of the habits that caused them to have these chronic diseases. I want to emphasize how important this is in our program.

This is an example of what I'm talking about. As we present these various topics, this is their reading assignment for the sixth week which is to evaluate with the heart. They'll read a couple of pages. Then, they will reflect and answer some questions. One of the questions on this page is what have I learned about myself for the first six weeks of this program? Another question is what behavior change will help me more than any other to become a healthier person? We're getting them very involved and causing them to reflect on how they're going to change their behaviors and how their emotions, thoughts, and relationships will also impact these behavior changes to become healthier.

Our program is set up to be 90-minute classes for 12 consecutive weeks. They're primarily PowerPoint presentations that we try to make as interactive as we can. We have three monthly follow-up classes after the formal program is over. This is really a six-month program. The 40 to 50 participants that we have in the class is what we have now. We started out this particular grant with about 15 but through the help of our consortium members and the health department, we've really been able to identify a lot of folks who qualify. They've been referred into our program to really build our numbers up pretty nicely. We also have had a lot of success with just word of mouth, participants who finished the program tell their friends.

Just to give you a background in our previous classes over the last 10 years, we've had over 2,200 people graduate from the program. That means that they've completed at least 85% of the classes with 100% satisfaction rating, meaning every one of these participants have recommended this program to family or friends. This really does allow us to be known in the community by word of mouth.

These are the measurements that we do at the beginning and end of the program. You can see there's blood work that we do as well as some standard anthropometric measurements. At the end of the program, we offer a repeat C-reactive protein, which for us is a marker of inflammation. We want this inflammatory number to come down because they've chosen better foods. At times, there's a role for a high quality supplement. We want their A1C numbers to come down. The 3T3 is a number that, as a family physician, I find that many people are suboptimal if their thyroid levels and, of course, this affects metabolism.

They're also weighed in every week. This is an opportunity for each participant to interact with our grant coordinator who really becomes a personal coach, a cheerleader and someone that they can confide in. That social interaction we found has been very effective and very important. This was a class from one of our work site wellness classes. This was actually in a nursing home from several years ago. I just want to quickly highlight what we're talking about in these classes.

The first class is the wellness crisis. It's basically the information that was just presented. We're showing them their risk for heart disease and cancer and stroke and obesity. We're talking about the fact that if we don't do something about this, that they could easily become a victim. Then, we shift gears a little bit. We talk about the power of the mind and are they aware of their behaviors and the origin of their behaviors and are they self-deceived? Do they really see reality versus perception and are they ready to change? Week three, we talk about intentional healing which is appreciating the mind-body connection, that your thoughts and emotions and relationships does have effect on your biochemistry and your physiology. We help them start to break free from these self-defeating behaviors.

Week four is where we really get into the nuts and bolts of the program. We review their blood work. I go over each blood test in detail and many of them have never had this opportunity to have these numbers reviewed in the past with their physician at this depth.

Then, we talk about the standard American diet and how it's linked to so many of these chronic diseases. Then, we talk about some of the major nutritional changes in the United States over the last 100 years that lead to things like obesity, high LDL cholesterol levels, abnormal glucose readings. We tie that all together.

At the end of this particular class, we get their attention when we say, "You know, your LDL was 145. That's too high. These are the foods that caused it. Now, let me show you what this looks like inside when you don't control this." We actually get some specimens from one of the local pathology labs. We show them a healthy aorta that's nice and smooth on the inside. Then, we show them a plaque-laden aorta, which is the one you see on the right. This one was actually so severe that at the level, where the aorta splits to go to both legs, the femoral arteries, this individual had a Gore-Tex graft sewn in. Many times, we'll show them a specimen that look like this with the beginning of an aneurism. We can show them cholesterol deposits. We can show them an aneurism. We can show them the friability and the calcification and these atherosclerotic plaque. It becomes very real for them. We allow them to put on gloves so they can feel this and look at it very closely. This really makes an emotional impact on them.

We also show them heart disease. We show them a healthy heart. The heart in the middle is typically a four or five-way bypass. What's always interesting is heart disease is not reversed with an open-heart bypass. We're delaying the progression. Every one of these specimens that I've shown them that's had a four or five-way bypass, we will always find two or three blood vessels that are occluded with clot, meaning, they're not intended to hold forever. If you want to prevent this or even reverse this, there has to be significant change in your diet.

Okay. Week five, we basically say, "Now, we've told you what foods make you sick. Now, we're going to help you heal with the right foods." We talk about high quality foods. We talk about the role of supplements but I emphasize that supplements supplement a healthy plant-based diet that's really most of this food is found in the produce section of the grocery store.

This is the image that I want them to think about. This is what I want them to see on their plate. Week six is about taking the information they've learned and starting to build a diet and making it very practical. We have displays that help them see serving sizes and the amount of sugar or fats in various foods. We make this very hands on for them. This is a real enjoyable class.

Week seven is helping them to read food labels and understand food labels and understand hydrogenated fats and where to find them, understand high-

fructose corn syrup and its role on health and where to find it on a label and to make better choices at the supermarket.

Then we shift into fitness. We talk about the importance of flexibility, extremely important as the family physician, someone who's interested in sports medicine and sports injuries for all of us to stay flexible. We talk about cardiovascular fitness and the fact that it doesn't have to be strenuous. I think sometimes there's this misnomer that we have to be killing ourselves on a treadmill to get the benefits that we want for our health. We show them the information that tells them it's just not necessarily true.

Week 10 is a class on strength fitness, the importance of having strong, toned muscles to protect your joints and allow you to move in a pain-free motion. We have a local chiropractor spend the second half of this lecture talking about effective ways to manage back pain so that you don't have to go to opioid drugs or management of the pain to realize that there's much more that can be done with the right type of care.

Week 11 is our chance to talk about screening tests that are recommended. We talk about colonoscopies, mammograms, pap smears and other screening tests. We talk about the role of immunizations and then we have the second half of this class. We talk about the benefits of bioidentical hormones for those who would qualify. We talk about how to age gracefully and to stay active and vibrant into your 90s.

Week 12 is a conclusion. We offer awards at the end of the class. Then, we have an opportunity for class members to tell us about their experience. It's always a very emotional time for us because we start to see the fruits of all of our efforts as these people describe how their lives are changed, as you saw with Marvin who was a diabetic. He was on probably six medications and now was off all of them and feels great. This is what is so satisfying for all of us here.

These are just some of the numbers from our first year in this diabetes prevention program. You can see that over six months, the average participant lost 18 pounds. Sixty-two percent of them increased the number of days a week that they exercise, 74% increased their weekly fruit and vegetable consumption which is extremely important and 29% of them exceeded the recommended goal for exercise, more than 150 minutes a week.

Here is just a couple of the data points that we collected from the first year. This was about 31 participants, I think, who generated this data. You can see that the average weight at the beginning of the program for our class was 208 pounds. By the end of the 12 weeks, the formal part of this program, they dropped down to 193 on average. What I was really excited to see is that, at the end of the three-month follow up, they're continuing to be successful. This is an 18-pound weight loss.

We also track the average days participants exercise. You can see when they begin the class, the average participant was exercising once a week. By the end of the 12 weeks, it was three and a half times a week. By the end of the six months total period, it was just about three times a week.

Here's the data on the fruits and vegetable consumption. You can see as we tell them that most of the healing occurs with fruits and vegetables. Not all of it but most people don't eat enough fruits and vegetables. We really emphasize that. We're seeing them make these changes. Again, they continue to make these changes even after the formal program is over. This is really exciting.

We see improvements in the hemoglobin A1C. In this slide, you'll see that 18 participants started with hemoglobin A1C's about 5.7, which is a pre-diabetic range. It means that their insulin levels are too high. I ask them, "What does that mean when you're insulin's too high?" They say, "It turns on the fat-making machinery and I'm making fat." They really understand this. They're really careful now that we've educated them.

On this slide, you'll see that 11 of these 18 people moved below the 5.7 number at the end of the program. We had 92% of our participants reduce their hemoglobin A1C within a 6-month period of time which is, this is how we're making an impact on either reversing or preventing diabetes. When you have these kind of numbers, people are changing their chemistry because they're changing the foods their eating.

This one is a little bit interesting. We had a 63% reduction in total cholesterol from the beginning to the end of the program. We typically see that. I'm not sure how to explain the 37% of the people who have an increase in their cholesterol from the beginning or the end but again, the number that generated this was 27. In year two, we have a lot more people enrolled. We'll probably have close to 80 or 90 individuals that we can generate from this next time around.

This slide emphasizes the power of collaboration. Those who take advantage of the fitness training classes in year one was 34%. What we were doing is we had trainers from the YMCA who were making appearances and encouraging the participants to exercise. Sometimes they would walk before the class. They would show them stretching or other strength exercises prior to the class beginning. We had 34% participation.

We also have a coaching opportunity for participants in our class. This is through the Chrysalis Counseling Center, the mental health piece of this. We're very careful not to say we're encouraging you to have counseling because that has negative connotations and people shy away from that. We're calling this an opportunity for motivational changing or coaching. This is extremely important because again, as people start to change their health and the way they look and feel, it changes relationships, it changes their thoughts and emotions. A lot of times, there are issues that come up that have to be dealt with. It's extremely

important for them to have these contacts and individual to guide them through some of the challenges they face because anytime there's change, there's going to be new challenges.

What's very interesting, though, is that you can see in year two, we've had a much more robust engagement in both of these services. We expect to see most of the things that we're measuring improve significantly because they're taking advantage of these services much more now than they were in year one.

These are just some of the questions we ask those participants who are involved in the fitness class. We had eight of the nine respondents were satisfied with the services. You can see what these bar graphs are telling us. The one on the left, the question was, is the fitness component helping you meet your health goals. There is an 88.9% satisfaction. Are you satisfied with the services provided? Yes, resounding 88.9%. Do you plan on keeping the exercises, continuing to do these exercises that you've learned? Yes. Seventy-seven point eight percent said, "Yes."

When it came down to the last question, "I plan to continue to work with a fitness professionals and take the classes," this was a little bit more undecided but the point is, as we involved the YMCA and those health coaches at the YMCA, these people became friends with the health coaches, they became comfortable with them. They were comfortable in a gym that they would otherwise probably not comfortable walking in. They started to see the benefits and had intentions to continue to exercise.

This is the response to the motivational coaching or the counseling services. Are you satisfied with the services? A hundred percent of these participants responded said, "Yes." Are they helping you to meet your health goals? Yes, 87.5%.

Again, the point of these last two slides is to tell you the power of collaboration. I think that's one of the reasons why this particular grant for us has been more successful is because we've really reached out to these other community services and got them involved and partnered with them. It's been really exciting. I just went in with this slide because this is what I try to drill into participants' minds is that it really is, it's within each of our capacity to heal. If we're given a little encouragement, we're given a little direction, we're given a little bit of hope and we're given a little bit of responsibility and a little accountability, most of us can heal. We have a community that's very representative of rural America who has significantly improved their health because of the collaborative efforts of many people in the community who are committed to health and wellness.

Again, I just want to thank you all for this opportunity. I'll turn the time back over to the moderator, Kristine.

Kristine Sande: Great. Thank you so much, Dr. McKnight. That was great. At this time, we will open the webinar up for questions. Now, you should see a Q&A box on the lower right-hand corner of your screen. That's where you can enter your questions. If you're not seeing that box, you may need to click on the Q&A icon at the top right of the screen to open that box. That just toggles it on and off.

As you enter your questions, I would ask that you select the option to send the question to all panelists. That just will help to ensure that your question doesn't get missed.

As we wait to see if there are any questions, I just have one question for Dr. McKnight. I'm just wondering about how might other communities that would like to replicate your program learn more about it or are there resources available or any advice that you might have for those folks?

Tim McKnight: Yes. You're welcome to contact us and we'll try to guide you through the process. We're currently working on a paper. We're hoping to become an official best practice so this would be available to anyone who wants to use it at that point.

Kristine Sande: Great. Thank you. Looks like there are a couple of questions. The first one is, "I would be interested to hear about how community health workers and community-based care more generally can play a role in reducing the rural health disparities described." Did anyone want to take a stab at that question?

Tom Morris: Could you read it one more time, Kristine?

Kristine Sande: Sure. The question is, "I would be interested to hear about how community health workers and community-based care more generally can play a role in reducing the rural health disparities described."

Joely Lee: -Just to note, too, that question did come in during our CDC presentation. I'm not sure if there was something during the CDC presentation that maybe our folks in the CDC could answer.

Macarena García: Hi. This is Macarena speaking. We did not delve into the issues of community versus clinical versus public health in our study. I think certainly from a professional standpoint and health care standpoint, community health, could certainly play a role. I think as we talk about rural health, it's important to note and I don't have the statistic. I'm not looking at it but as we're preparing the papers, it was obviously that there is a health care workforce deficiency in rural areas.

It's something to keep in mind and note that even with clinical providers, our research would understand that there are not enough clinical providers to include nurses in rural areas to meet the needs of rural residents. Community health care workers could certainly fill that gap with some task-shifting policies

and our colleagues at ... And I don't know if they're on the line now. They could have joined as participants from the rural development centers, there's four regional rural development centers. They work with extension workers across the country in these regional centers. They have some models around working with extension workers and community health workers that they have been using for years and years. That would be something to research more to see what they're currently doing.

Kristine Sande: Great. Thank you so much. I have a couple questions here for Dr. McKnight. First, what did you find are the best ways to recruit potential participants? Also, are you currently or are you planning to monitor longer-term behavior change in health outcomes, as well as can you comment on continuing the program after the funding has ended? That's a lot.

Tim McKnight: That's three questions there, I think.

Kristine Sande: First, what are the best way to recruit potential participants?

Tim McKnight: We have used our partners at the health department. They've done the hemoglobin A1C screenings and blood sugar screenings. That's one way to do it. We'll offer public seminars in the public to get an overview about what we're going to talk about in our program. That seems to bring a lot of people in. At this point, it's also been word of mouth but I've also initially started talking my colleagues because physicians don't have time to be able to talk to their patients on these behavioral changes at the level that they need to. That was the problem I had initially in the office trying to do it. I think you start with medical providers referring them through.

Then, we also provide news releases in the paper that advertises our classes. We get a pretty good response from that as well, as well as local health fairs. That was the first question. What was the second question?

Kristine Sande: The second question is for the Fit for Life program, are you currently or are you planning to monitor longer-term behavior change and improved health outcomes?

Tim McKnight: We're doing that better on this particular grant because it's a six-month grant but of course, that's always the issue is to keep the people healthy long term. What we've offered, we continue to offer community classes on various topics. We see a lot of these participants come back.

What we find with the three-month follow-up classes is that people come back to it. They really are relying on the opportunity to weigh again and to hear information to see one another. That social support system is extremely important.

It's, from a practical standpoint, without funding, it's a challenge. I don't know I have an answer for long term but we do have the contact information to locate these people and invite them back. We've talked about some type of a Fit for Life reunion and get people together again that we haven't seen in four, five years. Probably the best answer I have on that.

Kristine Sande: Okay, great. Then, did you also want to comment on your ability to continue the program after the funding or the grant period has ended?

Tim McKnight: I don't think we'll have difficulty. Our local hospital allows us to do this as a community outreach kind of an opportunity, is voluntary sort of a service or a community hospital, community benefit. This really gives us an opportunity to continue the message. We've been doing that. In fact, we're funded for this diabetes prevention class which meets on Wednesday night. We're doing that but alongside that, every time we do the Fit for Life grant program, we're doing a community benefit program which is the original Fit for Life program. We have about 50 participants. We have a waiting list for the next time we're going to do the class. We offer it twice a year. It normally sells out pretty quickly. You'd think in a small community like this, it'd be saturated but probably have 10 to 15% of the people have taken the class once or twice already and they're coming back as a refresher or just to make sure they got the information.

Kristine Sande: Great. Thanks. This question looks like it's maybe for our CDC presenters. Related to unintentional injury and opioid overdose issue, could you please expand on the naloxone program and where it shows the most success in decreasing unintentional deaths?

Mark Faul: Yeah. Hi. This is Mark Faul. First of all, opioid overdose burden is higher in rural areas. One of the areas that we started to look at is the fact that EMS, because naloxone is a narcotic, certain kinds of categories of EMS providers personnel could not legally or regulatorily administer naloxone. It's real critical on the EMS scene to get naloxone in the person's system in order to get them breathing again. It's an opioid antagonist and it reverses drug overdose.

We've found it funny that family members can administer in most cases. Firefighters could administer but basic EMTs and intermediate EMTs in some states could not administer naloxone because technically it's a narcotic. We worked hard to try to get that reversed. I'm happy to say that the majority of the states, I don't have the precise number. It's a little bit fluid but it's well over 30 states allow for the use of naloxone for EMTs, basic EMTs, and intermediate EMTs to use naloxone. We're working on that to try to get naloxone actually in the hands of users when it's absolutely necessary.

The other thing that the federal government's doing is right now is SAMHSA has a million dollar naloxone distribution program. There's, outside of the health care community, a popular type of naloxone distribution program is to family members and friends because they know who are higher at risk. They know these people personally. They're in a great position to try to reverse the drug

overdose while it's happening. This would actually be classified as a layperson use. We're working closely with SAMHSAs CDC is, to try to make sure that naloxone is distributed more in the high-burden areas of the country.

There's a lot going on with naloxone right now. I can talk for a really long time. We're helping to try to look at dosage levels. The Food and Drug Administration just voted in October 5th that look and see whether the dosing requirements for naloxone is effective because of the more potent opioid, illegal opioid-type drugs, synthetic fentanyl coming to mind. It's much more potent. The question is whether the off the shelf naloxone dosages are appropriate to reverse those opioid overdoses. There's a lot going on in naloxone. I don't want to hog up too much time but I'm happy to talk more about it offline if somebody needs me to.

Kristine Sande: Great. Thank you so much. That's certainly a topic that there's a lot of interest in right now so appreciate that response.

Here's another question. "Having lived in many places and now residing in rural Appalachia, I see the rural health crisis as a crisis in infrastructure. It's difficult and sometimes dangerous or often dangerous to travel actively so walking or biking and funding for those sorts of programs or infrastructure is highly competitive. Much of the new construction includes no pedestrian access. Can CDC or health care organizations go beyond their silo to influence infrastructure planning and funding?" Any thoughts on that?

Macarena García: Hi. This is Macarena Garcia. I can respond to that. Obviously CDC is a disease prevention and control agency but we do work across US government agencies. We do advocate and collaborate with other agencies across the government on many issues, on global health issues, on HIV, on all sorts of issues, obviously.

We have not as an agency focused on rural health in the past. We don't have a designated group or center or initiative on rural health. All of our centers are usually disease-specific with some of our centers being cross-cutting centers. The centers that are disease-specific do address rural health issues and do address specifically the behaviors putting folks in rural areas at risk but we don't have a coordinated rural health body that works on that.

We are beginning to coordinate on rural health. We're beginning to reach out to other sectors of government to coordinate around the social determinant and infrastructure. Perhaps it's not social but it's certainly age determinant of health and rural areas. Yes, that is beginning. It's not necessarily outside our mandate to collaborate but certainly, we wouldn't receive funding from the federal government to carry out programs that were non-health-related.

Kristine Sande: Thank you very much. It looks like we're getting to the end of the webinar time but there are a couple of questions here, again, for Dr. McKnight, some related to cost of the program in terms of how do you fund the program beyond grant funding and do you charge for classes. Then, the other piece of the question

relates to how well or do you think this is scalable and replicable for other communities?

Tim McKnight: Yes, absolutely it's scalable and replicable. The cost of the program with the funding is \$79, which basically covers the blood work that we do at beginning and the end but that can be scaled back. You could just do maybe a lipid profile fairly cheaply pre and post. We also use a little bit of money as an incentive for participants. We offer prizes at the end.

But this is something where we're fortunate to have at our hospital take some of the cost on themselves but sponsors would be a real great way to find some extra funding. You can use fitness centers as a sponsor. You can use health food stores as a sponsor. You might be able to get some local hospitals or physician practices or chiropractors to sponsor it because all these people at some level, in some way can be part of the program.

Kristine Sande: Great. I think we will stop there. I'm sorry if we didn't get to your question. If you do have additional questions for our speaker, feel free to send those to us at the RHlhub. Our email address is info@ruralhealthinfo.org. We can get you to the speakers so that they can answer your questions.

At this time, Tom, did you have any final comments?

Tom Morris: No. Just thank you so much for hosting and thank you to our CDC colleagues, not just for their presentations today which were great but for their commitment to the MMWR series. I think it will lead to a lot of other collaborations that we're already in discussions with them. I can't say enough good things about Dr. McKnight and his community's work. I think they're an ideal example of making a difference at the community level and a way to leverage the funding we have to bring about those changes in rural communities.

Kristine Sande: Okay. Thanks so much. We've certainly enjoyed this webinar today. Thanks so much on behalf of RHlhub to our speakers, for the great information and insights that we've heard today. Thanks also to our participants.

There will be a survey emailed to all of our participants following the webinar. We hope that you'll take the time to fill that out, to provide us with feedback that we can use to improve our webinars in the future. The survey that pops up on your screen after the webinar is not that survey. That's the WebEx survey. Please just watch your email for that survey.

The slides used in today's webinar, again, are currently available at www.ruralhealthinfo.org/webinars. In addition, a recording and a transcript of the webinar will be made available on our website and sent to you by email in the near future so you can listen again or you can share the presentation with our colleagues. Thanks everybody for being with us today and have a great day.