

Hepatitis C Prevention Opportunities Among People Who Inject Drugs: Confronting The Growing Epidemic

April 28, 2015

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DR. RONALD O. VALDISERRI: Good afternoon and welcome. This is Dr. Ronald Valdiserri. I want to thank all of you for joining us for this very timely webinar, Hepatitis C Prevention Opportunities Among People Who Inject Drugs: Confronting the Growing Epidemic. We're all looking forward to hearing from our two presenters, Dr. Jon Zibbell from the Centers for Disease Control and Prevention, and Dr. Holly Hagan from the New York University Center for Drug use and HIV research.

Before we get started, I want to share two important logistical points. In case of technical difficulties please contact Miss Barbara Draley at 301-587-1600 and press zero. Also please take note of the fact that this webinar is being recorded and will be archived on aids.gov. I'm very encouraged to see that so many of you share our concern about the urgent public health problem of hepatitis C infection among people who inject drugs.

America's epidemics of prescription opioids drug abuse and overdose have been much in the news lately. The fact that so many of you registered for this webinar signals that the related issue of hepatitis C infection may finally be gaining the attention that it deserves. Too many policymakers are still unaware that the prescription opioid drug abuse epidemic is fueling new hepatitis c infections. The CDC recently reported an overall increase of 150% in the number of acute hepatitis c cases reported in the US between 2010 and 2013.

And you will shortly hear from Dr. Jon Zibbell that some states report even higher increases. And don't forget that chronic hepatitis c infection is a serious illness and a leading cause of liver cancer. Our immediate task is to increase awareness about hepatitis c, share information about prevention, and encourage people to be tested. People who are aware of their status can take action to improve their health and adopt measures to prevent transmission to others.

We are fortunate to have more tools than ever before to address hepatitis c in the United States. A national viral hepatitis action plan that provides a much needed focus and framework for stakeholders from all sectors to improve viral hepatitis prevention, care, and treatment services. Expanded coverage for clinical preventive services and care under the Affordable Care Act. A day, May 19, devoted especially to raising national awareness about viral hepatitis and

promoting testing for both hepatitis b and hepatitis c and new treatments that could actually cure hepatitis c.

Part of our challenge, though, is to increase awareness and education. And today our two presenters will highlight important facts and resources that can help us prevent the spread of hepatitis c among people who inject drugs. In a moment I will introduce our first speaker. Please note that after both presentations have concluded we will begin the question and answer period. We are accepting written questions during the presentations as well as accepting written questions during the Q&A period.

You can submit your questions using the chat box in the GoToWebinar menu. And now I'm happy to introduce our first speaker, Dr. Jon Zibbell. Dr. Zibbell is a health scientist at the Centers for Disease Control and Prevention in the division of viral hepatitis where he conducts research on the prevention of and care for hepatitis c among persons who inject drugs. Dr. Zibbell is a medical anthropologist with over 15 years of field experience in the areas of illicit drug use, addiction, accidental overdose, and injection related health issues.

Now we're happy to hear from Dr. Zibbell.

JON ZIBBELL, PHD: Thank you, Dr. Valdiserri. Before I begin I also want to thank the webinar organizers both for asking me to speak and for putting a webinar in such an important and timely topic. My job really this afternoon is to describe the problem of hepatitis c acquisition and transmission among the population of persons who inject drugs, really to set the stage for Dr. Hagan to discuss the interventions that are out there to prevent transmission among this population.

So let me just begin with some general epi. Right now we estimate that there's three million people with a current HCV infection in the United States. And I'm using current infection here instead of chronic infection. We ascertain this estimate from the NHANES survey. We estimate that there's around 2.7 million persons in the United States who are currently infected. That confidence interval between 2.2 and 3.2. That makes up about 1% of the general population.

Now this survey is for civilian non-institutionalized population, specifically not the homeless and not incarcerated populations. If we take that 2.7 and we link that to the non-NHANES prevalent estimate of 500,000 persons making up the incarcerated population and the homeless we come to about 3.2 million persons currently infected with hepatitis. Now I will give the caveat that this most likely an under representation. The population's really hard to reach. The virus, when you're infected, you're asymptomatic. And there's not compulsory testing everywhere, so not everybody's getting tested and not everybody's aware of their infection.

But a conservative estimate of 3 million persons with current infections in the United States is what we are working with. So within just some general information on hepatitis, we know that hepatitis c is the most common blood borne infection in the United States. We know that

between 45% and 85% of people are unaware of their infection. We also know that HCV related deaths doubled from '99 to 2007 to over 17,000 a year. This is expected to increase to 35,000 a year without any type of intervention.

Left untreated we know that hepatitis c is the leading cause of liver transplants and liver cancer in the United States. And that hepatocellular carcinoma is the fastest rising cause of cancer related deaths as well. Within the population of drug injectors we know that injection drug use is the principal risk factor for infection. And we know when gathering the acute case reports from states, that it's also the most reported risk factor in all of the acute case reporting.

Again, estimated prevalence from numerous surveys and again a conservative estimate due to reporting, we estimate that about 30% to 70% of persons who inject drugs are infected. Younger persons, meaning persons between 18-30 years of age, there's a lower prevalence among that age cohort, between 10%-36%. And infinite infections, new infections are between one and four out of 10 injectors per year.

And so I really want to go and discuss briefly about the character of hepatitis c. And I think this is really an important message to get across for those of us that have grown up and have done work with HIV prevention with drug injectors, we know that syringe really was the most important factor. And that the virus did not really retain its infective levels outside the body on inanimate objects. We know that HIV lived in the barrel of a syringe for 2 plus months due to its hermetically sealed airtight space.

But other than that it was really the syringe that present the most problem and the most important fomite of transmission for HIV. Most recently over the last couple years we've been able to identify and isolate a strain of hepatitis and put it into a solution and use that solution and mimic the drug injecting process to test infectivity at every step of the preparation process. And what the research has identified is actually rather striking.

They found that infective levels of hepatitis c can live on a filter for up to 24 hours. When that filter is saved in foil, meaning the moisture is retained, it's 48 hours. So that means sharing a cotton within 24 to 48 hours can serve as a fomite of transmission. On surfaces, injecting services, up to 20 days. Meaning blood spots on a surface, events amounts too small to see, can serve as a fomite of transmission. Water containers, and that's an open cup water container, and also the plastic sachet you see before you, again almost three weeks.

And in the barrel of the syringe, similar to HIV, it's a little more than two months. Also they found that when heating in infected solution in order to have that solution at undetectable infective levels, the solution need to be heated for more than a minute and a half and reach temperatures of 144 degrees. What this means is that someone would have to heat their solution for 90 seconds consistently to retain its heat just to have the virus at undetectable levels.

So what this means without signing hyperbolic, is that really when it comes to hepatitis c, the injection episode itself, the surfaces, the equipment, are really all fomites of transmission. And so let me just identify a few of these. So let's talk about the syringe. Two types of syringes are mostly used are a fixed needle syringe that you see in the left side of your screen, otherwise known as an insulin syringe. The needle's fixed here. On the right side of the screen is a detachable needle.

Most of the syringes available in the needle exchange programs are the fixed needle syringes. But research lately has shown that more and more people are using detachable syringes, syringes with bigger barrels to hold more liquid especially around pill injections that often requires more water bigger syringes are used. But these are the primary fomites of transmission when it comes to syringes and preparation equipment.

And so the significant ones that the research has shown that are significant fomites of transmission, meaning not really tourniquet and not alcohol swabs, are filters, cookers, water, and surfaces. And I really want to stress surfaces here because we often don't think of surfaces at the fomite of transmission. But what we're finding with hepatitis c is it can really remain infected for weeks at a time on a surface. And so what this means, if we're looking at all the equipment serving as a fomite of transmission, what we really have to start talking about is really a new piece of preparation equipment and a new syringe for every injection.

Not just a new syringe for every injection, but we have to start talking to our participants in our programs about using really a whole new kit for every hit. Now this is going to cost more and a lot of our programs are struggling financially already and this is going to increase that. But I think that the data is showing that this is really important for hepatitis c. And with HIV we've been focusing much on the syringe and not having the discussion around preparation equipment. And as you'll see a forthcoming slide, there are lots of people there are still sharing preparation equipment even though they report not sharing syringes.

To talk about these prevention efforts and needs, CDC just came out with a fact sheet, hepatitis c and injection drug use. And that's on our website. Lots of information on there, but specifically what's new about this is we talk about how the virus is actually transmitted and ways to prevent it and identifying ways by line item. And I think this is a good resource as well that can be handed out to your clients and your participants and your programs.

Well now I'd like to make a quick shift and I want to talk about the changes in incidents and prevalence since 2006-2007. Ron briefly touched upon this in his introduction. HCV incident infections, new infections, have been steadily increasing since 2006-2007. We know this from case reporting. Of the 34 states that reported to CDC in both 2006 and in 2012, 30 of those 34 reported a higher incidence in 2012 than in 2006. Of those 30 states reporting a higher incidence, 50% of them had increases over 200%, that means from '06 to '12, a 200% increase.

In 2013, and this is from our surveillance summary that just came out two weeks ago, 12 of the 41 reporting states-- and let me just list these quickly, California, Florida, Indiana, Kentucky,

Massachusetts, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, and Tennessee-- those 12 states of the 41 with the biggest increases together reported for roughly 70% of the acute hepatitis c cases in 2013.

So we absolutely are having an epidemic of hepatitis c infections, but it's concentrated among certain states, not ubiquitous throughout all the states in the country. Also, in terms of the geography of these infections, incidence of acute case reporting increased 13% per year from '06 to '12 in non-urban counties and 5% per year in urban counties. However, 60% of the cases were reported in urban counties, meaning there's more people in urban counties so there's more infections, but the largest increase is in non-urban areas. It's very important to note.

Follow up investigations have shown that people are reporting injection drug use, not a big surprise there. However, the age group of these new cases are disproportionately 18 to 29 years of age, what I've been referring to as young adults under 30. Predominantly non-Hispanic white, equally female and male. This is different than the '80s and '90s with HCV and also HIV where there were more men than women. We're seeing 52 48 women and men, non-urban and urban as I said.

And one important characteristic of this are in these followup case reports people reporting prescription opioid misuse before injection. And what Dr. Holly Hagan has been referring to as antecedent description opioid misuse. So we did some follow up case reporting of the case reports, and out of the 1,202 cases we investigated, and here's just a breakdown of what I was just discussing, 52% were female, 85% white, 77% reported injecting drugs, that's probably under reported because we people don't like admitting, especially to health departments that they inject drugs.

But these two stats are interesting, 57% reported sharing needles, but 82% reported sharing equipment. And this harkens back to what I was talking about, people are still sharing equipment. And I think this is one of the reasons why needle exchange has not shown the same reduction in incidence with hepatitis c as it has with HIV. There's numerous reasons for that, I think this is one of them. This is very interesting, too. When we asked about their drug history, people-- this is first time use-- people reported using cocaine before prescription opioids and prescription opioids before heroin.

So again this is that the antecedent prescription opioid use prior to heroin use. So this'll be a good opportunity for me to situate HCV infections within the larger prescription opioid epidemic that we're currently experiencing in the country. We know that from 1999 to 2010 it's continued to rise to '11 and '12. That opioids sales have increased from the late '90s to now. We know the accidental opioid related deaths have also been increasing. And opioid treatment admissions have also been increasing over the same time period, especially if you look from 2006 2012, that we're seeing increases in hepatitis c infections.

And this is really the background and the driver, I would argue, for the increase in incidents that we're witnessing in the country. So we took some sample data and we kind of delved deeper

into treatment admissions. And what we found over the course from 2006 to 2012, again that same time period of acute case reporting increases, that people in treatment that reported injecting opioids increased from 2006 to 2012. And when we look at people under 30, meaning all under 30 treatment admissions as the denominator, and those that reported injecting opioid specifically as the numerator, we found even a higher rate of increase among injectors.

Meaning there's more people going into treatment for opioid dependency and more people out of those that reporting injecting as their primary route of administration. Again, some background as the driver for the epidemic. And so really just pairing to the opioid epidemic with increases in heroin, we know that roughly about 1.9 million people reported using opioids in a non-medical way from 2002 to 2012. But what I also want to highlight is that we know from the National Survey of drug user health that there was a doubling of people reporting heroin use from 200,000 roughly in 2007 to 467,412.

Now of course not all those people are injecting, but if you look it's really the same time frame as the increase in acute cases. So let's try to put some numbers to this. And this is from Chris Jones' article, very important article using YRBS, the youth risk behavioral survey and the national study of drug user health. In his study he found that seven out of 10 people who used heroin in the past year also misused opioids in the past year. And we know this is true, from those of use that work with the population, we know it's not that people start with opioids and then go to heroin, most people are opioid users.

And so they might start with opioids then transition to heroin, but if prescription opioids are available, people are going to use those, too. The one below is also interesting with three out of four people who use both heroin and opioids in the last year misused opioids first. Right? 75% people using both drugs misused opiates, had antecedent prescription opioid use first. So what we're witnessing really is a burgeoning heroin epidemic and existing prescription opioid epidemic. And this driver is, I would suggest, contributing to the increase in hepatitis c.

And I'm just going to wrap up briefly with these two slides. One of the things I want to highlight is bloody fingers. And I really borrowed this slide from Steve Jones and Greg Scott. And what I want to highlight is often we don't think about blood on fingers. And with hepatitis c I think we have to start talking about this. So we know that people touch injection spots, touch their own injection spots, but then we use those same fingers to touch our cookers, and to touch cottons when we take them out of bag. Very rarely do we dump them out on the table one at a time. We're grabbing out of the bag, passing the bag around.

Also, young people with a lower injection competency sometimes have a harder time finding a vein, also people that have been injecting a long time have harder times finding a vein. And so we know that people often fish for veins. This puts more blood in the event, more blood on hands. So given the characteristics of the virus I talked about in the beginning, just blood in the environment in amounts too small to see is I think a discussion we need to have with our participants and with our clients moving forward. And again, the setting, the surfaces and the water and people injecting together.

Need to start having conversations with our clients around all these fomites and risk factors. And that's the conclusion of my presentation. Thank you.

DR. RONALD O. VALDISERRI: Thank you very much, Jon. And now I'm pleased to introduce our next speaker, Dr. Holly Hagan, who is a professor at the New York University College of Nursing and co-director of the NIH Center for Drug Use and HIV research at New York University. Dr. Hagan's research has principally focused on the infectious disease consequences of substance use. And her primary interest is in reducing the burden of hepatitis c virus infection among people who inject drugs. Dr. Hagan.

DR. HOLLY HAGAN: Yes, thank you. First I want to begin by thanking the organizers for inviting me to participate in this webinar. I'm pleased to report that we have learned a lot about how to prevent hepatitis c and people who inject drugs in the recent years. And so I'm really happy to be able to talk about this today. So one of the things I want to emphasize, and I think that Dr. Zibbell laid a very strong foundation for this, is that strategies that are shown to prevent HIV infection in people who inject drugs are much less effective against HCV.

So by background, until a few years ago it was very much assumed that strategies that are effective against HIV in people who inject drugs would also prevent hepatitis c virus. And now we know that it's just not true. There's reason for optimism, though. We've learned a lot about HCV prevention. But let's start with a useful way to explain how to think about HCV in terms of the characteristics of the agent of the host and the environment. And this is a framework that's used in a lot of infection control strategies.

So the agent is hepatitis c virus. We know that it's efficiently transmitted via drug injection practices. As Dr. Zibbell showed it survives for long periods on services outside of the body. And it's also able to evade the immune system. And as a result of that, the majority, up to 80%, of infections become chronic infections. So if we look in the lower left portion of the slide, the host, we're referring to here are people who inject drugs, over the past 15 to 20 years, there have been significant declines in syringe sharing, mostly in response to HIV/AIDS.

But as Dr. Zibbell showed the sharing of drug cookers, cottons and rinse water persist. And there is very consistent and compelling research to show that this equipment sharing is strongly associated with HCV transmission. The other characteristic of the host to keep in mind is that up to 60% of them may be HCV infectious, they're chronic carriers, they're capable of transmitting infection to others. In terms of the environment, Dr. Zibbell did a splendid job describing the environment.

I think everyone has a clear sense of the risks and coupled with this range of contaminated surfaces and equipment, we think of the environment as including a high proportion of infectious people who inject drugs. The likelihood of exposure to HCV in these settings if you're there and you're injecting, it's very high. The other part of the environment are the communities in which drug injectors live. And we know that in many regions of the United States there's poor access to harm reduction and health services for people who inject drugs.

So they lack access to materials, information and the support they need to reduce their risk of hepatitis c. So altogether these characteristics facilitate ongoing transmission in people who inject drugs. And this hopefully helps to explain why the incidents of HCV in drug injectors is about 10 to 40 times higher than the incidents of HIV infection. When we think about prevention we can't change the characteristics of the agent, but we can certainly modify characteristics of the host in terms of behavior and characteristics of the settings.

So I hope that gives a little foundation as to why HCV prevention has been so challenging. The research has shown very clearly that by themselves syringe access programs and opiate substitution treatment, they both have been shown to reduce HIV infections when people inject drugs. But the research has also shown us that these programs by themselves do not reduce HCV infection in people who inject drugs.

However, and this is the good news, when they're combined then syringe access-- and by syringe access I mean syringe and equipment access and access to safe injection education, all the services that you might find in a needle exchange program or through a pharmacy if you're doing pharmacy access to syringes. When you combine syringe access and opiate substitution treatment, is highly effective at preventing the spread HCV.

When I say combined, what I'm talking about is that an individual injector is in opiate substitution treatment and also using sterile injection equipment. And under those circumstances their risk of HIV is reduced by 75% to 80%. This is a tremendous breakthrough in HCV prevention research. So to answer this question, which many of you may be thinking right now, why would people who inject drugs who are in opiate substitution treatment, need sterile injection equipment? Aren't they supposed to be abstinent while they're in treatment?

Well we know that not everyone who enrolls and remains in OST becomes abstinent from drug use. Some injectors are not ready to become abstinent, but they would like to have-- they would like to enter treatment in order to reduce the amount of drugs that they use to gain better control over their drug consumption. In Europe and Australia they have low threshold opiate substitution treatment. And in these programs abstinence is not required, there's no penalties for ongoing drug use.

So here the goal is harm reduction, although some people who enroll in low threshold OST programs do become abstinent. There's research that shows low threshold OST reduces injection frequency, it reduces injection risks behavior and criminality, and it also reduces mortality rates in people who enroll in low threshold OST. And something I think is really important and interesting is if there is a higher proportion of those who enroll in low threshold OST are retained in these programs than in the higher threshold OST that we have in the United States.

And let me just mention that we don't really have low threshold OST in the US. So if we keep in mind that that most of the injectors in the US are active injectors with chronic HCV infection, so if 60% percent of our injectors have chronic HCV infection and most of them are active

injectors, then these are the ones, these are the individuals who may benefit from low threshold OST programs. Both in terms of reducing their risk of hepatitis c virus, and also in terms of all of the other outcomes that have been shown to be associated with enrollment in low threshold OST.

So engaging active injectors in their combined HCV prevention is probably essential to HCV control. And by HVC control what I mean is a situation where we reduce the rate of new infections to less than 5%, and thereby reduce the prevalence of chronic infection. So this brings us to HCV treatment as a prevention strategy. In the past few years there have been incredible breakthroughs with new treatments, now able to cure more than 85% of patients.

These treatments are well tolerated and they're safe. And the course of treatment is much shorter, in only 8 to 24 weeks. The treatments are expensive, but studies have also shown that they're cost effective because they prevent the consequences of HCV infection like cirrhosis and liver cancer. But a problem that we currently face in implementing HCV treatment as prevention is that currently only about 1% to 2% of injectors with chronic HCV are treated each year.

But if we were to expand access to HCV treatment in this population, it will help prevent new HCV infections. And it will do so by reducing the number of infectious carriers. So if you think back to the environment and the injection settings that you were shown by Dr. Zibbell, if you can imagine that a larger portion of the injectors who are present and injecting, if they were to be cured of HCV infection and no longer capable of transmitting, then it would allow syringe access and OST programs, they would also be more effective.

But we can't-- the important thing to keep in mind is that we really cannot rely on HCV treatment by itself to achieve control of HCV infection in the United States. And we must at the same time maintain and expand access to the combined prevention that I was talking about. So based on this logic that we've put forth, let me suggest a framework of a model HCV control strategy for people who inject drugs. And this has three broad objectives which are shown here. The first is to prevent new infections. Secondly to detect and care for existing infections. And thirdly to reduce chronic infections.

And the details of each of these objectives are listed beneath them. We've already talked about HCV prevention activities in terms of what works with combined prevention. And I want to just emphasize this combined prevention has to be accompanied by safe injection education and outreach, outreach to recruit more injectors to these prevention programs. In terms of screening and diagnosis, this objective would be met by expanding antibody screening with every positive antibody test being followed by an RNA tests to confirm whether or not they have chronic infection.

And then among those are RNA positive, it's important to determine their disease stage and to arrange for regular monitoring to just oversee disease progression. And then as part of care for people who are chronically infected, counseling to reduce alcohol use because that will also

slow disease progression. In terms of reducing chronic infection we need to expand treatments to cure infection, and that should include active injectors. We know that hepatitis c treatment is more successful, in other words it results in more cases of cure when it's accompanied by social support to assist people to complete the course of treatment.

And we need to keep in mind that those who are cured are susceptible, newly susceptible, to HCV prevention and they will need to have access to prevention services. And the extent to which we can co-locate prevention, screening, and care services that will increase utilization and the net impact on HCV control. The framework that I showed you summarizes our existing knowledge about HCV control. As I mentioned before, we've learned an awful lot and there's reason to be encouraged but there are some special challenges that need to be mentioned.

As Dr. Zibbell described, young injectors have the highest rate of new HCV infections. There's also a greater difficulty in accessing youths and attracting them to harm reduction programs. There's been some success in some areas where programs are specifically designed for young injectors. And preventing transition to injection among those who are young people and other people who are using prescription opioids is a high priority because doing that will result in fewer injectors at high risk of HCV.

For rural injectors there's large areas of the United States where there's no harm reduction services. There's been some success using peers, people who inject drugs who have been trained to distribute syringes and drug injection equipment. And also to teach them safe injection practices. Unfortunately we can't deliver opiate substitution treatment via peers, and so expansion of services into areas where they are lacking and maybe needed.

I need to mention that stigma is also a barrier to support for HCV control strategies. And HCV is stigmatized because of its association with drug use. And this can create a barrier to accessing services for people. If they're seeking HCV related services they may feel that this suggests to medical providers and others that they are drug users and that can be a barrier. So in the final slide here we briefly summarize what's been discussed about how to prevent a HCV in people who inject drugs.

I just want to reemphasize that we must increase access to combined prevention. So this is sterile syringe and equipment together with OST, potentially including active injectors. And the second thing is to increase access to HCV treatment to reduce the number of infectious carriers and the consequences to HCV in those who are chronically infected. And finally, although there are specific challenges that are going to require new strategies, we now have the basic knowledge that is needed to achieve HCV control.

In the next slide I just list a few resources that you can go to for more information about prevention. And in the last slide I include some references for further reading. Thank you so much.

DR. RONALD O. VALDISERRI: Thank you Holly and Jon both for those extremely informative presentations. I want to remind our audience that we are now entering into a question and answer period. Please remember to type your questions into the GoToWebinar chat box. And we already have a number of questions queued up. I do want to begin by answering the first one. Several of you've asked about how can we get copies of the PowerPoint presentation. And I want to assure you that we will post the PowerPoint presentations on aids.gov/hepatitis. But it probably will take a week or so for them to be up.

So they won't be up immediately following this presentation, but check in the next seven to 10 days and they should be available. Likewise, as I mentioned at the beginning of the webinar, the whole verbal presentation will be archived as well. So Jon, I'm going to ask you the first question. We've had two questions related to your comments about bloody fingers really engaged some folks in the audience. And these are both related, so I'm going to ask them together.

The first part of the question is, do you have to have cut on your hands to become infected with hep c if you're exposed to infected blood? And as a follow up to that, what would be some basic prevention messages that if you were out in the field talking to people who inject drugs, what kind of prevention messages would you give them about bloody fingers? So part one and then part two, Jon Zibbell.

JON ZIBBELL, PHD: Thanks, Ron. And thanks for the questions for those folks that proposed them. My concern is not necessarily that you touch blood and then you touch an open wound on your body and that's how the virus gets into you. My concern is that people are injecting together and someone who is HCV infected is injecting with you. You're at the same setting or you're even using the same equipment, or you're even injecting now and blood gets on your hands.

Even if you're injecting them and you don't see, literally see, blood on your hands. But blood gets on your hands and then you proceed to touch your cooker. And then the cooker gets contaminated. You put the water in your cooker. And you deliver the virus very efficiently peremptory, right? Meaning subcutaneously, intramuscular, or intravenously depending on how you inject. That really is my big concern here, is that blood is in the event and it's so infectious that it can live on equipment and then our folks are touching the equipment and then contaminating the materials that either they're using or other people are using.

That's the bigger concern rather than you touching it and getting it on your cut.

DR. RONALD O. VALDISERRI: Jon, this is Ron Valdiserri. But I'll add a medical point that yet although it might be difficult to quantify the risk, yes, it is possible if one is exposed to HIV infected blood and even if you don't have a big gash on your hand, sometimes what in HIV we used to talk a lot about micro-abrasions, that's also a potential source of infection as well. Though I understand what you're saying about contaminating equipment. So just very quickly,

because I have a question for Holly, so what basic prevention message would you give if you were talking to an active drug injector in the field?

JON ZIBBELL, PHD: Yeah, so this has always been my struggle, and I'm sure people can relate to this, is that the hygienic messages that we really need to give are not a reality for a lot of people. I mean my message would be keep Germany gel around and wash your hands and keep your hands clean. Don't inject other people. Assume that everything is contaminated. And try to be as sterile as you can. And really understand that hand washing I think can go a really long way, even if you just have water, if you don't have soap, or keeping Germany gel around.

And so the problem is getting those messages out, but within the confines that people are experiencing. And some people are going to inject other people. And some people don't have anything to wash their hands. So trying to give hygienic messaging, even hand washing. And try to think of ways that people can do it in the field under the constraints and barriers that they face while injecting.

DR. RONALD O. VALDISERRI: Thank you, Jon. Holly, we got a really interesting question from someone listening in wondering if there's any evidence that ongoing measures to reduce prescription opioid misuse have contributed to increases in the use of heroin. And before you share your perspective on that I'd like to share a perspective that's really very fresh. The government has been asked by Congress to come up with a report addressing various strategies to deal with heroin in the United States.

And my colleague Corinna Dan and I actually attended a meeting this morning at the Department of Justice and one of the presenters raised that observation, but their perspective was no, that it's not the case. That it's really more about economics. That the supply of heroin is cheaper and more accessible. But it is an interesting question. And I would like to hear your perspective on it, Holly.

DR. HOLLY HAGAN: Yeah, sure. Yes, I think that there's been a couple of reports of this unintended consequence of efforts to regulate or reduce access to the prescription opioids. Some of the drugs have-- the formulations have changed so that they're no longer able to be injected. If you try to put them into a liquid state, they turn into something that resembles-- if people have to have a strong drug dependency, then that could lead them to--

DR. RONALD O. VALDISERRI: You're breaking up, Holly. So let me just say to that questioner, this is Dr. Valdiserri, that these epidemics are certainly interrelated, as both of our presenters have shared. But I think it would be, in terms of talking to legislators or policymakers, it certainly would be a mistake to imply that we should not deal with prescription opioid abuse because it's going to cause more people to use heroin. I think that the reality is we need strategies--

DR. HOLLY HAGAN: Prescription opioids, they become just as you heard, Ron, it becomes no longer cost effective for them to use those drugs and they are pushed toward using heroin.

DR. RONALD O. VALDISERRI: Thank you, Holly. Jon, back to you for a question. One of our listeners wonders whether or not the increase in the acute hepatitis c cases could be due to the fact that the public health world is trying to get more people tested for hepatitis c. Let's hear your answer to that one.

JON ZIBBELL, PHD: Yeah, no. I think that's partly true in the sense that if you increase case reporting, you're going to find more cases. And I think that in a lot of areas in the country, we don't have the case reporting that we need. So if it was just on it's face like that, I would say yes, increased reporting gives increased cases. But what we're seeing in states that have not increased their case reporting, really due to policy and just a lack of funds to do so, we're still seeing these increases.

And so that makes us think that they're happening in different parts of the country and not just in places that are increasing reporting.

DR. RONALD O. VALDISERRI: Yeah, I would-- this is Dr. Valdiserri-- I would say very firmly that there's enough evidence to suggest that this is in fact a real increase because of the different sources of information that we have available to us. So I don't think we're seeing an artifact here, but let's move on from that. We had a question related to treatment for hepatitis c. And at least one or two of the listeners were aware of the expense of the treatment and wondered where people who inject drugs, where in fact, if they don't have insurance or if they're not on public insurance like Medicaid, how are they accessing treatment.

I would give a general answer to that that most of the drug companies do have patient assistance programs for individuals who are uninsured. So that's definitely one vehicle for accessing treatment. But I think as Holly mentioned in her presentation, we still know that across the board in the United States, whether we're talking about people who inject drugs or not, that many people who are chronically infected with hepatitis c have not yet been able to access treatment.

But there are patient assistance programs. But let me ask Holly, do you want to say anything from a clinical point of view about individuals accessing treatment for hepatitis c?

DR. HOLLY HAGAN: Yes I would. It's true that in general if you have Medicaid, you have access to a lot of treatments. But another one, I think many state Medicaid programs, they're concerned about the high cost of the new HCV treatments. And so they've placed some additional restrictions on access to those treatments, even among people who are insured under those programs. And these restrictions are in the form of delaying treatment until the patient has cirrhosis or pretty advanced liver fibrosis.

And it's true the by doing that you will save money and you will be able to ration treatment in that way, but a problem that's associated with that, though, is that if you delay treatment it may take-- someone who's infected, they may remain infected for 20 years before they-- or 30 years-- before they're disease advances to the point where they have this stage F3 fibrosis or

cirrhosis. And over those 20 or 30 years they remain infectious. They remain capable of transmitting the infection to other people.

And so if we're to achieve HCV control, then we need to think about treatment in terms of not only its effect on the individual patient, but its effect on the prevalence of infectious carriers in the United States.

DR. RONALD O. VALDISERRI: Thank you, Holly. Jon I have a question, an epidemiology question, for you. One of our listeners wanted to know about the transmission of hepatitis c sexually. Can you let the audience know what we know about hepatitis c and sexual transmission.

JON ZIBBELL, PHD: Yes, thanks for the question. When it comes to non-MSM sex, meaning sex not between men, the literature really points to nominal incidents, nominal burden of infection as a result of sexual transmission. The virus, contrary to HIV, is not as pronounced in vaginal fluids and semen as HIV, but really concentrated in the blood. So where the literature does point to is sex that is bloody has more possibility of transmission.

We also find that HIV positive MSM that are already immunocompromised show a higher rate of infection with hepatitis c, and also higher rates of re-infection as well. So in terms of non-MSM sex, the literature really shows not a big risk factor. I wouldn't say never. Never say never. But the literature shows not as great a risk factor. But when it comes to MSM or sex that is bloody or rough sex, we do see increase association with infection.

DR. RONALD O. VALDISERRI: And Jon can you-- we didn't really mention it, but I think it would be worth just providing some information about what we know about transmission of hepatitis c from mother to child. Can you just mention something about that briefly?

JON ZIBBELL, PHD: Sure. In terms of perinatal transmission, we, again, we do we do see that, but it's not as pronounced as we see with hepatitis b as well. [INTERPOSING VOICES] Ron, I guess I would pass that to you.

DR. RONALD O. VALDISERRI: That's fine. That's fine, thank you. I think the audience-- the health department people on the line know this already, but the audience should also be informed that we do not publicly have the same level of resource for hepatitis surveillance in the United States that we do for HIV surveillance. So in many of these questions, part of it is that we simply down that as good surveillance information as well. So that's something to keep in mind.

We had a question. This is a question, Holly, we'll send to you. Since you brought up on your next to last slide, you brought up the special challenges of young people who inject drugs and hepatitis c, one of the listeners wanted to know whether or not they've actually been any interventions that have been specifically tested for young people who have used drugs. What can you tell us about that?

DR. HOLLY HAGAN: I'm not aware of it. I know the literature very thoroughly and I'm not aware of clinical trials or observational studies of the effective interventions on the risk of HCV infection. This is an area of research that needs to be expanded.

DR. RONALD O. VALDISERRI: OK. And I will also-- thank you, Holly. I will also mention that we've heard from our colleagues who work in substance use prevention that, in general, we need to do more to develop drug use prevention and treatment programs that are appropriate for adolescents and young adults. That a lot of what's available is more geared toward an adult model. So I think we need to look at that as an ongoing need, both in terms of research as well as programs.

OK, John this question-- someone wants to know that-- I'll just read it. What is the one major thing we should be telling others about safety if we know someone is using drugs, using injection drugs. Again, some basic prevention messages there.

JON ZIBBELL, PHD: Yeah, I mean I would say-- I kind of do go by-- as I get older I go by this more and more really, the ABC model. You know, I've worked with injectors for a long time and there's very few injectors over the age of 40 that actually want to keep injecting. I think it's a really hard life, a really thing to maintain, especially if you're indigent which actually ends up happen over the long haul.

So I would actually try to work with people, not to get people off drugs, we know that doesn't work, but really talk about ways of getting sober, of trying to stop. It's the best way to prevent drug related harm, right? But I think we know that the evidence is clear, at least since 8,000 BC, that human beings use drugs and they always will use drugs. And if that's the case, how do we prevent harm from people using drugs? And I would say in terms of drug injecting, I think the two biggest things we have to worry about, especially when it comes to opiates, are overdose, accidental overdose, and blood borne infections.

And we could talk about a lot of other stuff in terms of prison, in terms of family disintegration. But as someone who does health science I would focus on those two. I would say we really have to watch out for overdose. People are putting stuff in heroin. They're putting fentanyl analogs in there. You don't know what you're getting these days. So overdose is a big concern. And also infectious disease. If you're young, we young people have a lower injection competency. They learn from older injectors.

DR. RONALD O. VALDISERRI: Hey, Jon, can you wrap it up? I want to ask--

JON ZIBBELL, PHD: Yeah, that's it. I would focus on those two, accidental overdose, infectious disease, and prevent people from dying and getting infectious disease while they're using.

DR. RONALD O. VALDISERRI: Thank you. I want to make-- ask Holly to make this point again. One of the listeners at least was maybe a bit confused about the issue of re-infection. Holly can

you briefly just state what folks need to know about treatment and re-infection risk, please, for hepatitis c?

DR. HOLLY HAGAN: Yes. I mean when someone is cured of their infection, if they complete a course of treatment and they're cured, of course they're not immune to infection. There's no immunity to hepatitis c that's natural immunity or through immunizations. So once they're treated and they're cured, they can be re-infected. And so this is when people need ongoing support and they need to be-- if they're still injecting drugs, they need to be brought back into the prevention services that we talked about.

DR. RONALD O. VALDISERRI: Thank you, Holly. I do want to note that many of the questions that we're seeing online are repeat questions that were taken up earlier on. So I do want to encourage, particularly repeated questions about how can we get access to the slides, so I do want to repeat for those individuals who might have missed it that in the next seven to 10 days we will post both presentations as well as the archived webinar on aids.gov/hepatitis. So if you go to aids.gov/hepatitis you'll be able to find that, as well as other information about viral hepatitis, both hepatitis c and hepatitis b.

Because of course we want to remind all of you that Friday begins hepatitis awareness month. May is hepatitis awareness month. And we have a lot of information on aids.gov. And you can also access information from a number of our federal colleagues that is useful. So unfortunately we have run out of time. Sorry that we weren't able to get to everyone's questions. But we greatly appreciate your interest. We certainly thank Jon Zibbell and Holly Hagan for their excellent presentations.

And special thanks to the individuals who helped to arrange and implement this webinar. So by all means visit aids.gov and learn more about this issue. We will be posting new information as it becomes available. Thank you and have a good afternoon.