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IMPROVING THE DIAGNOSIS AND TREATMENT OF OTHER STIS IN THE ERA OF U=U AND PREP

Speaker: Susan Blank, MD, MPH

2/8/2017

Improving the Diagnosis and Treatment of Other STIs in the Era of U=U and PrEP
[video transcript]

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Welcome to Physicians' Research Network. I'm Jim Braun, the course director of the monthly meetings of PRN in New York City. Since our beginning in 1990, PRN has been committed to enhancing the skills of our members in the diagnosis, management, and prevention of HIV disease as well as its co-infections and complications.

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We hope this recording of the presentation by Susan Blank, Improving the Diagnosis and Treatment of Other Sexually Transmitted Infections in the Era of Undetectable Equals Untransmittable and Pre-exposure Prophylaxis will be helpful to you in your daily practice and invite you to join us in New York City for our live meetings in the future.

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PRN is a not for profit organization dedicated to peer support and education for physicians, nurse practitioners, and physician assistants and membership is open to all interested clinicians nationwide at our website PRN.org. And now, allow me to introduce Sue Blank, Assistant Commissioner and Director of the Bureau of STD Control and Prevention at the New York City Department of Health and Mental Hygiene.

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Good evening, everyone. It is really a pleasure to be here, thank you, PRN, among such an august group. I am really going to be talking about some-- I'm going to be talking about bacterial sexually transmitted infections, primarily syphilis, gonorrhea, and chlamydia and I'm going to really talk about some of the trends, challenges, and opportunities in terms of our future.

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So, I'm going to talk some generalities here, talk about some disease-specific trends and challenges, opportunities, and just some big picture polemics if nothing else. Generally speaking, this crowd knows better than anyone.

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This is a graph of HIV diagnoses from 2009 to 2015. And the gestalt of the graph is angling down, right? No matter which group you're looking at, rates seem to be going down. And there are some really important epidemiologic considerations as we think about the control of HIV. And there have been three really important studies that have been done through the STD clinics and the epi staff at the Health Department.

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And what we found is, you know, we've talked for years about the combined, the synergies between HIV and some of the other bacterial STIs and what we really did was quantify things. And the key findings that I want to point out here is what we found is that one in 42 HIV-negative men who have sex with men attending the New York City sexual health clinics were diagnosed with HIV within one year. If you look at HIV-negative MSM with primary and secondary syphilis as a diagnosis, one in 20 was diagnosed with HIV within a year. And if we look at the same group, HIV-negative MSM, diagnosed with anorectal chlamydia or gonorrhea, one in 15 will be diagnosed with HIV within a year. So, now I'm really going to start focusing in more on the big three, that is syphilis, gonorrhea, and chlamydia. And some general notes is that there are really some very important direct consequences of some of these infections.

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So, what? These are infections that can cause blindness, dementia, ectopic pregnancy, pelvic inflammatory disease, intense scarring along the genitourinary tract, infertility, and arthritis. There are also some important congenital or vertical transmission consequences that include stillbirth, blindness, deafness, musculoskeletal abnormalities of the newborn, as well as neonatal death. And above all, in terms of this discussion, there's a facilitation of HIV transmission in the presence of the big three. So, these are fairly newly released data from the city and it shows you what's happened between 2015 and 2016.

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And what you can see--I hope I don't like pull this thing out-- but the big thing that you can see is there's consistency up. From 2015 to 2016, we have increases, substantial increases, of primary and secondary syphilis, 27 percent, latent syphilis, 24 percent, gonorrhea, 13, and chlamydia, 6 percent. And the federal government's going to be releasing the national data in the next week or so and I think the arrows are all going to be pointing up as well nationally. Let's look at some disease-specific things.

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Starting with primary and secondary syphilis.

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These photographs should certainly remind you of some of the clinical manifestations. And what I'm going to show you here is these are cases reported in New York City between 1940 and 2016.

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And what you see is, yeah there's this undulating pattern. But since the year 2000, we've had this steady, steady creep up. And if you put a microscope down and really put that last part of the graph on high power.

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What you see is since the year 2000, there has been this persistent splay between the male rates and male rates. And you can see that the male rates, shown in orange, have really continued to progress upwards to the tune of about 45 cases per 100,000 population most recently.

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And if we look at latent syphilis, which is also important to think about, we're seeing increases as well. One is a disease that's clinically diagnosed the other one is a disease that's diagnosed you know off of serology, in general. And again, since the year 2001, aha. About a year later, we start seeing the splay between male rates and female rates with male rates taking off.

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Now, we also see another disturbing trend which is that in gray, you have again the case rates per 100,000 and on the left and along the bottom you have time. And what you see is that citywide, shown by the gray dotted line, is increasing. But if you look at just male PNS, primary and secondary syphilis, which represents about 96 percent of all the cases of primary and secondary syphilis in New York City, we see that there is a splay also in terms of the race and ethnicity. And this disparity is really quite striking and you're going to see this repeat as I talk about some of the other bacterial infections. But what you see is that the rates among black non-Hispanics is twice that what it is among whites, that's the dark blue versus the light blue. And Hispanics also have rates that exceed the rates among whites. What's really interesting is the city health department tries to interview every primary and secondary and early latent syphilis case in the city to learn about risk factors, to learn about information that's not on the report form.

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And one of the really interesting things is that if you look at sex of sex partner and you break that out, those data out, by race/ethnicity, you see something really pretty interesting, which is that white men who have sex with white men who are interviewed who have primary and secondary syphilis, almost 95 percent of them report sex with men and men only. That's the dark blue bar on the left. The orange represents sex with both men and women and the light blue, sex with women only. The story is very different when you look at black and Hispanic men. Among black men, what you see is about 75 percent are reporting sex with men only. But you have a much larger group that is reporting sex with both males and females or sex with females only and it's somewhat mirrored among Hispanics. And the reason that's important is because this is where you're going to see bridging into the female population is with men who have sex with both men and women. I guess I did not say, what I did not tell you, which I should've told you earlier, is the fact that these male cases of primary and secondary syphilis are overwhelmingly men who have sex with men. And I guess because of some of the so whats that I was telling you about, we always have to keep an eye out for what's going on among women.

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The other thing that has been a source of discussion in the last year or two has been the extent of neurologic involvement and particularly ocular symptoms among syphilis cases. Nationally there have been reports of increases in neurologic symptoms. And what you can see from this chart here is that from 2012 to 2016, and you have numbers on the axis on the left, is that we have seen an increase in the number of neurologic cases. You can see going from 32 in 2012 to 59 in 2016. That is proportionately a big increase but in terms of the percentage of all syphilis cases, it's actually quite small. It's not even 0.3 percent. The other thing about neurologic cases is as we get more savvy and

providers become more aware of syphilis, there are more, we know that we are getting more reports that involve CSF. And so, it may be that providers are looking for CSF involvement more than they had been. And so, what makes this a double edged sword is it's hard to-- it's really not well understood what the significance is of CSF findings in a syphilis patient. I've heard it said that if you were to tap every syphilis patient at whatever stage they present, you're going to find a fair bit of CSF involvement. So, what I'm also showing here though is actual clinical ocular symptoms and those are shown by the orange line. Again, this is as a percent, you can read the percentage here and we've seen an increase in ocular syphilis. Now, these two groups are not, one is not a subset of the other but there is a fair bit of overlap in terms of ocular symptoms and neurologic involvement. So, we are seeing increases. Not like the increases that have been described on the West Coast in particular. Proportionately, they remain, it is a small proportion of all syphilis cases but nevertheless we are paying attention and keeping track. So, what are some of the challenges with syphilis? It is really, it's a fascinating disease but to this date, hundreds of years after we've learned about syphilis as as an important infection, the diagnosis is still indirect. We don't have a culture for syphilis.

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We don't have assays that specifically point out this specific treponeme. We have to rely on physical findings, which can be so subtle that they go unnoticed by either the patient or the provider. Those findings are fleeting because whether or not you treat, primary and secondary findings will abate over time. So, serologic screening is really an important part of the diagnosis of syphilis, really of any stage. But what's important is not just the serologic data but the context that includes history and physical as well as prior serologic history and prior treatment history in order to interpret the data. As I mentioned, the significance of CSF findings is unclear and it really can be challenging for providers when the commercial world is changing the serologic screening algorithms in commercial labs. And I'm going to go through that in a minute because that can cause a lot of confusion and misunderstanding around interpreting those titers and the other thing is that Bicillin treatment you know after all these years and all the organisms that develop resistance, syphilis remains really exquisitely sensitive to Biccilin, or Benzathine penicillin G, and it's highly effective. But in the States, it is not a big profit maker and so production is limited. There is one producer of Bicillin in the country and we are currently in shortage, for those of you who didn't know. Pfizer is the producer of Bicillin. And they have had problems in their manufacturing and so a lot of places have been put on allocation, meaning they can't get the supplies that they really want, and usually the supplies that get provided is 70 percent of the baseline. But it's hard to have a baseline when you have 27 percent increases in a year. So, it is really a frustrating circumstance and something that we are all aware of and have been making provisions to address and hopefully, according to Pfizer, the the latest is that this shortage should be over by the end of this calendar year. Mark your calendars.

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I'm just going to quickly go through the screening algorithms. The traditional screening algorithms, for those for those of you who are too young to remember this or old enough to have memorized this, would begin with a non-treponemal test, an RPR screening test. If that RPR test was negative, that was the end of the testing and the individual was considered negative for syphilis. If the RPR test was

positive, or reactive, a treponemal test would be done. Now. the RPR test is not specific for syphilis but is really a good index of disease activity, whether treated or not. The treponemal test is usually considered sort of the definitive indicator of exposure to syphilis. If the treponemal test is positive, then the patient is deemed to have syphilis of some sort. If the treponemal test is negative, then it was not considered to be syphilis. It turns out that this is actually a fairly expensive route to go and through the wonders of blood banking, the commercial world has taken to a reverse algorithm, which is actually much cheaper and can be done with less requirement of human interpretation.

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The reverse algorithm for syphilis begins with a treponemal screening test. That's the specific test to indicate syphilis exposure. If that test is positive, then an RPR is done. If the RPR is then positive, the individual is considered to have syphilis. If the RPR is negative, that's when the problems arise. What has been recommended to laboratories is that they do like a tiebreaker because you have these discrepant results, right? You have a treponemal test positive, RPR negative. What does that mean? They go ahead and hopefully, we've been working with the labs from the Health Department to make sure that labs are doing a follow up TPPA or an additional treponemal test to then make a decision as to whether this is syphilis or negative for syphilis. And there are variations on how the laboratories report that result, whether you get the full sequence of tests reported to you or just one final result. And I can tell you that one of the groups that gets screened the most frequently for syphilis are pregnant women. It has to be done by law in New York State at least once.

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In the past, with the classic algorithm, a treponemal test wouldn't even be done on a woman who was RPR negative. Suddenly, we're faced with treponemal tests that are positive and RPRs that are negative and the consequences of missing a syphilis case in the obstetric world, are very serious. And so, it has been making the obstetrical world crazy dealing with the reverse algorithm. I think at this point, do most people, do your institutions use primarily this algorithm? Do you know? No, you have classic algorithm. So, as you might imagine, the laboratories don't always notify you also when they change the algorithm. So, it's really important to know how your laboratories are testing.

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I'm going to talk more about some of the treatment issues. CDC recommends directly observed therapy. Bicillin is the drug of choice. And again, if a woman is pregnant, Bicillin is the only choice. If a pregnant woman is pen allergic, she needs to be desensitized and given penicillin. And I had mentioned that the Bicillin shortage has been in effect since 2016 and has really compromised access across the city. If any of you are having difficulty accessing penicillin, our advice to date has been to prioritize the use of Benzathine penicillin LA for pregnant women who've been exposed to syphilis and then to use it for primary, secondary, and early latent. But it leaves the late latent cases who require the most treatment, getting an alternative, which is doxycycline, which is incredibly difficult to get full compliance with over the many weeks that it's prescribed. If you do have either a pregnant patient that's been exposed to syphilis or a lesion syphilis case or an early syphilis case and you don't have access to Bicillin, please call the health department. We will get those patients treated through our sexual health clinics. We have

been really aggressively stewarding Bicillin so that any facility that is located in the city that is without can avail themselves to the fact that we have been storing it.

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I'm going to move to gonorrhea. This shows you, this is a chart of gonorrhea cases in cases per hundred thousand population. From 2000 to 2016 and again starting in about 2003, 2004, you notice that male and female rates start to splay. The M to F ratio, or male to female ratio, is really increased tremendously. We are seeing that overall, since 2010, female rates have been declining but male rates continue to go up.

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And if we look at case rates by sex and by age, you can see these are what we call the population pyramids. For those of you who aren't used to looking at graphs that look like this, along the left hand side you have the age group and along the the lower axis you have, the zero is actually in the middle of the axis, and then the case rate per population goes to the left for the orange bars and to the right for the blue bars. And what you see is that the male rates tend to be highest among those males who are 20 to 35. And you can see rates that look like they are reaching 1200 per 100,000. And among females, you see rates that predominate in the 15 to 19 year olds. And we're talking about maybe five or six hundred per 100,000.

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And if we look at gonorrhea case rates overall, male and female by race/ethnicity, again we see the incredible health disparities. You have case rates along the y axis and along the x axis you have time. And what you see is that while the citywide rates spent many years around 150 per hundred thousand, you can see that overall the rates are going up. I showed you that that is being driven by increases in cases among men. And if you look at the light blue, which shows you white non-Hispanics, we're talking about 120 cases per 100,000. And when we talk about black non-Hispanics, we're talking about 275 per 100,000. These are really high case rates and Hispanics are somewhere in between, or Latinos I should say.

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And I had mentioned that we're seeing the increases among men primarily that are driving the increases. And this is showing the reports of male anorectal chlamydia and gonorrhea cases that were reported to the health department from 2011 to 2016. And you can see we had about eight thousand cases. When you think about, granted this is gonorrhea plus chlamydia, but when you think about anorectal bacterial infections, we have almost 8,000. We had about 19,000 total gonorrhea cases. So, anorectal infections really do represent a good chunk of the infections that I'm showing you. And this was a 50 percent increase from 2015 to 2016. But the most important thing is that gonorrhea and chlamydia are way under screened among men. The anorectal site is one of the extragenital sites. Most testing is done using NAAT, or nucleic acid amplification tests. And those tests are not FDA-approved for extragenital sites, so each laboratory has to do its own validation that has to be approved by the state. But in addition to that, any commercial lab that any of you may use, you need to know whether or not

that test is available through your lab and that might not always be obvious. There are providers who have access to testing but don't know it. In addition, there are plenty of providers who just aren't testing.

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And what I'm showing you here is, if you look among HIV-negative women, and you look at gonorrhea cases throughout the city by the reporting facility, all the cases that I've shown you up until now are based on residents. This is now based on where they were diagnosed. We know that women have a longstanding history of chlamydia screening. It's one of the U.S. Preventive Health Services Task Force A recommendations for chlamydia for many years and now it's chlamydia and gonorrhea. They're sold as a dual test. So, there is plenty of screening. The recommendation for women is screening for all sexually active women under the age of 26. And if you look at the providers who are diagnosing chlamydia among women, you can see there are pockets where there are more facilities than others, but you see stuff all over. And if we look at where the facilities are that are reporting an anorectal chlamydia and gonorrhea cases, at least among HIV-negative men it is really amazing. You really see very little. I know that these indicator marks, these pink things, aren't ideal. But is it obvious in the back of the room? There's like a lot more pink on the left hand side than on the right hand side. And one of the things that I think is, when we first ran these maps, one of the things I found most interesting is if you look here, this little island here. Does anybody know what this is? Rikers. This is Rikers. Rikers routinely tests women when they come in for chlamydia/gonorrhea. If we look at Rikers diagnosing anorectal infections among men, it's completely empty. You cannot convince me that there is no anorectal infection in Rikers. I'm going on record saying that. But it's really pretty striking. It is really quite striking and I think that this is a gap that we need to address, all of us as as providers and certainly as health departments that do various assurance activities. We need to increase the level of screening. I already showed you that each time one of these cases is found in an HIV-negative male, that is an important HIV prevention opportunity. And with that HIV prevention, be it PEP or PrEP, there's an engagement in care over time and that's when that kind of screening can happen.

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Let's go through some of the gonorrhea treatments. Uncomplicated gonococcal infections of the cervix, urethra, and rectum, as well as the oropharynx, the recommended regimen is, actually injectable cephalosporin, is the language that CDC uses. Specifically, CDC recommends ceftriaxone, 250 milligrams IM in a single dose plus azithromycin, one gram in a single dose. Now, for those of you who've been practicing long enough, it used to be that CDC recommended both of these drugs, one for gonorrhea and one for chlamydia co-treatment. That is not what CDC is currently recommending. These two medications are both part of gonorrhea treatment. It is thought that having these two drugs together helps mitigate the development of resistance in gonorrhea. So, even if you have a patient that clinically looks like chlamydia and you treat for chlamydia and at the same time you test for chlamydia/gonorrhea, and later on you find out has gonorrhea, you need to use both drugs. It is both drugs. It is a two-drug regimen that includes an injectable cephalosporin.

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In terms of alternative treatments, if Ceftriaxone is not available, you can use Cefixime, 400 milligrams orally in a single dose plus azithromycin, one gram orally in a single dose or you could use single dose of gemifloxacin, 320 plus oral azythromycin, two grams, or you can use intramuscular gentamicin, 240 milligrams, plus oral azithromycin, 2 grams. The one note that I want to point out is for oral pharyngeal infections that are treated with one of these alternative therapies, CDC does strongly recommend that you do a test of cure at 14 days.

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What about persistent symptoms? Re-evaluate any symptoms that persist after treatment and to evaluate using culture plus or minus NAAT because culture is the only way that we can assess antibiotic susceptibility. Again, a lot of things in sort of old fashioned bacterial STI world, we still have to rely on culture. We are not yet at a point where the technology allows us to predict or decipher resistance patterns using DNA. It has to be done using culture. But the NAAT is much, much, much more sensitive. So, you can have a positive NAAT with a negative culture.

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Anyway, consider a treatment failure. If the symptoms do not resolve in three to five days after appropriate treatment-- this is all according to CDC-- and there's no reported sexual contact during the post treatment follow up period. That's what they say. I know that the sexual contact clause makes it really difficult to ascertain what's going on sometimes. Consider treatment failure if your test of cure is positive. That means a positive culture 72 hours after treatment or at least seven days after treatment with a positive NAAT test for gonorrhea. And that's with after recommended treatment and no reported sexual contact during the post-treatment follow up period. And then the third consideration is that the test of cure is positive by culture with decreased susceptibility to cephalosporins plus or minus reported sexual contact during the post-treatment period. So, some of the challenges. Gonorrhea is incredibly facile at developing antibiotic resistance. We have been through a series of medications over the years with gonorrhea.

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Right now we're getting more and more limited. And increasingly, there is limited technology for monitoring antibiotic susceptibility. Let me see if I can show you this.

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This is a graph that shows you what the means of diagnosis was for the gonorrhea cases that were reported to the city health department by test type, blue showing you numbers of cultures and orange showing you numbers of NAATs. And by about 2004, cultures were pretty much out. These few cultures that are done, that are shown, sorry, here at 2016, I mean it's such a small percentage and most of those are being done at the sexual health clinics. The other thing that's really complicated about gonorrhea is that the criteria for resistance to cefixime, ceftriaxone, and azithromycin have not been defined by the CLSI, which is the international body that tells you an MIC of X Y Z equals resistance for a particular organism in a particular medication or antibiotic. It's still being figured out. And so, we're working off of best guesses and we maintain a pretty low threshold for wanting to investigate further

when we find that a threshold is exceeded. But I point this out because that means we can only talk about reduced susceptibility. We are not in a-- we really don't have the information at which a particular MIC tells us that there is a frank resistance. For you ID people in the room, I hope I explained that, I didn't say anything ID wrong. And the other thing is that again, as you saw from the maps, there's really quite a bit of under screening among men.

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This is just showing you the number of isolates that we've seen over time. And these are the thresholds that we are currently using, actually that we were using, along with CDC, for ceftriaxone, cefixime, and azithromycin. And you can see there are clusters of bars. Dark blue showing you MICs for ceftriaxone that exceed the, equal or exceed the 0.125 micrograms per mil. The orange for cefixime above the threshold and the light blue for azithromycin above the stated threshold. And what you see is, we did about five years ago, start seeing increases in ceftriaxone that exceeded that threshold and it sort of waned and disappeared so far for the year. Similarly, we had a brief increase and a decrease in the cefixime MICs and again, that's among specimens that are culture positive, that have E tests for antibiotic susceptibilities. But the thing that we're seeing is we've seen increases in azithromycin, in the number of specimens with azithromycin MICs above or equal to 2 micrograms per mil. The thing that's also concerning to us is the fact that the actual MIC that is read off, I mean with cefixime and ceftriaxone, when we see levels that exceed the threshold, it's really by like point 0 something. For azithromycin, we have seen azithromycin MICs at or above 256. We have not seen companion clinical treatment failures but we are noticing these and we are working with CDC. We are trying to figure out what those, where the MIC that indicates resistance is. But it's a very difficult public message to get out. I have 15 minutes so I'm going to talk really fast. Chlamydia really quickly.

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It's different than gonorrhea and syphilis. You will see because we're so good at screening women for chlamydia, female case rates have always exceeded male case rates but what you're seeing is that they are now beginning to approach each other.

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When we look by race/ethnicity, the story is the same as in the prior two organisms.

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And if we look at the population pyramid, you can see that young women have the highest rates of chlamydia as do younger men.

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I'm going to talk briefly about Lymphogranuloma venereum. It consists of the L2, L3, and L1 serovars of chlamydia. It is a very destructive rectal and it presents, generally it presents as a rectal disease. It can be mistaken for inflammatory bowel disease and we have seen such mistakes made in the city. In the sexual health clinics, we don't have, nobody really has access to an adequate LGV test. New York State's Wadsworth labs has allowed us to send batches of positive anorectal GC specimen-- positive chlamydia

specimens from the anorectum. And they will do batch testing for LGV. And what we see is between 2008 and 2011, we went from 8 percent positivity to the most recent batch showing 17 percent positivity. We've also looked at the cases that we have been able to document and the best predictors for a positive CT test from the anorectum to be LGV is anorectal discharge and blood per rectum and we do presumptively treat. We still have to, we still resort primarily to the three-week regimen using doxycycline.

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We have some challenges with chlamydia. There's under screening, there's no adequate commercial test for the serovars that are available, and why is it that all of the reports that we see are invariably anorectal lesions? Where are the penile lesions? We have not really adequately sussed that one out.

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Some of the general issues in preventing bacterial STIs is first of all, they're asymptomatic diseases, largely.

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Primary prevention, to remind you, that's preventing disease or injury before it ever occurs. Secondary prevention is reducing the impact of existing disease or injury. And when we think about challenges to primary prevention for syphilis, gonorrhea, and chlamydia, condoms are the only preventive that's available.

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There are no vaccines, there are no microbicides at this point and yet, condom use is decreasing.

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This shows you what we've learned from city-wide surveys of adults 18 and above. In the past 12 months when you have had anal sex, have you or your partner used a condom every time, some of the time or never? This is over time and then percent along the y axis and what you see is that the blue line is way on top and going up. That's the never line.

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If we look at the YRBS, the youth risk behavior survey that we do in the New York City high schools. It's a pencil paper survey, grades 9 to 12. We ask did you use a condom-- did students use a condom at least sexual intercourse? And the answer "no" is shown in red and that's going up. So, condom use is decreasing.

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The thing about condoms is that they are a source of protection. They're generally not part of the equation for pleasure and they've really taken some hits as far as diminishing relevance. With the advent of contraception, one less thing to worry about. Why do I need a condom? Only for STI. When HIV came, you needed condoms. But now, we have PrEP, we have U=U, meaning that adequate

treatment and sustained viral load suppression render somebody undetectable by viral load and uninfectious to other people. So, that's another reason why condoms may not be at the top of the list.

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Also, the other thing that makes condoms really a difficult sell is that the population that is most vulnerable to the catastrophic outcomes of these infections are women of childbearing age and women who are pregnant. The populations most highly affected by these infections right now are men who have sex with men, most of whom don't report sex with women. So, it is a tough sell, particularly when infections again are asymptomatic and they remain curable often with a single dose of directly observed therapy.

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And what are some of the challenges to secondary prevention? Well, again, asymptomatic infections means that somebody needs to access care. They have to have access to care. The provider needs to screen and treat. The classic control methods are increasingly difficult to do successfully. Historically, and even to this day, we identify a case, say, of syphilis, make sure the case is treated, reported to the Health Department, the Health Department will go try to identify partners from the index patient, notify those contacts of their need for treatment, pass them at that time. Contacts that are positive or that show infection are then become an index case and on and on. As I sort of said rather cheekily, lather, rinse, and repeat. This is labor and time intensive. It is especially difficult when the incubation period is short and the case number is large such as is the case with chlamydia and gonorrhea. The other thing is that partners are often not disclosed. In fact, increasingly not disclosed because many of them are frankly unknown. And the digital world makes that increasingly possible. So, what's next? I think what I have to-- after some soul searching, I think we just need to brace ourselves to rely on first of all, I think some of the real investment that's been made by the state and the local government in terms of ending the HIV epidemic. There's been a real recognition of that connection between bacterial STIs and HIV. To make sure that every case of an STI becomes a candidate for an HIV-related service and that people who get HIV-related services are routinely screened for bacterial STIs. The other thing is, I can't help but mention, although the federal government pays for a lot of the monitoring, that you see the data, that you folks take the effort to report and then it gets put into these nice graphs.

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It is an administration that is very hostile to STD prevention and STD control. So, I really have to appeal to providers: screen and treat. Rinse and repeat. One of the things that I wanted to make sure I brought to your attention is that the city Health Department website, we do have a search for STI provider. We do have some valuable resources there, one of which is the syphilis and reactor registry, which I ran out of time to talk about, but it can give you-- we do collect all of the serologic results on New Yorkers who are tested for syphilis as well as their treatments and we can help you contextualize what you're seeing on a serology that you've drawn and to help you interpret if you have any questions about the laboratory algorithms that are used. You just have to call, identify yourself. We do have the number on the website and we will do a lookup for you and share that data with you. Those data. I think we have to rely on active PrEP use, viral load suppression, as a means to assure that the appropriate screening and

treatment is happening for bacterial STIs. We can expect, if we are doing what we ought to be doing, we should be finding more cases of bacterial STIs over time before they start plateauing out, if we get to that point. We need to continue to monitor the public health impact in terms of changes and manifestations in response to treatment. Thus there's been a lot of investment in following gonorrhea, both microbiologically as well as clinical response to treatment, for example. An increased surveillance and assurance for pregnant women and newborns, which is something that the Health Department has really geared up. When any pregnant woman has a positive serology, there's a really quite aggressive follow up to make sure that she gets the treatment that she needs, especially in these times of Bicillin shortage.

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What are some of the opportunities?

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The city health department gives out 43 million condoms a year and lube and we have an app that makes it possible to find the nearest free condom to you as you stand or sit or lie. There is an increasing availability of extragenital tests for gonorrhea and chlamydia. We've been working with commercial laboratories to assure that they do their validations. I think most of the major labs that serve New York City do have extragenital testing available. People, luckily, the ACA has permitted an increased access to primary care and there is increasing uptake of PEP and PrEP.

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I have, briefly, just to show you. These are surveys of PrEP awareness and PrEP use in the last six months. And basically, you see that the bars are getting bigger. And the other thing is we look at prescriptions per hundred thousand patients seen in ambulatory care practices for PrEP and you can see that those lines are showing more numbers. But as I mentioned earlier, increasing uptake of PEP and PrEP, part of that package is routine STI screening. And so, we expect to be detecting more STIs.

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And to leverage every diagnosis of chlamydia, gonorrhea, or syphilis as a means for HIV prevention, if the patient is not on PrEP, maybe that's a discussion that needs to be the discussion that happens at the time of treatment. Also, we have streamlined access for the syphilis registry for providers, as I had mentioned. Go to the just google search city health department and enter STI provider when when you get to the page and that'll lead you to getting registry information or to look up whether your lab does provide extragenital testing should you have any question. We've been keeping those on the website. And there have been expanded low barrier sexual health care efforts here in the city, mostly tied to ending the epidemic of HIV. The city health department is able to screen asymptomatic patients on a walk-in basis in a sex positive environment. And that screening capability, there are many who have been impressed by some of the rapid screening that's being done in England and adopting something similar. Go visit the D Street Express next time you're just tooling around on the web. We have worked hard to create a more sex positive environment, not just in our clinics but in the city in general. And in the rebranding of our clinics from the STD clinics to the sexual health clinics, we've really moved forward

with our advertising as well. I think this has been a very forward leaning administration in terms of projecting a very sex positive image.

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That's my boss on the left. Doesn't get better than that, does it really? But we've also recently just initiated our emoji campaign, "Whether it's a fling or a serious thing... get tested!" to really make New Yorkers aware of the fact that on the left, that they've got a provider who is addressing their sexual health, in the middle that they get themselves tested, and on the right hand side daily PrEP plus condoms, we stay sure.

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Right now we are treating LGV presumptively based on proctitis or blood per rectum. We use 21 days of doxycycline twice a day plus perhaps ceftriaxone IM times one if you're thinking about gonorrhea as a presumptive treatment. We do not routinely use azithromycin one gram weekly other than in certain cases. I think that's the lean forward on HIV-positive or syphilis history, people who have a positive rectal chlamydia test who have had histories of syphilis or are HIV-positive, I think we will-- if they don't have symptoms, those we will use azithromycin just to be extra, probably mostly to treat ourselves. But the the recommendation is still 21 days of doxy twice a day. I see some of my colleagues here. We're still using that. Doxy is expensive. We had spoken about that. There just aren't enough data around the use of substituting azithromycin for doxy but hopefully that's something that will get resolved in hopefully the near future.

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Conclusions, take homes. One: we've got accelerating, we have increases and these increases are accelerating in the last year in bacterial STIs, especially among gay, bisexual, and other men who have sex with men. These increases are driven by many factors. One is the loss of urgency of primary prevention, that is condoms. Personal choices. Provider practices, both in terms of taking sexual histories and by appropriate, and I underlined appropriate, meaning including extragenital when appropriate, screening. Laboratory testing capacity, testing algorithms, and limited availability of certain treatments or treatment options. The take home message here is with your patients, talk, test, treat. Lather, rinse, repeat. I always remind providers when you find bacterial STIs, please report them. That allows us to collate the data that you see that we are able to share with you. And to let patients know the health department does for certain certain diagnoses, the Health Department will follow up. And again, that's how we find out some of the behavioral information that we are able to then aggregate and provide meaningful information. And to use the health department resources that we're working hard to make more available. So, anyway, thank you. Hopefully I'm on time and I'll take some questions.

[Video End]