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EMERGING ISSUES IN THE MANAGEMENT OF STIS: SEXUALLY TRANSMITTED ENTERIC PATHOGENS

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Dr. DeMarco is an infectious disease physician and Assistant Professor of Medicine at the University of Rochester Medical Center, and at the Monroe County sexual health clinic. She's also a faculty at our New York State clinical education initiative, Sexual Health Center of Excellence. Welcome, Dr. DeMarco.

00:24

Thanks, Jess. Welcome, everyone. It's just now 830. So we'll go ahead and get started. But I do want to review just a couple of the house Katie keeping items that Jessica mentioned just a couple of minutes ago. For those who are just joining us. If you're joining us in a group, or you're logged in with somebody else, or under someone else, and you haven't registered on your own, we would do want to make sure you get CPE credit for today's session. So go ahead and throw your name and email address in the chat. You can send that to hosts and panelists, or Jessica van Scott directly. And she will make sure that you get credit for today's session. So welcome. This is going to be a 30 minute talk. And we'll have time for q&a at the end. So please feel free to drop questions or any comments in the q&a or the chat section. Today's topic, as Jessica mentioned, is sexually transmitted enteric pathogens. I have no financial disclosures, and some additional objectives for today's session. So by the end again, you'll be able to identify three gi pathogens that may be associated with sexual transmission, you will be able to describe to strategies to prevent sexual transmission of these gi pathogens. And you'll be able to recognize indications for sexual history taking an STI testing in those with enteric infections. So what do I mean and let's kind of take a step back about enteric pathogens or enteric infections. These are organisms that can be found in the GI tract and transmitted in many different ways. And sexual transmission is just one of those modes of transmission. So here looking at different types of transmission for these enteric pathogens. The fecal oral route is most common via direct or indirect contact. So how that sort of manifests would be food or waterborne transmission, where the source is contaminated. And then ingested, but also sexual contact, particularly in email sexual contact, where there's some kind of contact with fecal material. Notably, with most of these infections, a very small inoculum can still elicit significant disease and that's part of the reason they're so transmissible. A symptom asymptomatic transmission does occur, and we see that with other STIs as well, which can make control of outbreaks difficult. Another thing with a couple of these bacterial infections that we'll talk about and the viral infection as well, a carrier state can occur for the bacterial infections where people are asymptomatic, but still harbor this bacteria and can transmitted for weeks to months after infection. And for Hepatitis A, for example, prolonged viral shedding can occur again for a prolonged period after infection results. And then when we're talking about modes

of transmission, there are certain sexual practices that are associated with the risk of sexual transmission for these pathogens. So as you might imagine, it's things that involve email sexual contact, be it oral anal, digital, anal or penile oral contact following anal sex. Sorry, just slides not advancing here. Okay. So, just a quick note that transmission of these pathogens occurred or is often limited in terms of the food or waterborne outbreak instance with good hand hygiene, but you can also implement hand hygiene and other preventive strategies, which we'll talk about towards the end of this discussion. But because these are Pathak, these pathogens are also predominantly transmitted by nonsexual routes. The describing the epidemiology surrounding sexual transmission is quite difficult. So we'll try to delve into that a bit as well. When we talk about the GI pathogen specifically, we have bacterial, viral and parasitic organisms that you can see here. notable ones include salmonella, Shigella, Campylobacter and CDiff, which many of you may be familiar with and Shigella has gotten a lot of recent press due to multi drug resistance. The parasitic infections you may have heard of less commonly in terms of sexual transmission, but there certainly are. Reports in Giardia would probably be the most common of those that you see there, followed by Entamoeba histolytica. And notably, there are plenty of other pathogens that can be transmitted through annual sexual Contact that are not necessarily considered enteric. But we're not covering those within the scope of this talk today. So clinical syndromes are a cover that you'll see here. And I'll describe on the next slide. The diagnosis of these infections is sometimes clinical, depending on what tests are available, but in certain cases, you may want to obtain stool testing, which we'll talk about later. And there are many different ways to identify the pathogen, including molecular testing, culture of stool, and sometimes microscopy.

05:37

Let's see. Okay,

05:42

this is from the New England Journal, there was a really great review paper looking at emerging and reemerging sexually transmitted infections. And here I just want to draw your attention to some of the enteric syndromes that I mentioned before. So when we're looking at Enter, Enter rhinitis or colitis, there are a couple different pathogens at play specifically Shigella ShiGGa toxin producing E. coli, Campylobacter species and Entamoeba histolytica. When you look down to the third row at proctitis, pathogens are a bit different, including some other routine STIs. Here they have LGB, but certainly other things that cause proctitis include syphilis, gonorrhea, even non LGB, Chlamydia, herpes, etc. But for proctitis, you can see that there's a lot of overlap in the enteric pathogens that cause colitis listed above. Thinking about epidemiology of these infections, we don't have great data on again, sort of the sexual transmission differentiated from non sexual transmission, but I can give you information about case rates in New York State and New York City, New York State Health Department in New York City Department, Health

Department reports separately, and so I'll report those separately for you here. Looking at just overall number of cases. You can see that in New York state over the last several years and we have data up to 2020. For this reported publicly, Campylobacter is the most common that's reported to the state and this is followed by salmonella and then third you see Giardia or diocese. Some of the others that are sort of clustered towards the bottom include Hepatitis A Shigella E. coli, excuse me, ShiGGa toxin producing E. coli and Cryptosporidium or cryptosporidiosis. When we put population level data as the denominator, you can see the incidence here is still somewhat similar in terms of how common things are compared to the number of cases. We do have Campylobacter still in the top three, as well as Jared diocese and Salmonellosis. The patterns scene in New York City are quite similar, with the exception that you can see that Campylobacter is sort of widely separated from the others. And then if you separate these by age groups, it's a little difficult to see here. But generally speaking with these types of enteric infections, you can see more severe disease in young children and older adults and many people have a self limited diarrheal illness. So they may not actually be seeking testing, or or medical care in general for this illness. So you certainly not everybody with infection is being tested. And that does have some contribution to how we see the data reported, of course. But here you can see the spread of these types of infections as reported in New York State by age group. And there is a little bit of trend for a couple of these, including Campylobacter where you're seeing more cases among those who are very young children or older adults with a more even spread among these age groups in between, but relatively few cases, comparatively in adolescence. So going back to big picture, generally these illnesses are again, self limited, but they have a very short incubation period and depending on the illness that we're talking about, it could be hours to days. Hepatitis A is really the exception to that and I'll talk about that later. The symptoms so I talked about syndromes, but symptoms primarily include diarrhea, that could have a component of bloody diarrhea or perience. There can be fever, abdominal pain to Nesmith, all these things you might commonly associate with a colitis or proctitis. If a person has entered itis you would also expect to see some upper GI symptoms as well including nausea possibly vomiting. Generally when these symptoms occur, the diarrhea is a little bit longer duration than the fever. But again, there's some variability between the types of infections. These illnesses can be prolonged, even though they usually are self limited. And sometimes they require treatment with, you know, severe disease or very prolonged symptoms. This is really host and pathogen dependent. And I'll show you more on the next slide about what some of those factors might be. sexual transmission for these particular pathogens is quite well established in the literature among men who have sex with men, though, less common. It's also seen in heterosexual women who engage in sex practices that involve annual sexual contact among MSM with bacterial enteric pathogen infections, we do see a higher prevalence of antimicrobial resistance in this group, so looking at some of these factors that contribute to the emergence or reemergence of these infections, but also transmission. For first we're looking at some pathogen dependent factors. And these also can contribute to sort of

severity of disease, as well. So, for pathogen, we're looking at antimicrobial resistance, various factors for the host, they'll draw you to the third row thinking about their overall immune status. So are they previously immune to the particular pathogen? For example, Hepatitis A, do they have co infection with other STIs? Or do they have coexisting conditions like HIV or you know, immunosuppression. And then in the middle, you see environmental factors, which I haven't really mentioned yet, but are important to note. So a couple of things are listed here. And this is again from the New England Journal article on these reemerging infections from 2020. So they focused on access to biomedical interventions, including HIV PrEP, behavioral aspects, including Chem sex or condomless, sex, international travel, access to testing and treatment, and social media and the use of online dating apps. So before we get into talking about some of these more prevalent or more common infections in greater detail, I'm just going to give you an example of some s t e i outbreaks. So first is a outbreak of Campylobacter jejuni that occurred in Quebec, Canada. A couple of notable factors here, this was a very long outbreak. So there was a very long period of sustained transmission despite public health measures for intervention. The isolate was notably associate was notably antibiotic resistant for both erythromycin or azithromycin and ciprofloxacin, which costs some treatment challenges for those who needed treatment. The next is ShiGGa toxin producing E. coli, for which there was a fairly large outbreak in the UK. This outbreak was among men who have sex with men living with HIV. And this particular outbreak was associated with Chem sex and having multiple partners. And then the third is one of the parasitic infections called Entamoeba histolytica. Several outbreaks of this have been seen in areas where this is not considered an endemic organism, including Spain, Japan, Korea, I'm sorry, that's a typo, it should say Taiwan and Australia. And this was another outbreak among men, among men who have sets of men living with HIV. And this particular infection can cause a very severe and bloody diarrhea, particularly in those who are immunocompromised, but even in those who are immuno competent. So some of the themes or the things to highlight here are that these outbreaks are predominantly impacting men who have sex with men. And there are so there has there have been associations with Chem sex or drug use, but also multiple partners. And in these particular outbreaks, people who were seeking care and had more severe illness included those living with HIV. So this is another table from this article. And they titled about assessment for treatment as ti STIs, and MSM, but I would sort of think about this not as exclusive to men who have sex with men, but to be used for anyone who's reporting anal sexual contact when you're evaluating them for a febrile diarrheal illness. So as you can see on the side, four primary elements to the evaluation or are included. The first is the history The second is the clinical assessment. The third is your diagnostic evaluation. And the fourth is treatment. And not all individuals presenting with these diarrheal illnesses, even if there's sexual transmission reported, need diagnostic testing or treatment. But as we go through today's session, we'll focus on who might need these particular elements.

15:26

Sorry about that, I did want to draw your attention to a couple of important elements of the history taking. One is travel history, particularly to endemic areas where there might be more resistant pathogens. And the second is medical comorbidities, including HIV status, but also other comorbidities that can pose immunocompromised and a sexual history. So the first I'd like to talk about is Hepatitis A transmission of Hepatitis A primarily again occurs through contaminated food or water sources, can occur through fecal oral contact and through saliva. The usual outbreaks that we've seen in the US that have been food related over the last 10 years or so have been associated with fruits or seafood. Viral shedding does occur for a prolonged period in the GI tract even after infection resolves. This has a longer incubation period than the other bacterial and parasitic infections and is usually about a month, but can be anywhere from two weeks to several months, as you see here. It does cause usually a self limited Hepatitis and diarrheal illness, and it's managed supportively some of the symptoms that people may present with include abdominal pain and diarrhea, jaundice and scleral icterus. If you do laboratory investigation at that time, you would notice significant trends of an itis and hyperbilirubinemia. For Hepatitis A, there's been an ongoing person to person outbreak in the US since 2017, among men who have sex with men and people whose injection and non injection drugs, but also people experiencing homelessness in this really started on the West Coast and moved eastward. And we saw similar outbreak parallel to this in the UK. The outbreak has since been declared over in New York State but still remains ongoing and some of our neighbor states. There's another outbreak that was just announced last month, which is associated with frozen organic strawberries. The diagnosis of Hepatitis A is can be made clinically but for confirmation which is really necessary for the diagnosis, you would send an IgM. Couple of other notes here, you generally have a heavy viremia early in infection, and just like this persists in the stool for weeks, it can persist in the blood for weeks as well. About 10% of patients have relapse of their infection within six months of the acute illness. severe disease is rare, but is of greater risk and people who are immunocompromised people who have chronic liver disease and people who have other types of viral Hepatitis including Hepatitis B or C, prevention of courses with immunization and it's now part of the routine childhood immunization schedule but for those of you who might be my age or older, it was not. Treatment is generally supportive. There is proof post exposure prophylaxis available with vaccine or immunoglobulin. Both are very effective if administered within 14 days of exposure. Notably, the vaccine is actually preferred over immunoglobulin for most people. It is much easier to administer has it's much more widely available and has a greater duration of immunity or protection after dosing. A circumstance where you might consider immune Gloxinia immune globulin over vaccine might be for very young children, perhaps if they are not able to generate their own antibody or for adults who are immunocompromised and not expected to really respond to immunization. So who should get vaccinated as adults? This is from CDC and based on a lot of the recent epidemiology associated with the outbreak, people who use drugs,

people who have unstable housing, people who were recently incarcerated people with other types of liver disease or viral Hepatitis and men who have sex with men. So the next thing I'd like to tell you a bit about is salmonella. Salmonella they're just one of these outbreaks the one of the earlier associated with sexual transmission was a cluster in Ohio in 2000, where there were nine males across three states with no international travel who were all diagnosed with salmonella serotype typhi. Some some of these were confirmed by culture And about four of these were actually bacteremic. And they had no notable antimicrobial resistance detected. They had a DHS investigation where they constructed social and sexual networks to identify additional cases, and all reported male to male sexual contact, eight out of nine reported sex with one male identified as an asymptomatic carrier. And that turned out to be the index case who had reported travel to Puerto Rico where the infection was acquired. They had prolonged positivity, leading to this ongoing transmission and were ultimately treated from a public health standpoint to produce to prevent ongoing transmission. So a little bit about salmonella it's a modal gram negative bacterial there are typhoid and non typhoid all strains mostly linked to foodborne illness, and or travel. Sometimes reptiles, particularly small turtles in the US, and it's usually self limited and severe illness can occur and disseminated infection to these various sites as you see here can also occur. An asymptomatic chronic carrier state is not uncommon. And the diagnosis is by PCR or still culture, and you can get blood culture with severe infection for treatment is generally supportive for the self limited illness and antibiotics are used for those with severe disease. And you might even consider them for those who are high risk for severe disease. There's a few different antibiotic options that are oral that you see here. And if of course, if someone is admitted to the hospital, you could still use something like ibsf tre axon, you do want to use the culture and susceptibility to guide treatment if you have that available to you. But some of you may just have molecular testing and in that case, you may need to provide therapy based on your local resistance prevalence. The duration of therapy is variable depends on host factors in response to treatment. Salmonella carriage does occur it's one of those infections that I mentioned where you can have carriage for weeks to months after infection. That said test of cure is not recommended for salmonella infections that usually just sort of muddies the waters and doesn't provide any clear benefit. asymptomatic carriage sort of duration is not well defined, because we don't really for treatment purposes. Check stool cultures. And so it's more from the public health standpoint that that's done as a process of outbreak investigation. Chronic carriage is fairly rare. But chronic carriers may be identified as part of an outbreak investigation. And from that perspective, antibiotic treatment may be recommended. But in any other instance it's really not recommended. The next one I'll talk about briefly is Shigella which you've seen in the news and Shigella has been associated with outbreaks among men who have sex with men. But the one of the most concerning issues with Shigella is the multi drug resistance. So similar to the other pathogens I've mentioned, you can see the factors are quite similar as you go through the first few bullets here. Again, causes this febrile diarrheal illness that's usually self limited, and severe illnesses are more common in

those who are immunocompromised, and again, antibiotics are reserved for severe disease. For shigellosis, in particular, there are additional factors associated with sexual transmission. But you can see again here the themes of Chem sex are direct use, multiple partners, oral anal sexual contact, the use of sexual network apps for meeting partners and attending sex parties. When we look at outbreaks of Shilke shigellosis among men who have sex with men in the US, this is from CDC showing you a little resistance snapshot. Shigella Sonia is the most common isolate identified and tends to cause a little bit more mild illness, but we tend to see a bit more resistance Shigella flexor AI tends to cause more severe illness. And with that particular strain we see kind of a focus on is a through Meissen resistance. But here you can see that and this is from 2017, where resistance was prevalent for these various antibiotics including Ciprofloxacin and as a through Meissen. The combination of multi drug resistance was less common, but we're certainly seeing more now. So sort of Fast forward to analysis performed by CDC, looking at Shilpa shigellosis cases from 2007 to 2016, where they looked at all All these reported cases were over 14 recrossed match for reportable STIs. So they had exceeding over 14 years old. So they had almost 5000 cases, mixture of men, women and those who did not have a sex identified on the case report form.

25:23

Most of the isolates were Shigella, some EI and 41% of the men in the group had a reportable STI, which is pretty significant compared to just 9% of the women. And for men, they had similar percentages across the board. So for men with Shigella they had a reportable STI within the study period, 25%, GC, 23%, chlamydia and 26% syphilis for women during the study period who had shigellosis they also had reportable STIs, but less commonly, so chlamydia 8%, gonorrhea, 3%, and syphilis 1%. Shigella in the news lately has been regarding an XDR strain of Shigella which is resistant to azithromycin, Ciprofloxacin Sef, Triax, zone trimethoprim, sulfa and ampicillin and CDC has reported that in the US the percentage of Shigella infections caused by these XDR strains reported to CDC has increased from zero and 2015 to 5%. In 2022. There's an ongoing outbreak of Shigella in the US with this XDR strain, again, mostly Sony AI, the median age is 42. There are 232 cases where case report data is available, and 82% of these cases are in men. And among 41% 141 patients who responded to questions on sexual activity 88% reported male to male sexual contact. So with that the CDC this sort of summary has some updated recommendations, so they do recommend obtaining stool testing for enteric pathogens and patients who present with febrile diarrheal illnesses and report male to male sexual contact. So get a sexual history. Use susceptibility testing to guide treatment when indicated due to the XDR strain IV carbapenems may be needed if you identify an SDR strain, severe illness who needs treatment, and with the demonstrated increase in STI frequency, as I showed you in that study, particularly among men evaluate men with shigellosis for routine STI screening. And they've had here some just preventive information including hand hygiene, use of condoms. If you've been sick with a diary illness, abstain from sex for two weeks before for

two weeks, and talk to your doctor if you have severe diarrheal illness. Again, from that New England Journal paper, they do emphasize those points. And they do have a couple of additional guidance information for patients including cleaning and disinfecting, shared bathroom spaces regularly not sharing towels or linens, avoiding swimming for two weeks, at some changes in sexual behaviors, and secondly, as you see here, and use of condoms, but also, you know, potentially depending on a person's occupation, they may have to take extra precautions with work. So just to kind of summarize how you might approach adults with acute diarrheal illness. Depending on you'll assess the duration and severity of symptoms and associated symptoms. Ask about food, occupational travel and sexual histories and medical comorbidities assess for complications, including dehydration, for acute diarrheal illness without severe comorbidities with high risk to without high risk comorbidities. generally supportive care is acceptable for several days without stool testing. But if you have indications for stool testing, including more severe or prolonged illness, those who are immunocompromised and who might have fever or bloody diarrhea, who might be pregnant, or there might be a public health concern like an outbreak, or a person who works in a daycare or a food service, for example, those are indications for testing. Stool testing options include the multiplex PCR culture and microscopy. And don't forget about STI testing for other things as well. So I'll stop there and I've sort of gone through the summary. You know, most bacterial enteric infections are self limited and managed supportively help PEP a post exposure prophylaxis is available the manner to management of these parasitic infections that didn't go through specifically, but it's very pathogen dependent and some of them can be self limited. Individuals who are immunocompromised are at greater risk for severe infections. So you would want to have a lower threshold for initiating treatment. And microbial resistance among these Ste eyes is increasing and have significant public health importance. Treatment when you need it for these infections is guided by your local susceptibility data. Don't forget to obtain a sexual history and perform STI testing to prevent ongoing transmission in your community. And the prevention strategies I mentioned can be very effective when implemented. So definitely talk to your patients about those things. So I'll just ask Margie or just to let me know if there's any questions.

30:52

While we wait a minute to see if there's a question. You mentioned that 10 year outbreak in Quebec due to Campylobacter, I'm just wondering if you knew any more details about that, like, that's such a common bacterial? Yes, I really.

31:10

I think there were a mixture of environmental factors associated with us as well. So it certainly wasn't. So Campylobacter for those who don't know is one of those things. That is not uncommon if you're sort of in the outdoors and drink contaminated water. It's often associated

with camping or your different outdoor activities with ingestion of contaminated food or water. So here in that particular outbreak, I think there was a combination of person to person transmission as well as ongoing environmental exposure.

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Really, the common exposures makes it really hard to figure out if the sexual network outbreak versus the outbreak.

31:55

Yeah, I think that contributes to a lot of these outbreaks and really makes control of the of the outbreak quite a bit more difficult. Thank you, everyone.

[End Transcript]