Expert Interviews

National STD Curriculum Podcast

Congenital Syphilis Prevention

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Congenital syphilis cases have tripled in recent years. Dr. Katherine Hsu, a Boston University Medical Center Professor of Pediatrics and a national authority on congenital syphilis, discusses when to screen, birth letters, and public health's role in prevention with National STD Curriculum Podcast Editor Dr. Meena Ramchandani.

Topics:

- Syphilis
- congenital
- STIs
- STDs
- third trimester

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Transcript

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introduction**[00:00] Introduction**

Dr. Meena Ramchandani
Hello everyone. My name is Meena Ramchandani. I'm an infectious disease physician at the University of Washington in Seattle. This podcast is dedicated to an STD [sexually transmitted disease] literature review for health care professionals who are interested in remaining up-to-date on the diagnosis, management, and prevention of STDs.

For this episode, we welcome Dr. Katherine Hsu. It's a distinct pleasure to introduce Dr. Hsu. Dr. Hsu is a professor of pediatrics and attending physician in pediatric infectious diseases at Boston University Medical Center. In addition to her work in the School of Medicine, and excellence in clinical care, she serves as the Medical Director for the Division of STD Prevention and HIV/AIDS Surveillance at the Massachusetts Department of Public Health, as well as the Director of the [Sylvie] Ratelle STD HIV Prevention Training Center of New England. Dr. Hsu is a national authority on both the topic of congenital syphilis as well as congenital syphilis prevention through public health. We are very excited to have Dr. Hsu here today, and is it okay if I call you Kathy for this episode since we know each other so well?

Dr. Katherine Hsu
Absolutely, Meena. I much prefer going by Kathy, and I appreciate your asking.

Dr. Meena Ramchandani
Welcome, Kathy. So let's take a first step back and talk a bit about congenital syphilis and syphilis in pregnancy. So, for our listeners, we've talked about congenital syphilis on previous episodes. It's a devastating disease that can result in stillbirth, neonatal death, prematurity, and severe long-term health outcomes, so we're very lucky to have Kathy here today. What's going on in the state of Massachusetts, and is that reflective of what's going on throughout the U.S.?

Dr. Katherine Hsu
We are on track to double our numbers from 2022, which were about 10 cases. We are on track already with about nine cases so far in 2023 that qualify, so we're probably going to obtain over 20 cases this year.

Dr. Meena Ramchandani
That's what we're seeing in Washington State as well. In 2021, we had 51 cases of congenital syphilis, and in 2020 it was ten, and in 2019 only three.

systemic-challenges**[02:09] Systemic Challenges**

Dr. Meena Ramchandani
What have been some of the challenges addressing congenital syphilis and syphilis in pregnancy?

Dr. Katherine Hsu

That is the whole problem. To prevent the problem of congenital syphilis, you basically already have the tools. We have the tools. In the United States of America, this is not an epidemic where the infectious disease pathogen is neither curable nor preventable through good treatment. What I mean is we already know that penicillin works, and if you treat a pregnant woman in time, 90 plus percent of the time, you can prevent transmission to the as-yet-unborn infant.

The problem is really more one of health care systems. It is not a problem of science. It's really about systems getting women into prenatal care rapidly enough so that the diagnosis and the screening can be made and the appropriate courses of penicillin can be prescribed well in advance of birth. So I'll break down the problem. Post-COVID, we are now seeing women coming to the state of Massachusetts for the first time between their 36-week of pregnancy and when they give birth. So basically, we can't get the treatment in fast enough for the infant not to be qualified as a case of congenital syphilis. It's a numbers counting issue, and it's about getting treatment in early enough because any case that doesn't start treatment four weeks before delivery actually counts as a case.

Dr. Meena Ramchandani
So we have the tools. It's really a preventable disease. It's just about testing, getting treatment in, getting these pregnant persons into care and as soon as possible.

Dr. Katherine Hsu
Right, exactly. I would say the other proportion of the cases that we are just unable to prevent are the women who are not accessing prenatal care, and some of them have concomitant comorbidities. Here in Massachusetts, what I can describe is that the substance use epidemic has definitely been one of the syndemics that relates to the issue of congenital syphilis. We have a number of infants born to women with substance use disorder where the diagnosis of pregnancy or the diagnosis of syphilis during pregnancy was not made early enough for us to intervene and prevent a case being diagnosed in the infant.

Dr. Meena Ramchandani
And we're seeing similar in Washington State in our DIS, and for our audience, DIS stands for Disease Intervention Specialists, have struggled with many of these cases because they're occurring in patients who are not typically engaged with the medical care system. So, even if they're screened, some of these patients are really hard to contact to get a hold of to communicate that diagnosis but then also link them to treatment. Are you seeing that same kind of issue with your Department of Public Health of trying to, even for the people who are getting screened, linking them to care?

Dr. Katherine Hsu
Not so much. Here I would say, in Massachusetts at least, I can comment that because we have such good healthcare coverage, once we identify somebody as pregnant or having substance use disorder, engagement into treatment facilities tends to be better. We also have an armada, not dissimilar to the system that you probably have in Washington, of field epidemiologists, also known as disease intervention specialists, who can work across department silos and get people into substance use disorder treatment. It's been more an issue of, for example, substance use disorder treatment facilities aren't always used to testing all women or all people who can become pregnant for pregnancy. They don't automatically do a pregnancy test, so we just won't know about them in time. So fortunately, in our systems, usually once we engage them, as long as they're willing to come back for care, which is often the case, it's a good time to intervene both for substance use disorder and for syphilis treatment. It's a matter of making the diagnosis in the first place faster.

when-to-screen**[06:40] When to Screen**

Dr. Meena Ramchandani
Can you tell us what's the recommended screening for syphilis in pregnancy in the U.S. just generally, but then also for communities with high rates of congenital syphilis, which now it sounds like a lot of communities are heading that way?

Dr. Katherine Hsu
Well, that's actually one of the difficulties. So, in the United States, we usually defer to one of two guidelines agencies related to management and screening for STIs [sexually transmitted infections]. One is, of course, the United States Preventative Services Task Force (USPSTF), and the other one is the CDC [Centers for Disease Control and Prevention]. For the USPSTF, the latest guidelines, there are two sets. One is about the screening of syphilis in nonpregnant adolescents and adults. The other guideline pertains to pregnant individuals, and for pregnant individuals, it's fairly simple. You're just supposed to screen them at entry to prenatal care. That's the key problem. Entry to prenatal care can take many different forms if there isn't adequate prenatal care or there isn't adequate health insurance coverage in any given jurisdiction. So, that's the one thing that's totally solid across any jurisdiction in the United States. And then what you referred to for pregnant individuals where syphilis is known to be at a higher prevalence in a jurisdiction, then more frequent screening is recommended. For example, at third-trimester or at delivery are two other time points that people contemplate rescreening individuals if you're at high enough prevalence. But the problem is neither CDC nor the USPSTF has come out with *exactly* what they mean by high prevalence. That number is very difficult to come by. There is no specific cut point.

third-trimester-screening**[8:34] Third-Trimester Screening**

Dr. Meena Ramchandani
How widespread is the adoption of third-trimester screening, at least in the local jurisdictions that you know of?

Dr. Katherine Hsu
Well, before we get back to how widespread it is, how did Washington State make that decision of what was high enough prevalence? And, then, I'll share with you how Massachusetts made that decision about what was high enough prevalence.

Dr. Meena Ramchandani
So, that's a great question, Kathy. In 2022, a letter was sent out from Public Health Seattle and King County as well as the Washington Department of Health, and given the significant increase of congenital syphilis, the recommendation changed so that all pregnant persons should be tested at the following times: in the first prenatal care and then also at the time of third-trimester laboratory screening. Some people didn't have the typical risk factors that one would see with syphilis in pregnancy.

Dr. Katherine Hsu
I completely agree, Meena. That was where Massachusetts was back in 2020. As I look back on the clinical advisory that we issued, we literally specified that the syphilis rate is rising and projected to exceed 10 per 100,000 women of reproductive age in Massachusetts in 2020, which goes back to rates we haven't seen since the 1980s when we actually were doing more screening during pregnancy, not just at x1 at entry to prenatal care. So, we also made the decision based on a projected increase that wasn't quite a 10 per 100,000 but was on track to reach it. And we did, in fact, reach it the next year, and we use that as the cut point.

Dr. Meena Ramchandani
That's really helpful. And then, in terms of how widespread the adoption of third-trimester screening: What was your experience like?

Dr. Katherine Hsu
We don't believe there were very significant challenges. In Massachusetts, as I described to you, health insurance isn't usually the issue. So, what we did was to confirm that there weren't very many challenges with the implementation of this third-trimester screening recommendation from the public health department. We actually worked with the Maternal Child Health Bureau in the Massachusetts Department of Public Health. They have a listserv and an organized approach to perinatal morbidity and they have a network of providers across Massachusetts, clinicians across Massachusetts engaged in perinatal care, obstetricians,

gynecologists, family practitioners. We sent out a survey and basically identified within months of the issuance the clinical advisory in June of 2020, most systems had heard of it. Most systems that were doing obstetric care, like having delivery services, when they had an impression of the charts that they were reviewing, we asked them specifically, “Have you seen third-trimester screening taking hold?” And 80 plus percent of the facilities that we surveyed through this perinatal quality improvement network and our collaborators in the Maternal Child and Health Bureau of Massachusetts indicated 80 plus percent of the time they were seeing third-trimester screening being done.

Dr. Meena Ramchandani
Oh, that’s fantastic! What is the rationale for third-trimester screening, and then have there been any congenital syphilis cases prevented by the third-trimester screening?

Dr. Katherine Hsu
In the first six months following the instigation of this—in the middle of the pandemic, really, a clinical advisory—we wondered the same. And we were able to identify, I think even within the first six months or nine months, four cases where clearly the screening RPR [rapid plasma reagin] or one of the tests that’s used to identify syphilis in pregnancy was negative at first-trimester entry and had flipped and changed to positive by the third-trimester screen.

If you take a step back and ask the question of when is screening effective or cost-effective, several studies have been done to try to project costs associated with this. First of all, the cost of an RPR or a syphilis screen nowadays is so much cheaper than when they actually looked at this last, but second of all, it was entirely based on the prevalence of syphilis, the incidence of syphilis acquisition in women 15 to 45 [years of age]. And, if that dials upwards, pretty much you can see effects almost immediately that indicate that you can prevent—even a single case of congenital syphilis averted is incredibly high yield because of the projection about quality-adjusted life years around an infant who then comes out with no significant morbidity, or so we think, from congenital syphilis or syphilis exposure.

birth-letter-option--follow-up**[14:10] Birth Letter Option & Follow-up**

Dr. Meena Ramchandani
You talked a little bit about some of the different programs that you have in Massachusetts, so how is the Massachusetts Department of Health addressing the congenital syphilis in terms of the types of program that you have developed to address this issue? Can you lay them out for us?

Dr. Katherine Hsu
So, I would say it starts right when a positive trep [treponemal] and a positive non-treponemal assay are identified in somebody who’s identified as gender female within our surveillance database. At that point, because we get electronic laboratory reporting in, if the woman is identified as between 15 and 49 years of age, what we do is we have a research analyst either look in the medical record because we now have medical records access, direct medical records, access to a number of clinical systems in Massachusetts, or we call the practices and we find out if they’re pregnant in order to figure out which women are the highest priority to reach out and co-manage with clinical facilities. Once that’s done, I would say approximately 150 to 300 pregnant individuals are identified to date on an annual basis. That is a manageable number.

In that realm, every one of those women with a positive trep and a positive non-trep, we then attempt to look back, work with other jurisdictions to import information that’s helpful to clinicians about whether or not the woman has ever had previous treatment, or whether the woman needs it now. And now it can be documented in the surveillance record. So we keep the records, and wherever the woman delivers in the state of Massachusetts, we can then be called, and we actually issue what we call “birth letters” to every one of the clinical practices following these patients, both to the clinical practice and to the expected hospital of delivery, that summarize the woman’s stage of syphilis at diagnosis, whether it was infectious or not, and summarize the patient’s previous treatment and titer record so that clinicians have it on hand at the time of delivery so they can make better decisions around the time of delivery.

And, to top it all off, because not all women actually deliver at the hospital that they expect to deliver at, we basically leave our phone numbers available all the time. And for all the fact that women deliver around the clock, it's just amazing. Clinical services are incredibly polite. They don't use that cell phone until it's around 8:00 in the morning or change-of-shift, and they call us on a weekend, and yes, they can actually reach us. We can double-check the records, and we can help issue guidance if it's needed. Many times it's not, though. Many of our clinical systems have great coverage with infectious disease (I.D.) specialists and pedi [pediatric] I.D. docs that look through the scenarios of treatment guidelines, both from the CDC and the Red Book [Report of the Committee on Infectious Diseases of the American Academy of Pediatrics (AAP) or AAP Red Book]. They basically reinforce the same kind of approach dependent on the probability that the infant coming out actually does or doesn't need treatment. We manage in accordance with that.

If a clinical facility actually doesn't have much I.D. input, we do offer additional guidance from the public health department vis-a-vis our opinion of whether or not the woman deserves more treatment or the infant deserves more treatment at the time of delivery. Following that, we also spend some bandwidth following the infants, knowing that many of them can be tracked through the Massachusetts Immunization Registry as to who their primary care practice will be. And through the primary care practices, we double-check that ultimately testing is done that documents that the infant had completed and responded to therapy for some, the handful that were truly exposed to infectious syphilis, or we try to document antibody testing many months later that clears the infant of ever needing further management later on in life. So we have a postnatal follow-up system too.

reporting-requirements**[17:52] Reporting Requirements**

Dr. Meena Ramchandani
Any challenges with these programs in implementing them or coordinating with the different providers? And it sounds like you've probably had quite a bit of success, and how have you been able to measure that success?

Dr. Katherine Hsu
Well, I think the feedback from clinicians about what we do and when we co-manage and supply records it's so helpful that they don't overdo or underdo clinical management around the time of delivery. On average, the clinicians are amazed and grateful that the public health department has access to this type of information because I think in many systems across the United States, they are not aware of the fact that this is a reportable, trackable, notifiable disease of public health significance, and *every* state and jurisdiction is required to keep records both of the preceding titers and any clinical management that was done. And moreover, many clinicians don't realize that we have crosstalk across jurisdictions and United States territories where individual people are named within public health departments as having roles to be able to call across jurisdictions and get previous records that are really helpful to not over-treat or under-treat women who are pregnant. So, I think clinicians are amazed that we're responsive in real-time.

I think people worry about the public health department not necessarily having the clinical capacity and being too overbearing. Right? We only have the syphilis lens. We only worry about the syphilis lens. What if the rash is actually something other than syphilis? We are so not blind to that, and in many clinical systems, we have colleagues that are working with us, and basically, we don't want to work against what the clinical system is already doing. We're merely supplying the information in real-time so that it's actionable and can change the course of management right around the time of delivery.

cases-averted**[19:56] Cases Averted**

Dr. Meena Ramchandani
It's probably hard to assess a decrease in congenital syphilis based on the program implementation just because the rates are going up higher or there's more cases. Correct? But at least what you could do is assess if there's any prevention of highly probable or definite congenital syphilis by some of the programs you've implemented.

Dr. Katherine Hsu
Every state and jurisdiction is now monitored by CDC because this is such a high-priority issue and such a high-yield intervention to intervene with pregnant women in their treatment to prevent cases of congenital syphilis. CDC is now doing program-by-program, jurisdiction-by-jurisdiction analyses of cases averted, where the denominator of the possible case number is the women with infectious syphilis who were pregnant in any given jurisdiction, and then the proportion of time that the case qualifies then as a congenital case, either because the woman didn't receive treatment in time or because the infant actually truly had signs and symptoms of congenital syphilis or there was a stillbirth associated with it. So, cases averted, and out of a proportion of total number of women who are pregnant with infectious syphilis, is a calculation that's now attempted at least on a national level for every state and jurisdiction.

Dr. Meena Ramchandani
And that'll be good information to follow over the next coming years.

collaboration-options**[21:29] Collaboration Options**

Dr. Meena Ramchandani
What would be your advice to other jurisdictions or different regions in terms of working together to prevent this disease? Like from a national, or statewide, or local level?

Dr. Katherine Hsu
Early on, we realized that individuals with syphilis were sometimes treated in private practices that don't ordinarily have the wherewithal to stock *Bicillin* [long-acting penicillin G benzathine]; we actually learned early on that we should participate in a program to buy *Bicillin* at the state level and distribute it as needed when an individual who presents for care wants to be treated in their own primary care office. This includes OB/GYN and family practice offices taking care of pregnant individuals, for example. So we distribute the *Bicillin* if the clinical practices themselves don't stock it.

So, in every step of the way, it's been the public health department monitoring what are potential barriers to great clinical quality care for either diagnosis or management or subsequent reduced management around the time of delivery of an infant and trying to ameliorate those barriers. So, I guess one approach would be rather than feeling like if you, for example, are listening to this podcast today and you're a clinician working on the front lines in a jurisdiction just overwhelmed by the sheer volume of infants who have been exposed to women who potentially have syphilis infection. When you have the bandwidth or when there's an opportunity, have conversations with the local jurisdictional public health department, whether it be at the county level or at the state level. In our state, we don't operate on a county-level public health department intervention, but many jurisdictions work at the county level, talking directly to your clinical counterparts within those public health departments to figure out what's the best way forward in terms of this epidemic that we're all seeing affecting pregnant women.

Dr. Meena Ramchandani
Thank you Kathy for being on this episode. It's great to hear of your experience in Masssachusetts and steps you've taken to address this epidemic. It's really helpful to learn from each other.

Dr. Katherine Hsu
Well, Meena, you make it easy, and thank you so much for sharing some of Washington State\'s experiences. I do think it is an incredible process to think about what each state and jurisdiction has to conquer individually, but sharing these experiences has been really helpful for me as well. And, it\'s really a tribute to the entire Massachusetts Department of Public Health team, including my amazing public health nurse, Kaitlin Nichols; a shout out to her, Lauren Molotnikov, who\'s been our senior epidemiologist looking at these numbers with me for almost a decade, and many others on the team of the field epidemiologists who work so hard to get the women and their partners treated so that they don\'t become reinfected and have to go through this endless cycle. It\'s been a tremendous experience to work on the public health side of things vis-a-vis these projects.

Dr. Meena Ramchandani
I hope our listeners are able to join us in late June episode when I discuss with Cathy how to diagnose and manage congenital syphilis. Thanks for listening.

credits**[24:55] Credits**

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