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**Health Disparities and the US MSM HIV Epidemic**  
**Kaiser Family Foundation**  
**July 23, 2012**

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**KEVIN FENTON:** Hello, and welcome to Washington, D.C. I'm Kevin Fenton, Director of CDC's National Center for HIV/AIDS, Viral Hepatitis – stand here. I think he's running to turn the microphone on [audio gap].

Perfect. Hi, good morning everyone. Welcome to this session which will focus on health disparities and the US MSM HIV Epidemic. I am Kevin Fenton, Director of CDC's National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. And on behalf of my co-chair for this session, Professor Darrell Wheeler, who is a professor at the Loyola University, and Dean and Professor of the Graduate School of Social Work.

We'd like to welcome you here this morning. We have an exciting lineup of presentations which will focus on health equity issues related to gay, bisexual, and other men who have sex with men in the United States today. And we have a wonderful lineup of speakers that will be presenting for approximately 10 minutes. And following each speaker there will be time, approximately five minutes for questions or issues that you'd like to explore with each of the presenters.

At the end of the session we'll be asking Professor Wheeler to provide a summary of some of the key themes and issues which arose in this session. So first I'd like to briefly introduce our speakers in the order that they will appear this morning. First of all we will hear from Alexandra

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Oster, who is a medical epidemiologist in CDC's Division of HIV/AIDS Prevention, and she will be presenting on trends in HIV prevalence and HIV testing among young men who have sex with men in five US cities between 1994 to 2008. She will also be presenting another poster later in the session on foreign location of birth and time since immigration are associated with HIV status among Latino MSM in the US.

Eli Rosenberg is a doctoral student from the Emory School of Rollin's School of Public Health, and he'll be presenting on equal behaviors and equal risks: the role of partner transmission potential in racial HIV disparities among men who have sex with men in the United States. Thirdly, we'll hear from Ken Mayer, who is the Medical Research Director of The Fenway Institute in Boston, who will present on an evolving, concentrated epidemic; comparison of socioeconomic behavioral and biological factors among newly diagnosed, previously diagnosed, and HIV-negative black men who have sex with men in six US cities.

That will be followed by Beryl Koblin, head of the Laboratory of Infectious Disease Prevention of the New York Blood Center, who will be presenting on correlates of HIV incidence among black men who have sex with men in six US cities. Finally, this morning we'll hear from Linda Beer, who is an epidemiologist with CDC's Division of HIV/AIDS Prevention, who will present on racial disparities in anti-

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retroviral therapy use and viral suppression among sexually active HIV-positive MSM receiving medical care in the United States. Data from the medical monitoring project, the 2009 data collection cycle. So without any further ado, I'd to welcome Dr. Alexandra Oster to the podium.

**ALEXANDRA OSTER:** Young men who have sex with men are a population of great interest for HIV prevention in the United States. HIV incidents surveillance estimates indicated that new infections increased 34 percent among MSM age 13 to 29 years in the United States. However, these data were not able to be separated into finer age groups. Another method for examining incidents is by using serial cross-sectional measurements of prevalence. Among young people who have had limited time of exposure to HIV, these measurements can serve as a proxy for incidence.

The second issue I'll address is HIV testing. HIV testing and diagnosis allow for behavioral changes and clinical treatment to optimize outcomes and reduce the risk of transmission to others. Increasing the prevention of HIV-infected persons who are aware of their serostatus is a key objective of the national HIV/AIDS strategy. As a result, it is important to monitor HIV testing behaviors over time. Our objective was to assess trends among young MSM in the United States from 1994 to 2008 for two important indicators: HIV prevalence and HIV testing behavior.

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We use from two CDC-funded projects that conducted cross-sectional interviews and HIV testing among MSM and used nearly identical recruitment methods: The Young Men's Survey, or YMS, and the National HIV Behavioral surveillance system among MSM or NHBS MSM. While these studies were very similar in methods, they varied in time periods the data were collected, as well as the age ranges of participants and number of cities where the studies took place. YMS Phase I, conducted during 1994 to 1998, recruited men aged 15 to 22 years in seven US cities. This was followed by YMS Phase II, which recruited men age 23 to 29 years in those same cities. The first round of NHBS among MSM was conducted in 2003 to 2005 among men aged 18 or older.

Although surveys for NHBS-MSM 1 were conducted in 15 cities, only five cities, all of which had participated in YMS, conducted HIV testing. The second round of NHBS among MSM conducted surveys and HIV testing in 2008 among men age 18 or older in 21 cities. Please note that these studies each interviewed different people. This was not a longitudinal cohort. Our analysis will use data from these studies to examine cross sections of young people over time.

Both YMS and NHBS recruited participants using venue-based sampling, which I will discuss in more detail momentarily, and conducted a standardized in-person anonymous interview. All participants were also offered an anonymous HIV

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test regardless of their self-reported HIV status. Incentives were provided for the interview and HIV testing. Venue-based sampling begins with formative research to better understand the population of MSM in each metropolitan statistical area. The process also includes identification of venues at which MSM congregates and daytime periods during which those venues are active.

A random selection process occurs, and project staff recruit, interview, and test participants at randomly selected venues during sample daytime periods. Eligibility criteria included being a resident of a participating MSA and being able to complete the interview in English or Spanish. For NHBS, participants had to be male sex at birth and identify as male. We set our analysis criteria with the goal of making the samples as comparable as possible. To be included, participants had to be 18 to 29 years, report a male sex partner during the past six months, and not identify as transgender.

We also limited our analysis to the five MSAs that conducted surveys and HIV testing in YMS NHBS-MSM 1 and NHBS-MSM 2. However, for analyses of men age 23 to 29 years, one MSA was excluded because their recruitment methods differed for YMS Phase II. For analyses of HIV testing behavior, we also excluded men who self reported a previous positive HIV test. These are the MSAs included in the analysis. For the analysis, we combine data from all of these studies then conducted

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separate analysis for two age groups: 18 to 22 years and 23 to 29 years.

We assess temporal trends for each age group in two main outcomes: HIV prevalence and HIV testing in the past 12 months. We created a multivariable logistic regression model for each of our main outcomes and each age group, resulting in four models. The main predictor, interview year, was included as a linear variable. Because MSA and race-ethnicity were associated with both the outcomes and interview year, we included them as co-variants in all models. Education was associated with the outcomes and interview year, but only for the 23- to 29-year age group. So we included education as a co-variant in models for men age 23 to 29 years. Using predicted marginals, we calculated model-adjusted estimates of HIV prevalence and HIV testing by interview year, adjusted for all of the other variables in the model.

Now I'll present sample characteristics. Here you can see the sample size for each year for each age group. The total sample size was 2,186 for the 18- to 22-year age group, and 2,592 for the 23- to 29-year age group. Both age groups were racially diverse, with Latino MSM comprising approximately a third of the sample and black MSM comprising nearly a quarter. The vast majority of both age groups had completed high school, and in the older age group nearly three quarters had completed

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at least some college. Sixty-nine percent of 18- to 22-year-olds and 79 percent of 23- to 29-year-olds identified as gay.

Now I'll report data on our key outcomes, HIV prevalence, and HIV testing behavior. HIV test results indicated that the overall prevalence among 18- to 22-year-olds was 11 percent, and prevalence among 23- to 29-year-olds was 16 percent. This figure shows model-adjusted estimates of HIV prevalence adjusted for city, race/ethnicity, and for MSM age 23 to 29 years education. Estimated HIV prevalence for men age 18 to 22 years, shown in blue, remain stable at approximately 11 percent during this time. For this age group, there was no significant increase in HIV prevalence with a model-determined P value of 0.6. However, for the 23- to 29-year age group, represented in orange, estimated HIV prevalence appears to increase over this time period from approximately 14 percent at the beginning to approximately 18 percent at the end with a model-determined P value of 0.07.

Now we move on to our second outcome, HIV testing among men who did not report a previous positive HIV test. In all, 56 percent of men age 18 to 22 years and 57 percent of men age 23 to 29 years reported having an HIV test in the 12 months before interview. Here you see the model-adjusted estimates of recent HIV testing among young MSM. For both age groups, HIV testing increased significantly over this time. Estimated HIV testing

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increased from 45 to 50 percent at the start of the time period to 65 to 70 percent at the end of the time period.

In summary, HIV prevalence was stable among MSM aged 18 to 22 years. We found that HIV prevalence may have increased among MSM age 23 to 29 years with a P value of 0.07. HIV testing increased substantially among both groups. This analysis is subject to several limitations. Social desirability by us may affect estimates as date of most-recent HIV test was self reported. Moreover, these data are not representative of all MSM. They were collected in four to five MSAs with high-AIDS prevalence, and most of the men were recruited from bars or dance clubs.

Finally, venue-based sampling may result in selection bias, and data are not weighted to account for bias. We found that prevalence was high among young MSM in four to five MSAs. This is consistent with national data showing that young MSM continue to bear a disproportionate burden of HIV. The fact that prevalence was stable among 18- to 22-year-old MSM suggest that incidence among this group has been stable over time. However, prevalence was increasing among 23- to 29-year-old MSM, although the trend was not statistically significant.

This is suggestive of a possible increase in incidence. We are exploring adding more recent data from NHBS to see if the trend continues. We found that HIV testing increased substantially among MSM of both age groups. This may reflect at

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least in part the effect of CDCs many HIV testing initiatives implemented during this time period, which aim to increase HIV testing among groups at high risk.

In conclusion, gains in HIV testing among young MSM are encouraging. Data from multiple surveillance systems can be used to characterize the epidemic and triangulate findings on epidemiologic measures such as incidence, prevalence, and HIV testing behaviors. Moreover, as NHBS is an ongoing surveillance system, we can use NHBS data to monitor changes over time and potentially assess the impact of large-scale interventions. To prevent ongoing transmission and improve the health of people living with HIV, it is important that young MSM are tested regularly, are aware of their infection, and get linked and remain engaged in appropriate care. This analysis would not have been possible without years of contributions from many people including those listed here. Thank you.

**KEVIN FENTON:** Thank you, Alexandra. We have time for a couple of questions. Please, do come to microphone to identify yourselves. So we'll start with Carlos.

**CARLOS:** Thank you very much. Just a quick question, since this session is about disparities. I didn't hear anything about race relations and what was the difference between. Or there were no difference whites and African Americans MSMs in testing of prevalence.

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**ALEXANDRA OSTER:** Great question. So what we found was that there were large disparities in HIV prevalence by race ethnicity that are parallel to what we've seen and reported previously with these data. We didn't have quite enough sample size to look at whether – actually we did test for whether trends over time varied by race/ethnicity, and we did not find a significant interaction between race/ethnicity and the temporal trend. And in terms of testing behaviors: Testing behaviors seem to be pretty similar by race/ethnicity.

**KEVIN FENTON:** Great. Thank you. Donna?

**DONNA FUTTERMAN:** Thank you, Donna Futterman from Adolescent AIDS in the Bronx, New York. While prevalence may be remaining steady in the 18- to 22-year-olds, I think it's important for us to recognize that those are new young people entering into this cohort. It's not a static cohort, but there's young people aging into 18 and aging out. So a lot of numbers are reflecting new entries and incident cases, not just a static prevalence.

And the other thing I just wanted to say: In our cohorts in the Bronx, we see that each positive young person whose MSM has tested an average prior five times and having negative tests. So I think our testing strategies, which I'm sure you know have to go way beyond getting that single test but have to include prevention with it; very active on-going testing strategy. Thank you.

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**ALEXANDRA OSTER:** Thank you. Those are both excellent points. And I'll add that the fact that new infections is stable is encouraging, but it does not mean that we have an answer. We really want those to be going down.

**KEVIN FENTON:** We have time for the final two questions. I'm going to take the two questions, and I'll ask Alexa to respond to both. So quickly.

**MALE SPEAKER:** So according to 2008 [inaudible] - Denmark, US from San Francisco. According to a 2008 MMWR report amongst Asian and Pacific Islander young men who have sex with men ages 13 to 24, it was reported that they had the largest proportion increase of 255.6 percent from 2001 to 2006. So given that the national HIV/AIDS strategy is trying to address health disparities, what is the CDC doing to better surveillance data amongst Asian and Pacific Islanders?

**KEVIN FENTON:** Great. Thank you. And at the back in the red shirt.

**DAVID PHILLIPS:** Thank you. My name is David Phillips. Personally, I've been with HIV from here in College Park, Maryland. Two questions; one, given that you had the demographic data about individual identity versus the bar category MSM, was there sufficient data to analyze whether self-identity as gay or bisexual provided any particular influence on testing the behavior or protection against infection? And two, with the data that you had, was there data

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around drug use given that the time period where you saw this increase in prevalence among 23- to 29-year-olds coincided with methamphetamine outbreak?

**KEVIN FENTON:** Great. Thank you.

**ALEXANDRA OSTER:** Excellent. So in regards to the question about Asian and Pacific Islander MSM, unfortunately in this analysis we only had data from four to five cities. And we didn't really have enough to look at that in a lot of detail. But that's something that we will be able to do when we look at the larger data set.

The question regarding sexual identity and HIV testing: I don't have those data at the ready right this moment, but I'd be happy to talk with you about it afterwards. And we do, as you mentioned, we do have data on sexual identity and how that influences. We can make that link between testing and prevalence and identity.

And then the last question was about drug use. Unfortunately because we were using data from two different studies, we didn't have the same questions on drug use asked across that whole time period. So we're not able to look at how drug use might have changed between 1994 and 2008 at least in this analysis. But I agree that it's an extremely important concern, and we can look at it with some of our more-recent data that do ask those questions. Thank you.

**KEVIN FENTON:** Thank you. Thank you, Alex.

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**MALE SPEAKER:** And now Eli, speaking to us about the role of partner transmission and health inequities and disparities.

**ELI ROSENBERG:** Hi. So my name is Eli Rosenberg, and I'm here from the Emory School of Public Health. And the title of my talk is Equal Behaviors, Unequal Risk: The Role of Partner Transmission.

**KEVIN FENTON:** Speak closer to the –

**ELI ROSENBERG:** The Role of Partner Transmission Potential in Racial HIV Disparities among MSM in the United States. So as we just heard, HIV prevalence among MSM is high. And black MSM, particularly young black MSM, continue to be disproportionately affected by the epidemic. The reasons for this racial disparity effort remained unclear. Studies of behavior – studies have shown that compared to white MSM, black MSM report similar or lesser levels of risk behaviors.

And it's unknown particularly the degree to which existing disparities in HIV prevalence and the prevalence of unsuppressed infection might be perpetuating on-going disparities in HIV incidents, since in theory the greater the likelihood that one has of encountering a partner who is both HIV – who is HIV-positive would translate into increased incidence. So in order to properly understand this, we need to shift our focus from our standard set of community-level measures to ones that consider the individual perspective, and

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specifically an individual's risk of – an individual who's in a community, their risk of having unprotected sex. And in order for them to be at risk, they both must encounter somebody who is HIV positive, and that person must also have a level of viral – of unsuppressed infection that would permit transmission.

And so this would suggest a measure that incorporates the full spectrum of the prevalence of HIV infection through diagnosis, linkage to care, treatment, and suppression. And however our toolkit of measures is limited for this task, HIV prevalence, the total number who are HIV positive, over the total population gives a sense of this probability of encountering an individual with the virus. But it does not incorporate viral load. On the other hand, community viral load, or the mean log viral load among all those diagnosed, gives us a sense of how well the community of those who are diagnosed are suppressed. Yet because it fails to include those who are not diagnosed, and that's who might have uncontrolled infection, something is missing.

If we expand this with the population viral load to incorporate all who HIV-infected, we improve this. However we still do not understand the chance of encountering individuals who are infected because we did not include those who were HIV-negative. And so our measures are limited, and we have – there's a need for a broad and relevant public health measure

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to understand transmission. And so we propose a new measure which we call the Transmission Potential Prevalence, or the TPP, which represents the proportion of individuals in the whole population with a viral load sufficient for the transmission of HIV. And we compute this as the number of the viral load above 400 over the total population.

It's a cross of both the prevalence and the viral load measures that we discussed. And while the cut point is not known for transmission among MSM, we've used a conservative estimate of 400 copies per mL. And so we wanted to know: What are the TPPs in the black and white MSM communities of Atlanta, and what do they tell us about HIV risk in these communities? And to do so, we used data from the involvement study, which is an HIV incidence cohort study of black and white, non-Hispanic MSM in Atlanta.

Men were between the ages of 18 and 40 years old and were sexually active. They were recruited using venue time space sampling. At their baseline visit, all participants underwent OraQuick Rapid Testing. And for all men who tested positive, we conducted western blots and viral load testing. All individuals took part in a partnership level behavioral questionnaire. And as of June 2012, 709 men have enrolled into the cohort.

Here's a quick description of their study composition. Men black MSM were slightly but significantly younger on

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average, with median age of 25 compared to 28 years. But it also achieved a lower level of education compared to white MSM. Black men reported fewer partners on average, five – a median of five compared to 7-1/2 in the previous year. And yet despite that, HIV prevalence among our black MSM participants was substantially higher, 42 percent compared to 14 percent.

Similarly, HIV incidence to date in our cohort has shown similar disparities. Six point four cases per 100 person years among black MSM compared to one per 100 among white MSM. So in other words, if we had 100 HIV-negative black MSM, one year later we would see 6 cases develop of it. Compared to if we had 100 white MSM, we would see only one case develop over the course of one year. And so for more details on some of our incidence data, I encourage you to see my colleague Brandon O'Hara's poster tomorrow afternoon.

When we look at our viral load data and we consider the community viral load, that is the viral load among all of those who have been previously diagnosed with HIV, we see similar levels by – we see similar levels of live viral load by race. And also similar levels of the proportion with 400 copies per mL or above. When we expand this to include all individuals who are HIV infected regardless of diagnosis, these measures both go up as might be expected. But we still fail to detect a difference by race.

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However, when we expand our consideration further to include all individuals in the black and white communities that we've studied, we see substantial racial disparities. Twenty-five percent of black participants were both HIV-positive and had a viral load above 400 compared to 8 percent of white participants. And thus one in four among our black participants compared to less than one in ten among white. And for more details on some of our viral load data, I encourage you to check out my colleague Colleen Kelley's poster this afternoon.

And so we next wanted to translate this information on TPP and our observed partner selection patterns into the probability that an HIV-negative black or white man might encounter a potentially transmitting partner in his community. And to do so, we constructed race-specific deterministic models that used our measured TPPs to represent the partner pools. And we also used our observed racial mixing patterns for unprotected anal intercourse, or UAI, in the following way. We divided partners into three groups: black, white, or other and we noticed that about 70 percent of our participants were racially exclusive across all other UAI partnerships.

For the remaining men, partners were selected approximately equally from these three groups. And so we computed these models using Monte – and we used Monte Carlo simulation with 100,000 runs to estimate the variability. And here are our results. This graph represents the likelihood that

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at least one of one's partners is potentially HIV – has potential HIV transmission potential as a function of the number of partners that one has. And so the top curve represents black, our estimate for black individuals in our community, and the bottom curve represents that for white MSM.

And so I earlier said that the average number of partners was a 5 versus 7-1/2 in the previous year from black and white MSM. But when we considered UAI partners, the average for both black and white MSM was two in the previous year. And so at this equal level of risk behavior of two UAI partners we see substantial differences in risk. So we have among black MSM a 39 percent chance that at least one partner has HIV transmission potential, compared to 18 percent among white MSM at this equal level of risk behavior. To achieve a 50 percent risk, black MSM would need to have just three partners compared to seven partners for white MSM. And to reach a 90 percent, this would be ten partners for black MSM compared to 25 partners for white MSM.

So in conclusion we see that despite similar community and population viral loads, there are still substantial racial differences in the transmission potential prevalence and the associated exposure risk for HIV-negative men living in these – in living in communities. Our model suggests a limited ability of behavioral interventions alone to eliminate disparities.

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Because at even low levels of behavior, we still see substantial disparities in risk.

We recommend that communities with high TPP should be the focus of the allocation of new resources that are aimed at for the prevention of transmission. And we recommend that each of these surveillance systems be adapted through the incorporation of viral load measurements to be able to measure TPP to understand transmission risk in the subgroups and be able to make comparisons that are meaningful.

Our work has several limitations. Our measure of viral load is current viral load and does not reflect durable virologic suppression. And our model does not account for other determinants of transmission such as STI prevalence, and we are not explicitly measuring – incorporating serosorting facts. And of course we are playing everything forward in time with prevalence today, seeing with how that might – what that might tell us about incidents. We are not able to explain from this model alone what gave to rise to the original disparities that we are observing.

So overall we feel our data support the targeting of resources to dramatically reduce TPP among black MSM through the redoubling of our efforts in testing linkage and retention HIV care to reduce disparities. And these should be supported by behavioral interventions that would increase the effectiveness of these treatments.

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So thank you all for your time today. The involvement study has dozens of individuals contributing from across a number of teams, and I thank you all. I particularly thank our participants who have given up so much of their time and enthusiasm, and of course our funding sources listed below.

**KEVIN FENTON:** Thank you, Eli.

**DARRELL WHEELER:** Thank you for approaching the microphones. I see I have several individuals queued up. We'll start to my left. Yes please.

**DAVID WALL:** Great. Thank you. David Wall, University of North Carolina. So that's interesting, and I like what you did with the dichotomy. But I wonder if there is any more data you have looking at viral load as a continuous variable. So stratifying not just below and above 400, but maybe different strata looking at increased transmission potential at higher viral loads and how that translated into rest.

**ELI ROSENBERG:** Right. That's a great question, a great direction for future work. I think we were focused on really establishing a more relevant measure. That's kind of always our starting point. The thing is our understanding of how transmission works across the viral spectrum. That's a great point. I fully agree that future work should incorporate that.

**DARRELL WHEELER:** Okay, thank you. Here please.

**DOUG FELDMAN:** Yes. Doug Feldman: State University of New York, Anthropology at Brockport, and also President of the

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Society for Medical Anthropology. I was very intrigued by your point that we still don't know, apparently, what is the source of the difference between black versus white young MSM in terms of the potential for risk. And I'm just wondering if either you or anyone else on the panel would know of any perhaps qualitative data that they may have come across that might suggest the difference.

I know you're dealing with quantitative data, and it's not yielding any information. I'm just wondering if there's – any or any possible – or any thoughts on this issue of what the possible difference might be in terms of the source of the difference between the health disparity between young versus white, young MSM.

**DARRELL WHEELER:** Okay. Eli, if you don't have a direct response, I'm going to ask that we move through the presentations and potentially come back to that question as the other presenters.

**DOUG FELDMAN:** Because I think this a critical issue.

**DARRELL WHEELER:** Yes. Absolutely. Absolutely. Eli, did you want to make –

**ELI ROSENBERG:** I think that's good. I mean this is a source of great research. And in fact, the greater involvement studied a number of the other presentations today will – are all burning to know the answer to that question. And we're starting to unravel this puzzle. So I think I agree.

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**DARRELL WHEELER:** Thank you.

**DOUG FELDMAN:** Thank you.

**DARRELL WHEELER:** Yes. Please.

**MALE SPEAKER:** In your slide that made reference to partner selection and patterns with regard to ethnicity, did you do any assessment in terms of levels of education or also the business of – well, just social economic analysis as well? I'm driving at whether or not the whole business of social stratification ends up being a real factor.

**ELI ROSENBERG:** To see whether at varying levels of socioeconomic status partner selection patterns might differ?

**MALE SPEAKER:** Exactly.

**ELI ROSENBERG:** We have the data. We haven't – we have not done that yet. So that's a great question.

**MALE SPEAKER:** I think that's very important in terms of who we target with regard to this [inaudible]. So anyway, yeah; or how we target.

**DARRELL WHEELER:** Indeed. Thank you very much. And this will be our last question from the floor.

**DAVID HUEBNER:** Hi. I'm Dave Huebner from the University of Utah. Thank you. That was a really interesting presentation. And I also appreciate this idea that TPP – as I looked at it, as I looked at those data I thought maybe you could clarify this for me. It looked like most of the disparity was really not in the viral load but was being driven by the

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baseline differences in prevalence. So I was kind of curious about how then the conclusions that you guys came to were really about testing and treating when what we appear to see is not that there's a difference in viral load, at least in these data. I mean I appreciate the test-and-treat message from other studies that we've seen with these communities, with these disparities, but as I look at those data I wasn't seeing that we would need to test and treat our way out of this disparity.

**ELI ROSENBERG:** Wait, so you're absolutely right that a large portion of what we're seeing is driven by prevalence. But what we're arguing is for a more holistic approach. So prevalence alone doesn't tell us what we need to know. And community viral load doesn't tell us. In fact we need to in fact cross them and weight our viral load data by prevalence to get a true number on risk. And so you're right, but we're just saying we just need to expand our concept of what is prevalence and drilling in on what matters for on-going transmission. So absolutely correct, but we still think that the layer of viral load is very important.

**DARRELL WHEELER:** Okay. Thank you. In order to try to stay on time, we're going to have to stop at that. That was the last question from the floor. Thank you, Eli.

**KEVIN FENTON:** We'd now like to welcome Dr. Ken Mayer from the Fenway Institute to the podium to give his presentation.

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**KEN MAYER:** Good morning everyone. On behalf of my protocol co-chairs, doctors Koblin and Dr. Wheeler, and the wonderful HPTN061 study team, I'm looking forward to presenting some of the first from this study to you today. As we're all extremely aware, there is extreme health disparity in the US. Black men who have sex with men comprise less than one percent of the US population but more than 20 percent of new HIV infections over the past few years. The purpose of HPTN061 was to determine the feasibility and acceptability of a multi-component intervention for black MSM, including peer health system navigation.

The study methods included enrollment from six cities in the United States: Atlanta, Boston, Los Angeles, New York City, San Francisco, and Washington, D.C. The men were recruited from the community or referred by sexual partners. To enroll in the study, the men had to identify as male at birth or identify as male. They identified as black with multi-ethnic descriptions also allowable for entry into the study. They were at least 18 years of age, and they had to report at least one episode of unprotected anal intercourse with the man in the prior six months.

The participants were offered incentives to refer up to five black sexual partners for participation in the study. The study methods included obtaining demographic information and behavioral information by audio, computer-assisted self-

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interview. There was a social and sexual network questionnaire completed with an interviewer. State-of-the-art testing for gonorrhea and chlamydia using nucleic acid amplification testing of the urogenital and rectal sites was done as well as serology for syphilis. Risk reduction counseling was performed.

The individuals in the study were offered the services of a peer community navigator to link them to clinical and social services. And individuals testing positive for any infection were linked to treatment and medical care services. The participant categories included – the largest group of men were men who came into the study indicating that they had not had a prior HIV test or that their last test was negative. And then those men were subdivided after their HIV tests came back; and to those who tested uninfected at enrollment, those who tested newly infected at enrollment.

And then there was a group of men who were HIV infected when entering the study. This included men who had an HIV diagnosis, were not engaged in care, and or men who were engaging in serodiscordant HIV serodiscordant sexual contacts. We also wanted to get a more full picture of the lives of black MSM in the different cities, so we also included enrollment up to 10 men per site who were engaged in care and were having only seroconcordant sexual relationships.

The statistical methods compared the newly diagnosed infected men to those who were HIV uninfected as well as the

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previously diagnosed men to those who were HIV uninfected. Multivariable logistic regression models were used to predict HIV status from the baseline covariants. And covariants that were significant at a 0.1 level in the bi-varied analysis were included in the multi-varied models.

So, our results: 1,553 men were enrolled in the study, of whom 88.8 percent reported no prior HIV diagnosis. Ninety-six percent of those men agree to HIV testing at study entry. Twelve percent of the men in the sample were newly diagnosed as HIV-infected, including three men with acute HIV infection. We have a presentation by Dr. Sharon Mannheimer this Thursday at this meeting. That will be discussing the men's prior testing experience, the CD4 counts of the men who newly tested positive.

So we will focus today on comparing those who were known to be infected, those who were newly diagnosed being infected, and those who were HIV uninfected. So in the bi-varied analysis, the men who were HIV-infected in the study, both previously and newly infected, tended to be older. They were more likely to be unemployed. They were poorer as well. You can see that for the newly diagnosed men, they were less likely to lack stable housing. But it's also important to note that the vast majority of men on all three strata had stable housing. But poverty and unemployment was quite pervasive in all three categories.

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The men who were HIV-infected were more likely to identify as gay or homosexual. There was a higher prevalence of HIV among transgender individuals in the study. The men actually had slightly fewer sexual partners, and this was statistically significant in the bi-varied analysis, but were more likely to report unprotected receptive anal intercourse. They were less likely to have female partners and they were less likely to have transgender partners than the men who tested HIV uninfected.

In terms of other behaviors and identities, there was not a difference in regard to transactional sex, sex while drunk or high. And in point of fact with regard to all the substances, the only one that was statistically significantly different was popper use among the men who had an established HIV diagnosis, which was higher than in the other two categories. Of note is that the men who were infected, both newly diagnosed and previously diagnosed, tended to have a more of an identification with a religious affiliation.

In terms of the biological markers, in terms of the sexually transmitted infections, the newly infected men were more likely to have syphilis, more likely to urogenital chlamydia, more likely to have any sexually transmitted infection, as well as any sexually transmitted infection. And I would point out the very high prevalence of having had at least

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one undiagnosed bacterial sexually transmitted infection among the men who were HIV infected in this sample.

When we went to do the multi-varied analysis then comparing those who were previously infected and those who were uninfected, being older was associated with having prior HIV infection. Being unemployed was associated with having prior HIV infection. Having sexually transmitted infections was associated with prior HIV infection. Being gay or homosexually identified was associated with having HIV infection. And transgender identity was not associated with increased likelihood of prior HIV infection.

Comparing the newly diagnosed men with the HIV-uninfected men in the multi-varied analysis, unprotected receptive anal intercourse not surprisingly jumped out independently in the model. Again, older men were more likely to be newly diagnosed with HIV infection with a chronic viral infection. Cumulative prevalence may be an explanation for this. What did jump out was that being unemployed was highly associated with a new diagnosis of HIV infection and being poor.

And again, unstable housing was associated with a decreased risk of being HIV-infected, but from attributable fraction this was a very small percentage of the sample who were unstably housed. But a very high percentage of the sample were unemployed and were quite poor. In comparison to Boston,

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there were more new diagnoses performed, excuse me, diagnosed in Harlem, Washington, D.C., and in Atlanta. And what was particularly striking was having one sexually transmitted infection independently was associated with a twofold odds ratio and having more than one infection with more than sixfold likelihood of being newly diagnosed with HIV infection.

So in conclusion, we find that these rates of HIV and sexually transmitted infections were quite high in the men in the study. We also feel that this data suggest that structural, behavioral, and biological factors; particularly poverty, unemployment, local environment, unprotected receptive anal intercourse, being older, and having sexually transmitted infections were each independently associated with undiagnosed HIV infections among black men who have sex with men.

We conclude that culturally tailored interventions that encourage repeated HIV/SDI testing, engagement with treatment and prevention programs, and that address the social factors, particularly poverty, are urgently needed for black men who have sex with men. We have additional presentations at this meeting that I call your attention to. We have six posters that begin to unpack some of the complexity of these data, including presentations on the sexual networks of the men, on the high prevalence of incarceration among the men, on sociocultural and psychological factors of the men, lessons learned from implementing a black caucus as part of this study which really

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help keep us informed about the concerns of the community as we conducted this work, differences with regard to the men who had sex with men only, and the men who had sex with men and women, and the experience of perceived health care discrimination, and how that played into the lives of the men.

I just want to thank the study teams that have been incredible in the work of the study. And I'd like to thank our funders, The National Institutes of Health. And I want to thank our assistants from the expert work at the central lab at the Johns Hopkins University, University of Washington Statistical Center, and FHI 360. And thank you for your attention.

**KEVIN FENTON:** This paper is now open for questions. And we have a few minutes for a few. So we'll start on back on the left side. Please go ahead.

**BISI ALIM:** Thank you very much. My name is Bisi Alimi [misspelled?] from London and I've got two questions for you. You said in your presentation that being identified as homosexual MSM is one of the drivers of this. Well from what we know, we understand that actually men who have sex with men seem to be the driver of this. And I don't know how we can actually explain this and what influences we have in developing intervention.

And the second question is: Did you collect data on why there's such a large number of people that have never

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tested before? And because again, this will help to understand why people are not testing and what we need to do. Thank you.

**KEN MAYER:** Yeah. Thank you for the questions. So with regard to this issue of identity, we actually have collected data on how the men identified. And we did not limit the men to say that they can only identify as one category or another. We have information on people's behavior, and those analyses are underway. But I think it's very important that these are men who at least endorse the fact that they identified as gay or homosexual. And they were more likely to have HIV infection. And my colleague Dr. Koblin will be presenting more data that is relevant for this discussion.

With regard to the number of people who never tested, I actually didn't give the exact number. And Dr. Sharon Mannheimer will be discussing that Thursday: The characteristics of the men who didn't test and also the men when they did test who had very low CD4 counts.

**KEVIN FENTON:** Great. Thank you. My right at the front: Vickie.

**VICKIE MAYS:** Vickie Mays, University of California Los Angeles. Thank you for a great presentation. It was a little quick, so I want to make sure I have these facts straight. Similar question: When you talk about the identity, there's a difference between saying whether they were gay or homosexual, which may be what's throwing some of us off in terms of the

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results that we're seeing. But also I'd like to know two things: 1) what do you make of this variable about religious affiliation? It seems also a little - I'm not quite understanding it.

And third, I guess the question is: I see a lot of focus in the meeting around behavior and of course biological outcomes, but it seems like this is driving a very structural outcome. Would we not, for example, begin to see interventions in which there is job training skills, employment, et cetera as a part of that, and that what we're looking for is a relationship with, you know, work force development, department of labor, et cetera?

**KEN MAYER:** Yeah, I know. Thank you, Vickie, for those really important points. So the issue of identity, we lump together homosexual and gay just because they both suggested a level of community identification. Where some people have said, well, you have to approach prevention for black MSM and not really embrace gay identity. We did not find that to be the case in this large sample of men.

In terms of the questions, we asked the men. They could endorse by sexuality. They could endorse to spirit. They could endorse queer. So there's a variety of other categories that were less prevalent. But these two together were most highly associated with HIV infection.

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The religious affiliation is an area that is being investigated now further. That was – we showed it because we didn't want to preselect data to show you. And that was significant in the bi-variants. It was not significant in either of the multi-variants.

Your last point about job training: I think right on. I mean I think we – there are programs now in Africa for microfinance for vulnerable populations to prevent HIV. We have to think about similar kinds of approaches here in the United States.

**VICKIE MAYS:** Thank you.

**KEVIN FENTON:** So we are almost at the end of time available. And we now ask the two people standing to answer questions very succinctly. And then we'll ask Ken to respond. So please, go ahead.

**DOUGLAS BROOKS:** Douglas Brooks: Justice Resource Institute in Boston. Dr. Mayer, can you talk about, and maybe not, the incarceration factor?

**KEVIN FENTON:** Alright, thanks. And we'll take the second question.

**GABRIELA PARSBADÉ:** Gabriela Parsbade [misspelled?] at the CDC. We have been very concerned about the accuracy of self-reported HIV status. And I wanted to ask you if you had additional data to validate the new diagnosis. So if you had viral loads, or drug testing data.

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**KEN MAYER:** Yeah. So to answer the second question, we're in the process of doing those analyses. So we have CD4 counts on the individuals, and we will have viral load data. The quick look was that the vast majority of people self report seem to be corroborated in terms of where -that we didn't see a lot of people with, you know, plasma viral loads that were undetectable for example, but we can't exclude the fact that there may be some people in the sample, but the majority of people we have reason to believe that they were correct self-reports.

The other question about incarceration, I really strongly recommend people go see Russell Brewer's poster presentation. Russell is one of our HPTN Scholars and has really been focusing on this work for the past year or so. 60-percent of the men in the sample had a lifetime experience of incarceration. The work that we've done at the sites reveals that many of these incarcerations were for some very punitive drug laws and other kinds of discriminatory laws. You see a cycle being set into place where people may lose social agency by being incarcerated, having difficulties finding jobs, and being constrained to a life of poverty. It is an area that I think we have to pay much attention to.

**KEVIN FENTON:** Ken, thank you very much. [Applause]  
Continuing with the HPTN 061 data release, I would like to ask Dr. Koblin to come to-

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**BERYL KOBLIN:** I want to thank the organizers of the conference for accepting this as a late breaker. On behalf of the HPTN 061 Team, I'd like to present the data on HIV incidents among Black MSM who participated in HPTN 061 in six cities. As we've heard many times, men who have sex with men comprised the single largest group of individuals in the US who've become infected with HIV with 61-percent of new infections occurring in 2010 and that Black MSM are greatly disproportionately affected, particularly among young Black MSM.

I'd like to go through some of the methods again with HPTN 061 for anybody who's come in late. This was a longitudinal study designed to determine the feasibility and acceptability of a multi-component intervention for Black MSM and it was conducted between July of 2009 and December of 2011. The components of this multi-component intervention included HIV testing, STI counseling and testing, and referral for treatment, counseling and referral for care for issues such as substance use and mental health issues, peer health navigation, and referral of sexual network partners. The six cities were Atlanta, Boston, LA, New York City, San Francisco, and Washington DC.

Recruitment came from two sources. One, from community recruitment that occurred in each one of the cities and the men who enrolled were asked to refer up to five sexual partners.

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The eligibility criteria was at least 18 years of age, identified as a man or male at birth, self-identified as Black African-American, Caribbean Black, or multi-ethnic Black, and reporting unprotected anal intercourse with a man in the six months prior to enrollment.

Both HIV uninfected and infected men were enrolled based on the testing at baseline. Men were identified as being HIV uninfected or newly diagnosed. A prior HIV diagnosis, but not engaged in care or having unprotected sex with partners who were HIV uninfected or unknown status or a prior HIV diagnosis and in care or only having sex with HIV infected men for up to 10 men per site.

At the baseline visit, consent was obtained and locator information. We collected demographics, and behaviors in the prior six months were collected by a self-administered computerized interview. Then a social and sexual network were collected by interview, or we had counseling and HIV rapid testing, and testing for gonorrhea, chlamydia and syphilis. All the men were offered peer health navigation to link to clinical and social services as needed, and any of the participants testing positive for any of the infections were linked to treatment or medical care. Follow-up visits were scheduled at six months and 12 months after enrollment.

The HIV infections that I'll be reporting on today were based on real time testing at the study sites, and all of HIV

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infections were confirmed by the HPTN Network Lab. HIV incidence was calculated as the number of new infections per person-years of follow-up and confidence intervals based on using exact methods.

As Ken just previously reported, there were a total of 1,553 men enrolled and 174 had a prior HIV diagnosis, and of the men, 1,379 without a prior diagnosis, 46 refused testing or did not have a baseline specimen that was available for confirmatory testing by the Network Lab. There were 165 newly diagnosed, which included three with acute infection; 1,168 were uninfected at baseline. We have follow-up data for HIV infection status on 1,109 of the men.

The endpoint retention, that is, we had HIV status on 87-percent of the men at six months and 79-percent of the men at 12 months. We looked at demographics, baseline risk behaviors, and baseline diagnosis of STIs among men who were retained versus not retained, and there were no significant differences. Of the 1,009 men that we have the HIV follow-up data for, 38-percent were 30 years of age or younger. 46-percent had some college education or more. 35-percent worked full or part time, and 58-percent had an annual income of less than \$20,000.

Getting back to the gay and homosexual identity, the men were offered multiple options and they could choose more than one. Just to let you know, the top three that were chosen

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were gay identity by 40-percent of the men, bisexual by 39-percent of the men, and 25-percent of the men identified as homosexual. 48-percent of the men identified combined gay or homosexual identity. 45-percent reported that they had both male and female sexual partners. 76-percent of the men were circumcised and 14-percent had any STI at baseline. 47-percent of the men of the HIV-negative men reported unprotected receptive anal sex in the prior six months to being enrolled. 76-percent reported unprotected insertive anal sex. 23-percent reported receiving money or goods for sex. 10-percent provided money or goods for sex, and 38-percent reported using stimulants.

There were a total of 26 infections that were identified. That translates into an annual incidence of 2.8-percent. We found that the men who were in the age range of 18 to 30 had a significantly higher HIV incidence compared to older men at an annual incidence rate of 5.9-percent. There was no difference in terms of level of education. We also did not find any difference in the HIV incidence rates by household income. We did find a somewhat elevated rate of HIV incidents among men who identified as gay or homosexual compared to all other categories with an HIV incidence of 4.3-percent compared to 1.5.

Following that trend, the men who reported only male partners had an HIV incidence of 3.8-percent compared to men

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who reported both male and female partners who had an HIV incidence rate of 1.7. The annual HIV incidence rates did not differ by whether the men were circumcised, and we also found an increase of HIV incidence rate among men who had an STI at baseline with an HIV incidence rate of 6-percent.

We found a significantly higher HIV incidence rate during follow-up among men who reported unprotected receptive anal sex at baseline with an HIV incidence rate of 4.9-percent compared to 1-percent among men who did not report it with no difference by whether they reported insertive anal sex. Stimulant use, and receiving or providing money for goods or sex, we found no differences in the annual HIV incidence rate.

In this largest prospective cohort of Black MSM in the US HIV incidence was high. It was, particularly, high among young men and those reporting unprotected receptive anal intercourse at baseline. We also saw trends and increased HIV incidence among men who identified as gay or homosexual, and those with male partners only, and those with STIs diagnosed at baseline. This direct measurement of HIV incidence reinforces much of the other data that has been presented in the past and at this meeting about the concerns among Black MSM.

Additional analyses will be conducted to assess changes in behavior during follow-up and within higher incidence groups. We'll be looking at the uptake of peer health navigation during the study and the relationship of these

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variables and others to HIV incidence. Clearly, as been mentioned earlier targeted, tailored, and culturally appropriate combination HIV prevention strategies looking at behavioral, social, structural, and biomedical interventions are urgently needed.

Again, we'd like to really thank all of the individuals and groups that have contributed to HPTN 061. It truly does take a village to pull off a study like this, and our sponsors, and all the wonderful staff and participants at all of the sites. Thank you. [Applause]

**KEVIN FENTON:** Thank you Beryl. We have time for some questions and we go to the forward mike, yes?

**FEMALE SPEAKER:** Hi, Beryl. I'm wondering, the rates of unprotected sex both receptive and insertive seem much higher than I've seen in most other studies of young Black MSM. It makes me wonder what were issues about how—who you recruited. I'm also a little uncertain about how do you retain a sample that doesn't end up being biased in some ways because so many young men really don't want to participate in a longitudinal sample. Can you explain?

**BERYL KOBLIN:** Yes, I guess first of all one of the eligibility criteria was the men needed to report unprotected anal intercourse in the prior six months to enrollment. That probably reflects the percentage that you're saying. Retention is clearly a challenge with every longitudinal study, and one

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of the things that we were concerned about in terms of looking at the incidence data was that we didn't have a particular bias. At least, looking at the data that we have to date, it doesn't look like we had men who were at higher or lower risk that were dropping out.

**KEVIN FENTON:** Thank you. Ron?

**RON:** Hi, this question is about men who're identified as being gay versus those who don't, having more HIV. I always assumed that that was because men who identify as gay or bisexual probably engage in more unprotected anal intercourse than are men who don't identify as gay or homosexuals, and so, essentially you have the data. Did you find a difference between men who call themselves gay or homosexual engaging in unprotected anal sex compared to-well, unprotected receptive anal sex compared to other men?

**BERYL KOBLIN:** That's a great question. We just received the incidence data just about a month ago. We haven't really had a chance to look at the behaviors, but one of the really key factors will be for all the subgroups that we're indentifying as having higher HIV incidents, it's going to be important for us to not only look at the behaviors, but also look at the structural factors that may be playing into that.

**KEVIN FENTON:** Can we just receive the two questions and have Beryl respond to both at the same time. Thank you.

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**MALE SPEAKER:** I'm from Uganda. I'm an epidemiologist. I kind of see that in this study, unprotected sex was a bigger factor, but in the previous study comparing Blacks and Whites, the use of condoms or protection was not looked at. Couldn't that be the real difference between two racial groups?

**RICK ALTICE:** Rick Altice from New Haven, Connecticut. You gave some data on baseline stimulant use, but can you tell us a little bit about stimulant use and alcohol use disorders and concurrency with risk for transmission and that may be true for Kenneth Mayer's presentation as well.

**BERYL KOBLIN:** For the first question, this study only included Black men so we can't compare within this study. It would be interesting to see how those different factors play out within this cohort versus some of the previous data that included both Black and White men. In terms of stimulant use, the top stimulants that were reported were both powder and crack cocaine, and a very small proportion of the men only 9-percent reported methamphetamine use.

**DARRELL WHEELER:** Thank you, Beryl. [Applause]

**KEVIN FENTON:** Our penultimate presentation is Alexandra Oster from the CDC.

**ALEXANDRA OSTER:** In the United States, Latinos are disproportionately affected by HIV infection. The rate of new infections among Latino men is two and a half times that of White men. In 2009, Latino men who have sex with men or MSM

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accounted for 81-percent of new HIV infections among Latino men. Latino MSM are not a homogeneous group.

One important factor is location of birth as US-born and foreign-born populations have different levels of HIV knowledge, risk behavior, and use of prevention services. Still foreign-born Latinos themselves are a diverse group with differences in culture and acculturation that are important to recognize. Among foreign-born populations, health status for a number of conditions varies not only by location of birth, but also by time in the United States. Our objectives were to describe the prevalence of HIV infection among Latino MSM in the United States and assess the associations of location of birth and time since arrival with prevalent HIV infection.

The National HIV Behavioral Surveillance System or NHBS was implemented in 2003. NHBS is conducted in annual rotating cycles among MSM, injection drug users, and heterosexuals at increased risk of HIV infection. The 2008 cycle of NHBS among MSM was conducted in these 21 metropolitan statistical areas. NHBS among MSM is conducted using the venue-based time-space sampling which includes identification of a variety of types of venues at which MSM congregate, random selection from among these venues, and recruitment of participants at sample venues.

Participants undergo a standardized in-person anonymous interview, and all participants are offered an anonymous HIV test regardless of their self-reported HIV status. To be

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eligible, men have to be at least 18 years of age, a resident of a participating MSA, able to complete the interview in English or Spanish, male sex at birth, and currently identified as male. For this analysis, we further limited the sample to men who reported having a male sex partner during the past 12 months and being Hispanic or Latino. Moreover, although Puerto Rico is part of the United States, for this analysis we focused on Latinos living in the continental United States. Therefore, we excluded data from San Juan, Puerto Rico resulting in a sample from 20 MSAs.

We described HIV prevalence of Latino MSM stratified by various socio-demographic characteristics as well as two variables related to location of birth. The first was migration status. For this variable the three categories were US-born, foreign-born who arrived at least five years ago, and foreign-born who arrived less than five years ago. The second migration-related variable was region of birth and included United States excluding Puerto Rico, Mexico, the Caribbean, Central America, and South America.

We then conducted multivariable analysis in which the outcome was prevalent HIV infection. Because we were interested in exploring how differences in migration status and region of birth affected HIV risk, we created two separate models. For model one, migration status was the main predictor variable. For model two, region of birth was the main predictor variable.

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Both multivariable models adjusted for age, education, income, and sexual identity. We employed a generalized estimating equation-based Quasim [misspelled?] model and accounted for clustering at the MSA level.

Now, I will present the sample characteristics. Of the 8153 of MSM who completed the interview and HIV tests, 1734 were Latino MSM and were included in this analysis. Of the 1734 Latino MSM 55-percent were US-born; 37-percent were foreign-born and arrived five or more years ago; and 7-percent were foreign-born and arrived less than five years ago. Of all Latino MSM, again 55-percent were born in the United States, 5-percent were born in Puerto Rico. Although Puerto Rico is part of the United States, we considered it separately for this analysis. Between seven and 12-percent were born in each of the other regions specified.

I am going to describe HIV prevalence among Latino MSM. Overall, HIV prevalence was 19-percent. Prevalence ranged from 8-percent in 18 to 24-year-olds to 35-percent in those aged 50 and older. Differences in prevalence by education were not statistically significant. Prevalence was highest among those whose household income was USD 20,000 per year. Although this analysis was limited to MSM, there was variation in self-reported sexual identity and we found that prevalence was highest among MSM who identified as gay or homosexual.

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When we examined HIV prevalence by migration status we found that prevalence was highest at 23-percent among foreign-born men who arrived five or more years ago, and lowest at 10-percent among those who arrived less than five years ago. Next, we examined the HIV prevalence by region of birth and we found that prevalence was highest among men born in Puerto Rico, South America, and the Caribbean.

I'll, now, present the results of the multivariable analysis. First, I will present the results of the model that included migration status. Variables with significant findings are presented. Those comparisons with statically significant findings are bolded. Prevalent HIV infection was significantly associated with increase in age, income less than USD 20,000, gay identity, and being US-born or having arrived five or more years ago, both compared with having arrived less than five years ago. In model two, which included region of birth instead of the migration status variable, region of birth was not significantly associated with prevalent infection. Associations between other variables and prevalent HIV infection were similar to those in model one.

In summary, among Latino MSM HIV infection was associated with age, income, sexual identity, and migration status. This analysis is subject to several limitations. This is not representative of all Latino MSM as data were collected in cities with high AIDs prevalence, and most of the men were

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recruited from bars or dance clubs. Second, venue-based sampling may result in selection bias and this data are not weighted to account for bias. Finally, we did not have data on intent to remain in the United States so we are not able to address whether the population of recent arrivals are likely to remain in the country.

Compared with foreign-born men who arrived less than five years ago, men who arrived five or more years ago and US-born Latino MSM had higher HIV prevalence even after adjusting for other variables. This suggests that many foreign-born MSM acquire HIV after arrival in the US and indicates the presence of a critical window for HIV prevention after arrival in the United States. Published qualitative studies indicate that many Latino MSM immigrate to the United States to escape hostile social environments towards MSM and that arrival in the US leads to increased sexual freedom and disinhibition. As a result, interventions that target this group may be particularly important.

In descriptive analysis, prevalent HIV infections varied substantially by region of birth with prevalence highest among men born in Puerto Rico, South America, and the Caribbean. As these differences did not persist in multivariable analysis, this finding may be due to confounding by other characteristics such as age which varied substantially by region of birth. Nonetheless, this information may be useful

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when designing prevention strategies in cities with large Latino populations.

Finally, HIV infection was also associated with low income. Our study does not explain the link between low income and HIV infection. Public health officials should make special efforts to reach low-income Latino MSM with HIV prevention efforts. We should work to improve access of this population to testing and care. NHBS is a team effort and this would not have been possible without the hard work of that team. Thank you.

[Applause]

**KEVIN FENTON:** Thank you, Alexa. We have time for a few questions. We are going to start with the front on the left.

**BILL HOELSCHER:** Hi, Bill Hoelscher with the Coastal Bend AIDS Foundation in Corpus Christi, Texas. In your study, did you determine whether or not the participants were documented or undocumented, and that in anyway had an effect on the positivity rate? Also, I'd like to know, most of the studies seem to be on very large urban areas rather than just small cities or rural communities such as ours. I'm just wondering, what exactly is the reason for that as well.

**ALEXANDRA OSTER:** Okay, great. We did not collect any information on whether people were documented or undocumented. You raise a great point that this could have important implications for prevention and care, but we can't speak to it with the study. Your second question was about the locations

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where we conduct NHBS. The selection for NHBS is based on AIDS prevalence. We conduct an NHBS in cities with high AIDS prevalence and these turn out to be large urban areas. It's true, factors may vary—they may be very different for populations in rural areas. CDC does have some other studies that have looked at migrant communities in different situations, but not focused on MSM.

**KEVIN FENTON:** Thank you. I know there are a number of people who wanted to ask questions. We only have time for the four people currently standing at the microphone. I'm going to take the two questions on my right. Then we'll take the two questions on my left. I'm going to ask Alex to respond to each pair, so please.

**VIRAJ PATEL:** Viraj Patel from Montefiore Medical Center in the Bronx, New York. This question is in relation to the identity issue and higher risk seen among people who identify as gay or homosexual. Did you guys collect information on the number of sexual partners such that perhaps the individuals who identify as gay or homosexual have more sexual acts with more male partners compared to men who have sex with both or who don't identify as gay or homosexual.

**KEVIN FENTON:** Great, thank you and at the back?

**DAVID OSTROW:** This is a comment for the entire—is there time for that or—?

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**KEVIN FENTON:** If it's a brief comment, yes; but if it's-

**DAVID OSTROW:** I want to thank the panel for such interesting presentations. My name is David Ostrow [misspelled?] from Chicago. A great philosopher once said that it's déjà vu all over again. I remember that in the early 1990s asking Jim Curran what the future of HIV epidemic would be in the United States, and he said it would be like any other STI. It would become a disease of the poor, disenfranchised, and those without adequate access to healthcare and prevention care.

I think these studies demonstrated that that is what is happening among Black MSM and Hispanic MSM in the United States, except there's an overlay particularly in the Black MSM community where there is this church issue of being ejected and a lot of anti-homosexual rhetoric coming out and making it even more difficult for people to seek care and so forth. I think we're seeing a pattern that's not unique to HIV, but is being exacerbated by particular social drivers that are perhaps unique to these populations.

**KEVIN FENTON:** Thank you, David. Alex, please.

**ALEXANDRA OSTER:** Yes, the question about gay identity and number of male sex partners. That's not something that I've looked at yet for this particular sample of Latino MSM, but

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it's certainly a good point and I can certainly explore that further.

**KEVIN FENTON:** Great. The two questions on my left.

Yes, Kevin?

**KEVIN CRANSTON:** Kevin Cranston, Massachusetts

Department of Public Health. Thank you, Dr. Oster. How did the study accommodate South American men born in Brazil either in inclusion in the interview or in analysis?

**ALEXANDRA OSTER:** The way that we ask about race ethnicity is that everyone gets a question asking do you identify as Hispanic or Latino. Yes, No. It was that question alone that determined whether they are considered Latino MSM. I suppose it would be up to them to determine whether they identify as Hispanic or Latino.

**KEVIN FENTON:** The final question from the back on my left?

**MARK BRENNAN:** Mark Brennan from the Aids Community Research Initiative of America. I was wondering because you lost the results in model two if there is any relationship between time of arrival and country of origin other than those who are US-born, and also with the time of arrival and the income findings, did you have any information on transactional sex and whether that might have been related to your findings?

**ALEXANDRA OSTER:** Time since arrival did vary by location of origin. Those from South America were more recent

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arrivals. Those from Puerto Rico were the sort of the most distant arrivals, but we did account for that in the model. The question was about transactional sex, those data aren't ones that we've looked at. We do have whether they have exchanged money or other goods for sex in the past 12 months and can look at that. Thank you.

**KEVIN FENTON:** Great. Thank you, Alexa. [Applause] We call to the podium now, Dr. Beer.

**LINDA BEER:** Good afternoon. First, to provide some background on what I'll be talking about today that you've already heard via many of our co-presenters. In the US, Black MSM are disproportionately likely to become HIV infected. MSM account for 61-percent of new infections in the US and Blacks comprise 11-percent of the US male population, but 37-percent of new infections among MSM. There has been limited work on factors among HIV infected MSM that may contribute to higher incidence among Black MSM. Further, this is not to our knowledge been explored for a large geographically diverse sample.

What factors among HIV infected MSM may contribute to higher incidence among Black MSM? First, we know that frequent, risky sexual behaviors increase the likelihood of HIV transmission. Also, research has shown that HIV viral load suppression decreases the likelihood of HIV transmission. Further, studies have found that Black MSM tend to have sex

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partners of their same race so if HIV infected Black MSM engage in more sexual risk behavior or have lower levels of viral suppression, this may contribute to higher incidence among Black MSM. Further, racial differences and viral suppression can also contribute to disparities in morbidity and mortality among MSM, another area of concern.

The specific objectives of this analysis were to answer two questions. First, are there differences between HIV infected Black and White MSM in factors that increase HIV transmission risk? We explored behavioral factors looking at sexual behavior and clinical factors where we examined ART use and viral suppression. Second, if there were differences, we wanted to identify factors that could account for these differences.

To accomplish this, we analyzed the Medical Monitoring Project or MMP data collected from June 2009 to May 2010. MMP is a National Supplemental HIV Surveillance System that monitors behavioral and clinical information on HIV infected adults who are in care in the United States. MMP has a multi-stage cluster design for where states are sampled. Then care facilities, and finally, adult patients receiving care. This methodology allows us to make inference to the entire population of the HIV-infected adults receiving care in the US. For this analysis, we included non-Hispanic, Black or White

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male MMP participants who had oral or anal sex with a man during the past year.

To address our first objective, are there racial differences and factors associated with transmission? We compared the prevalence among Black and White MSM of self-reported sexual risk behaviors, specifically, unprotected anal sex with a negative or unknown status partner, and a reported number of sexual partners in the past 12 months. We compared self-reported current ART use and two measures of viral suppression captured from the participants' medical records. Our outcomes were sexual risk behavior, ART use, and viral suppression. For outcomes that significantly differed between races, we use multivariable logistic regression to identify factors that could account for these differences.

In our models, we included variables that were associated with the outcome at  $P$  less than 0.1 and changed the association between race and the outcome by more than 10-percent. We, then, compared the unadjusted and adjusted predictive prevalence of each outcome to assess how the racial difference changed with the inclusion of the other variables in the model. All analyses accounted for clustering, unequal selection probabilities, and non-response.

Here are our results. Our response rate at the first stage of sampling, the state level was 100-percent. It was 76-percent at the facility level, and 53-percent at the patient

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level resulting in an overall response rate of 41-percent. We obtained matched interview and medical record abstraction data from 4217 participants from 461 HIV facilities. Three hundred and fourteen Black MSM and 696 White MSM men met our inclusion criteria.

First, we looked at behavioral factors associated with HIV transmission. Among sexually active HIV-infected MSM in care, we found no racial disparity in having unprotected sex with a negative or unknown status partner or in engaging in misbehavior while not durably virally suppressed. Black MSM were less likely than White MSM to report four or more sexual partners in the past 12 months.

Turning to clinical factors, this graph displays the estimated percentage of White MSM on the left and Black MSM on the right who are on ART shown in red or currently virally suppressed shown in blue and who have durable viral suppression shown in green. The graph shows significant racial differences among MSM in all three factors.

In terms of likelihood of HIV transmission, we see that almost three out of four White were durably virally suppressed in the past 12 months. The same is true for only about half of Black MSM. We found differences between Black and White MSM in clinical factors that increased the risk of HIV transmission.

Turning to our second objective, we find factors that could account for these differences. As a reminder of our

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methodology, our first step was to identify factors associated with ART use and viral suppression which are shown here. We included in our models all factors that changed the behavioral association between races in the outcome by more than 10-percent.

Here were the results for the ART use model. The graph shows the unadjusted and adjusted predictive prevalence of ART use by race. White MSM are shown in blue and Black MSM are shown in red. The unadjusted prevalence of ART use was 91-percent for White MSM and 80-percent for Black MSM. Adjusting for age, health coverage, poverty, time since diagnosis, and disease stage did not change the prevalence of ART use for White MSM, but increased the predictive prevalence for Black MSM to 84-percent, decreasing the Black White risk difference from 11 to seven percentage points.

Turning to the viral suppression model even limiting the analysis to those on ART, we still saw differences in durable viral suppression as you can see in the unadjusted estimates; 78-percent for White MSM and 61-percent for Black MSM. Adjusting for age, health coverage, poverty, time since diagnosis, and education changed the predictive prevalence for White MSM to 76-percent and increased the predictive prevalence for Black MSM to 68-percent. The Black/White risk difference was halved from 17 to eight percentage points.

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Our first objective was to determine if there were differences between HIV-infected Black and White MSM in care and factors that increased HIV transmission as other studies have found. We saw no evidence for racial differences in sexual behaviors to the extent that sexual networks are racially homogeneous. Risk behaviors among HIV infected MSM in care did not appear to be contributing to racial disparities in HIV infection. However, we did find significant racial differences in viral suppression even among those on ART which possibly contribute to racial disparities and new infections and health outcomes among MSM.

What did our multivariables tell us about why HIV-infected Black MSM who were in care are less likely to be virally suppressed than Whites? Part of the story were racial differences and ART use. Even controlling for other factors Black MSM were less likely than White MSM to be on ART and ART use is the path to viral suppression. Other contributing factors were that Black MSM were younger and more recently diagnosed than White MSM, and both of these factors are associated with the likelihood of viral suppression.

From a Social Determinants of Health Framework our findings indicate that differences in access to resources that support health such as healthcare, income, and education account for some of the racial differences that we saw. However, even after adjusting for these other factors, Black

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MSM who are on ART are still less likely to achieve durable viral suppression. Other possible contributing factors include differences in adherence to ART or in ART regimens, both of which we are beginning to explore.

This analysis is subject to some limitations. First, our study population is limited to those in care. Racial differences in the entire HIV infected MSM population are likely higher than those presented here since many studies have found that African-Americans are less likely to link to and be retained in care. Also, self-reported information may have led to measurement bias although we have no reason to believe that this bias would vary by race.

In conclusion, we found that the majority of HIV infected MSM in care were on ART and virally suppressed. That is good news. However, over half of sexually active Black MSM are not durably virally suppressed, and this may be contributing to disparities and incidence. Although the model adjusted racial differences that we found were relatively small, the effect of even small differences can be compounded by relatively close sexual networks and socio-demographic factors that are more prevalent among Black MSM.

Our results suggest that increasing the proportion of Black MSM that are durably suppressed may help decrease racial disparities and incidence, and will improve the health of Black MSM. To accomplish this, our findings indicate that we need to

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make efforts to increase the issue of ART and address the structural inequalities that exist between Black and White MSM in terms of access to care and resources.

Finally, I'd like to acknowledge all the people that contributed to this project and the presentation. Thank you.

[Applause]

**KEVIN FENTON:** Thank you. We'll move immediately into the questions as we are very—we are actually at time.

**ANN BAGCHI:** Thank you. I'm Ann Bagchi from Mathematica Policy Research. This last study I think was the only one that specifically mentioned health insurance status, and I'm wondering if maybe other members of the panel want to talk about this as well, but what specific role did health insurance status play in your findings and what implications does that have with the passage of the Affordable Care Act and its effect on people with HIV?

**KEVIN FENTON:** Thank you.

**LINDA BEER:** Thank you, yes. Our measure of health coverage, I mean these are people who are in care. Our measure was whether or not they had continuous healthcare coverage over the entire previous 12 months. We did find much higher prevalence of not having continuous healthcare coverage among Black MSM compared to White MSM which hopefully the ACA will be able to address.

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**KEVIN FENTON:** Thank you. Our last question from the floor?

**MALE SPEAKER:** Sort of related is the same issue of—we're looking at individual factors associated with a person, a participant, but what about those associated with their clinics. Are there differences based upon where people get their care and what kind of standard of viral suppression exists at those clinics? Would they be low providers or high providers of HIV care and services?

**LINDA BEER:** Right, thank you. That's an excellent point. MMP because of our sampling design, we do actually collect a lot of information from both the patients' clinics where they're sampled from and also their providers. We haven't yet begun to look at that, but I think it's certainly going to be a topic of future studies.

**DARRELL WHEELER:** Thank you very much. We've had fantastic—thank you. [Applause] Very rich presentations utilizing surveillance data, new and innovative approaches to assessing viral load and hearing first-hand new data coming out from HPTN 061. We are over our time now so we really don't have the opportunity to go further into questions, but I want to thank and I do want to bring to your attention based on a question that Dr. Mayer's put out there—all right I don't think it was Dr. Mayer's, but someone else asking about testing. At Poster Session 290 today, Travis Sanchez will be presenting on

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the validation of reported awareness of HIV infection. Thank  
you to the audience.

[END RECORDING]

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