Week 9 (edited) - Pregnancy, Genetics & Epidemiology

Fri, Sep 29, 2023 9:00AM 48:56

SUMMARY KEYWORDS

pregnancy, correct answer, methadone, opioid use disorder, opioids, disease, questions, alcohol, buprenorphine, study, people, hayes, dehydrogenase, opioid withdrawal, patient, risk factor, attributable risk, treatment, relative risk, epidemiology

---

00:03

It's exactly five o'clock. So I'll go ahead and get us started. Hello, and welcome, everyone, I'm seeing a lot of familiar names. So thank you all for joining us again. I think most folks have been with us before. But just as a reminder, if you aren't comfortable with it and open to it, please go ahead and turn your camera on, it makes for a more engaging session. At this point, also, let's see, if you want to share your screen, we can get that started.

00:28

So as you know, today, we will be covering topics, a wide range of topics, actually. But we'll talk about pregnancy, genetics, and then epidemiology. If you were here last week, I promised that we would have a handout and that- I fulfilled that promise. So it is here and it will be attached to the program. And I think Dr. Hayes will also be going over it during the session. She also graciously created another handout. So we'll have quite a few supporting materials for today. Throughout the session, we're gonna go through some practice questions. She will read the questions and please feel free to put your answers into the chat. And if you have any additional questions that come up during the session or anything that comes to mind, feel free to share them into the chat or to unmute yourself and join us. Let me see, I think I got through everything. So I'll go over- Go ahead and pass it over to Lesley Hayes to introduce herself and then get us started.

01:18

I'm Leslie Hayes. I am a family medicine doc and addiction medicine board certified in Espanola, New Mexico. I'm going to be talking about pregnancy which I'm reasonably good with, genetics- which I know some about, and epidemiology. And I still don't know exactly how I got chosen to do the epidemiology questions. But I was telling Giulia, I hope actually, I know that they're really tough, I had to look up definitions for everything right before doing this. So hopefully, I'll be able to explain it in a way that's not too complicated. But feel free to jump in with questions at any point.

01:57

01:57

I was commenting to Giulia that when I took the test, and this is certainly true of the test bank as well, it seemed like about a fourth of the questions were blindingly obvious to the point where you're like, I must be getting this wrong, this is just too obvious. And about a fourth were just really obscure and impossible. And then the rest were kind of in between and I couldn't decide which end to go for. So I tried to get a little bit of both, both stuff that is clinically relevant, and then sort of the more obscure stuff that you need to know for the tests but probably only for the tests so so we'll go ahead and jump into the questions.

02:37

First question: 22 year old G1P0A0 female with an 11 week gestation is referred to you for evaluation of high dose alcohol consumption prior to learning of her pregnancy. The patient reports that she has not drunk alcohol since learning that she was pregnant, but tells you that some of her friends have told her that one drink won't hurt the baby. She asks you how many standard drinks can I have during my pregnancy and still guarantee that my child will not develop alcohol associated birth defects? Your response should be that: A- no amount of alcoholic beverages is safe during pregnancy. B- one to two standard alcoholic beverages are safe during pregnancy. C- three to four standard alcoholic beverages are safe during pregnancy. And D- five to six standard alcoholic beverages are safe during pregnancy. And we'll give people just a moment to put things in the chat.

03:32

And it looks like we have tons of A's in the chat.

03:35

Okay. And that is correct. No amount of alcoholic beverages is safe during pregnancy. There are certainly some people who will do just fine during pregnancy. My grandmother I'm sure drank at least a pint and possibly a quart of vodka daily during her pregnancy with my father and he got his PhD in math and was one of the smartest people I know but unfortunately you can't guarantee it. So some babies are going to be affected by very small amounts of alcohol.

04:07

The mother of a 25 year old pregnant patient on medication assisted treatment with methadone for severe opioid use disorder presents with her daughter and has questions regarding what to expect when her grandchild is born. More specifically, she asks you about neonatal abstinence syndrome. And I will say I find it interesting with the actual courses, they go through and they're very picky about the language but I'm sure you know we're no longer using medication assisted treatment. We're using medication for opioid use disorder MOUD. And instead of neonatal abstinence syndrome, we've really gotten to neonatal opioid withdrawal syndrome. But in any case, abstinence syndrome symptoms in a passively opioid dependent newborn include which of the following: A- increased irritability, B- respiratory depression, C- increased somnolence or lethargy and D- bradycardia. Go ahead and put your answers in the chat.

05:04

And again a lot of A's and these first two, I think are towards the blindingly obvious end that the spectrum. Opioid withdrawal in newborns is similar to opioid withdrawal in adults of significant irritability. Babies are not respiratory depressed, that's obviously as you know, from opioid intoxication, and again increased somnolence- opioid intoxication. And same with bradycardia. So these babies tend to be very irritable, breathing more rapidly than normal, trouble sleeping, and tachycardic.

05:46

Pregnant women with a known opioid use disorder currently on methadone, A- should be transitioned to buprenorphine because studies support the buprenorphine has the best retention, B- should be kept on the lowest possible dose of methadone to avoid neonatal opioid withdrawal syndrome. C- should not be on any controlled substances capable of leading to addiction. D- should have her methadone dose monitored closely as pregnancy may re- require increased doses. And we have just a little bit more for people to put the answer in. And looks like we've got a lot of Ds, which is the correct answer. And we tend to start with buprenorphine if we have someone who's not been on neither of them. But the most important thing, buprenorphine has lower rates of neonatal opioid withdrawal syndrome, which is really good, but the most important thing is that the patient is stable and not using opioids. And if this patient is stable on methadone, we don't want to mess with that. We definitely don't want to keep her on the lowest dose of methadone because the lower doses of methadone, if she is going into withdrawal, then that's actually going to be more likely to cause withdrawal in the baby. And MOUD is absolutely indicated during pregnancy, it is standard of care for any patient with active opioid use disorder.

07:12

All right, next question. Which of the following is the safest intervention for a woman seeking treatment who is physiologically dependent on hydromorphone, but recently started to use intravenous heroin and is pregnant at eight weeks gestation: A- provide her with a 10 day course of methadone to gradually taper, B- advise her to immediately stop taking her opioid pain medication. C- refer a patient for FDA approved opioid use disorder agonist treatment with buprenorphine or methadone. D- continue to prescribe hydromorphone. I'll give you a moment to put your answer in the chat.

08:03

All right, and looks like everybody is agreeing with C, which is the correct answer. First off, I'm sure you'll know this, but I'm just going to mention that the correct answer is never in an outpatient basis to provide anyone with opioid use disorder with methadone. This is a violation of federal law. I have actually talked to physicians who are facing federal charges for having done this. With a pregnant patient never ever recommend they stop opioids during pregnancy abruptly. You want to get them on treatment with an opioid agonist because if they stopped opioids abruptly, it can put them into withdrawal. And withdrawal is usually uncomfortable but not life threatening but with pregnancy, it's one of the few times it's actually can be quite dangerous. You can get placental abruption where the placenta pulls away from the wall of the uterus. You can get preterm labor, you can precipitate

miscarriages. You don't want to continue to prescribe hydromorphone obviously in a patient actively using heroin. So the correct answer is to refer for medication for opioid use disorder, which is always the correct answer for pregnancy. All right, before we move on, are there any specific questions about pregnancy?

09:24

And just a quick reminder, you are all able to unmute yourselves if you do have a question feel free to unmute and chime in

09:30

I think we might be okay to move forward. Okay.

09:43

You are see, seeing a 16 year old male patient who presents to your primary care clinic because he drank quote a couple of beers with some friends the other day and quickly developed a headache, dizziness, flushing, nausea and vomiting. You believe he has which of the following: A- normal activity of alcohol dehydrogenase and high activity of aldehyde dehydrogenase, B- low activity of alcohol dehydrogenase, high activity of alco- aldehyde dehydrogenase C- normal activity of alcohol dehydrogenase, low activity of aldehyde dehydrogenase or D- low activity of alcohol dehydrogenase, normal activity of aldehyde dehydrogenase.

10:36

Oh I see there was a question on the pregnancy before I move on, if there is any preference for the buprenorphine alone or in combination with naloxone? So, I still use the buprenorphine without naloxone, I think eventually we're going to be switching over to doing buprenorphine with naloxone during pregnancy. The studies that have been done, have shown that it's safe, but they've been small studies so far. And the problem is that all of the official sites still recommend using this straight buprenorphine product. And I don't want to prescribe it and have somebody have a bad outcome and blame it on the combination product. So I suspect eventually, we're going to be switching to the buprenorphine with naloxone. The other issue though, during pregnancy is there is just so much nausea, and the naloxone component definitely does cause nausea. So that can be an issue for a lot of pregnant patients.

11:33

All right. So before we move on on this one, what is the chemical that is causing the dizziness, flushing, nausea, vomiting and headache with ingestion of alcohol? In patients who have this condition?

11:52

11:52

Acetaldehyde.

11:53

Exactly. It's the acetaldehyde. And so the answer to this is going to be something that low activity of the chemical to get rid of rid of gets rid of it, the aldehyde dehydrogenase. And I will say this was I think one of the more poorly thought out abbreviations that aldehyde dehydrogenase is ALDH. And alcohol dehydrogenase is ADH, and I have trouble remembering that. So that's one of those I actually will like write it down before I go into the exam because I've occasionally gotten those two confused. So the answer to this question is what you all wrote down, which is C- the low activity of aldehyde dehydrogenase

12:38

Alleles of gene that affect function of which type of neurotransmitter systems have been associated with severity of alcohol withdrawal: A- dopamine, B- serotonin, C- gamma amino... gamma-aminobutyric acid 1 or D- endorphins? I'll give you a moment to put the correct answer and the answer you think into the chat.

13:21

All right, so the correct answer is A but one thing to remember with alcohol withdrawal and alcohol intoxication as well as alcohol. Unlike most of the other drugs that affect one particular neurotransmitter, alcohol affects all of the neurotransmitters in the brain. So almost any of them will affected. Dopamine is associated with the severity of alcohol withdrawal, but actually a good number of the symptoms of alcohol withdrawal are related to norepinephrine, certainly the GABA is affected as well and maybe what leads to seizures, but for this particular question, the genes that affect it affect dopamine.

13:58

All right, which of the following gene mutations results in the production of low activity enzyme and an unpleasant sensation when consuming alcohol? A- aldehyde dehydrogenase 2, B- patatin-like phospholipase domainâ€“containing protein 3? Gamma-aminobutyric acid receptor A2 and membrane-bound o acetyl transferase... o-acetyltransferase domain containing protein seven?

14:36

That is the biggest tongue twister question.

14:39

I was gonna say I hope you all won't be too harsh on me for the fact that these are just hard to pronounce. And you got it correct that the aldehyde dehydrogenase, acetaldehyde dehydrogenase

pronounce. And you got it correct that the aldehyde dehydrogenase, acetaldehyde dehydrogenase...

14:56

Okay- The efficacy of naltrexone for the treatment of alcohol use disorder is significantly better in patients with the 8355 G polymorphism- polymorphism on exon one for which of the following genes: A- COMT gene, B- GABA-1 gene, C- OPRM-1 gene and D- DRD-2 gene?

15:32

All right, you guys are doing great. OPRM-1 gene. OPRM-1 affects both naltrexone and heroin. And I suspect fentanyl as well, although I haven't seen anything specifically on fentanyl. So anytime you get something that's either naltrexone or any of the opiates, and they're asking about genes, I would just go ahead and answer OPRM-1 gene. You may be wrong occasionally, but the vast majority of time that's going to be right. It also affects the severity of neonatal opioid withdrawal syndrome.

16:06

All right. You are surprised to learn that a newborn whose mother had an opioid use disorder that was managed with methadone maintenance experienced very severe neonatal opioid withdrawal syndrome, which gene is correlated with greater severity of NAS when it is the aa-allele?

16:31

A is DRD-2, B is OPRK-1, C is GABRG-3 and D is OPRM-1. And looks like everybody got the correct answer of D- OPRM-1, I would have been very sad if after I just said that you guys had missed it. So thank you for getting it correct.

16:54

24 year old female presents to your practice for treatment of cannabis use disorder. She reports that she started smoking marijuana because when she smoked tobacco she developed nausea and dizziness. A polymorphism of which of the following genes has been implicated in this reaction to nicotine: A- COMT gene, B- OPRM-1 gene, C- DRD-2 gene, and D- CYP2A6 gene. Give you a second to answer.

17:39

All right, looks like most of, all of you got the D- CYP2A6 gene. As you probably know, this is a gene that affects metabolism of various chemicals including nicotine. And generally if you get things that are not directly related to their effect in the brain, such as nausea or dizziness, it's going to be related to the metabolism. So the acetaldehyde dehydrogenase or in this case, the CYP2A6 gene.

18:18

All right, a cross section... Moving on now to epidemiology. And like I said, this is the stuff I found find a little scary. So if I, if you hear me mis-state something, please feel free to jump in and elaborate on it. So, a a cross sectional survey is conducted to assess how many people at a given time in a particular population have moderate amphetamine use disorder. The survey has not been previously conducted, the total population is 5000. And the survey real... the total population is 50,000. And the survey reveals that 5000 people report meeting criteria consistent with moderate amphetamine use disorder. What is the incidence of moderate amphetamine use disorder in this population? A- 10,000, B- 45,000, C- 0.5, D- incidents cannot be calculated from a single cross-sectional survey.

19:24

All right, before we move on, can someone tell me what incidence is?

19:31

Rate of new cases.

19:33

Exactly. And so with a single cross sectional survey, you can't tell how many of these cases are new and how many people have been using methamphetamine in the last 10 years. So correct answer is D which it looks like all of you got.

19:49

Next, which statement is true as it applies to gender differences between drug and alcohol use among women and men? A- the rate of drug use but not alcohol use is higher in women than men, B- the rate of alcohol use but not drug use is higher in women than men. C- the rates of both alcohol use and drug use are narrowing between men and women. D- the rates of alcohol and drug use are the same for both men and women.

20:25

All right, looks like everyone got C. Rate of alcohol use and the rate of drug use is much higher in men. But women are catching up unfortunately.

20:42

All right, the ratio of the total number of cases of a particular disease divided by the total number of individuals in a particular population at a specific time is known as the A- incidence of a disease, B- relative risk of a disease, C- absolute risk of a disease, D- prevalence of a disease. All right, before we

go to the answer, already got a definition of the incidence, who can tell me what the relative risk of a disease is?

21:33

Anyone want to guess what the relative risk of a disease is?

21:52

Anyone want to try? All right, relative risk of the disease is your risk of getting a disease if you have a risk factor, compared to your risk of getting the disease if you don't have the- not really no one likes statistics. Exactly. That's why it's a good time to practice here because we're a nice group, and nobody's gonna make fun of you if you get it wrong. So anyway, relative risk of a disease is your risk of getting the disease, if you have a risk factor versus your risk of getting it, if you do not have a risk factor. Anyone want to tell me the absolute risk of a disease?

22:42

Absolute risk of a disease is your risk of getting it over a certain time, say over the next 10 years, what's your risk of getting that disease is you know, 10% or 20%. And it's not compared to whether or not you have the risk factor or not. And then prevalence is as I said above the ratio of the total number of cases of a particular disease divided by the total number of individuals in the population at that specific time. And looks like you all got it. So I don't think you need to be afraid of defining these but, and I will say I find all of these a little bit hard to remember. And so I actually will write all the definitions down. And this is one of the things I look at the day before the test just because I find these hard to have make them stick in my brain.

23:28

A measure of the association which compares the probability of a disease and those exposed to the probability of disease and those unexposed is called A- the incidence of a disease, B- the number needed to treat, C- the odds ratio or D- the prevalence of a disease.

24:00

All right. So before we move on, who can tell me what the number needed to treat is?

24:17

Number of patients to be treated for one to get benefit.

24:21

Exactly. And how about the odds ratio?

24:26

The probability of disease in exposed to the probability in unexposed.

24:30

All right. Perfect. So odds ratio and so I this was one of those I actually had to look up so I calculated it just because I I find I do better if I calculate it. So oh shoot, where's that Word document. Let me bring up my Word document real quick.

25:02

You know, the tip that Dr. DeVido always says is it is a ratio of odds. So if you are comparing the two odds of a population with it with versus without, then that's the, that's what you're calculating for.

25:14

Okay? So difference between odds and risk is odds is comparing the people with the outcome versus without the outcome. So odds would be two to one, in this case, people with the outcome with the risk factor, it's two to one. And with the outcome, or with is two, without is one, so it's two to one. Whereas risk is people with the outcome versus the complete number. So that's going to be two thirds in this case. And then odds rat- odds for not having the risk factor is one to two, absolute risk in that case would be 1/3. So looking at odds ratio, you're taking the odds of getting the condition, if you have the risk factor, and dividing it by the risk of getting it if you- or the odds of getting it if you don't have the risk factor. So you're going to get an odds ratio of four. Relative risk, absolute risk with the risk factor and absolute risk without the risk factor, two thirds divided by 1/3. So that's going to be two. So odds ratio is just going to be a larger number than relative risk is just because of the way it's calculated. And as you get a much rarer outcome, for instance, this one, where two people get it with the risk factor and only one get it out of 1000 without the risk factor, then the odds ratio and the relative risk are going to be pretty much identical. So so as your numbers get lar- as your probability of a condition gets much lower, then the odds ratio and the relative risk become much closer. Does that make sense?

27:13

Did I completely confuse everybody?

27:16

Made sense to me, so I think that's a good sign.

27:19

Okay, phew...

27:26

All right. You and a colleague are interested in finding out if early age of onset cannabis use increases the risk of addiction to opioids and design a study to test the hypothesis. You survey ninth graders within the county of interest in your state and match kids using cannabis at that age to kids who are not using cannabis. You then follow all of the kids until the age of 25 by sending a survey asking about drug use to all of the participants every year, and obtaining medical records of new diagnosis from their physician. This type of study is best classified as what kind of study? A- retrospective observational study, B- longitudinal prospective cohort study, C- randomized control trial, D- blinded prospective control study?

28:13

Have a lot of confidence in B's in the chat.

28:26

Yeah. All right. And B is the correct answer. Can somebody tell me what a retrospective observational study is?

28:47

This would be when you would, if you would look back.

28:51

I'm sorry.

28:53

Yes.

28:54

Time?

28:56

Yeah, you're taking a group who maybe has the disease and looking back to see what they have. And then longitudinal prospective cohort study does... what's the difference between a cohort and a control?

29:20
So I think...

29:21
any disease...

29:24
has the disease control and one who don't have the disease.

29:29
Yeah, it's... control is going to be more sort of matched one to one whereas cohort is two groups. So you're you're looking at groups versus matching people. And then randomized control, what's important about randomized control?

29:49
Controlling for bias.

29:51
What was that?

29:53
So control for bias, to bias to remove the bias, you randomize.

29:58
Yes. And with a randomized control study you're introducing an intervention. So, you have you know, a group who has pneumonia and you match them up and you give half of them the new antibiotic and half of them the old antibiotic. So, you're introducing an intervention.

30:24

All right, the occurrence of new cases of a disease divided by the total number of individuals at risk for the disease during a specified period of time is known as the A- incidence of the disease, B- relative risk of a disease, C-absolute risk of a disease or D- prevalence of a disease?

31:02

All right and correct answer is A and I realized I did want to bring up the handout that Giulia will be sending to you... one second... Um

31:19

So, these are the types of studies: observational, longitudinal, and cross-sectional. Longitudinal as you're following them over a period of time. Cross-sectional is where you're just asking everybody at one time about something. Prospective- going forward. Retrospective- going back. So, prospective is when you take two groups and you go forward in time with them to see whether something changes; retrospective works better for a rare condition where you know, even if you get 1000 people you may not get somebody with a particular condition. And so, you get people with the condition and then you find somebody similar to them without the condition and you go back in time and see what sort of risk factors that they have. Does that all make sense?

32:18

Yes.

32:19

Okay, great.

32:30

All right. The strength of association between a particular characteristic and the development of disease is generally recommend or excuse me, generally represented by the A- incidence of disease, B- relative risk of disease, C- absolute risk of disease, and B... D- prevalence of disease.

33:03

All right, looks like there's good agreement about the the relative risk, and the stronger the characteristic is associated, the higher the relative risk of disease.

33:20

Cohort studies can demonstrate causal- causality between two events. A- if the confidence interval

Cohort studies can demonstrate causal- causality between two events, A- if the confidence interval does not cross zero, if the prevalence of the event is low, B- if the odds ratio is greater than some statistically predetermined value to demonstrate statistical significance. C- if the sample populations are of similar size, D- causality can only be determined through randomized controlled trials experimental.

34:01
All right, who can tell me what cohort studies can demonstrate? If it's not causality?

34:13
Association

34:14
Exactly- association. And you really need a randomized controlled study to demonstrate causality. So causality is demon- is determined through randomized controlled trials.

34:31
This was one of the blindingly obvious ones.

34:33
A highly specific test has a lower high false positive rate. And a highly sensitive test has a lower high false negative rate. A- high high, B- low high, C- high low, D- low low.

34:48
All right, correct answer is D- low and low. Obviously, on any test, you want to have a low false positive rate and a high or a low false negative rate. Who can tell me what a highly specific test is going to do?

35:25
Rule In.

35:34
Rule In- and a highly sensitive test?

35:37

Rule out

35:40

... Yep.

35:44

So, which of the following annual surveys assesses adolescents and young adult substance use since the 1970s? A- NSDUH, B- MTF, C- NESARC, D- TEDS.

36:15

All right, looks like this is actually split between A and B. And I will admit I got this one wrong. And it's one you just need to know. The correct answer is B, or Monitoring the Future which specifically looks at adolescents. The National Survey on Drug Use and Health looks more at adults. NESARC, which stands for the National Epidemiologic Survey on Alcohol and Related Conditions, looks at alcohol. And I have forgotten what the TEDS survey is...

36:55

Treatment Episode Dataset, which looks like it is looking at actual treatment. So and these, I don't think unless you're actually doing research, it's not useful to have the acronyms memorized, but for some reason, the exam seemed to really like it. So that's another one that's just useful to look up at some point during the week before you take the test so you can remember what the acronyms are and what they do.

37:24

All right, which of the following is true regarding gender differences with respect to substance use disorder, A- men are less likely to use illicit drugs than women are. B- women are more likely to use drugs to celebrate whereas men are more likely to use drugs to cope with physical or emotional pain. C- women will suffer adverse effects of their use of similar levels of alcohol much sooner than men will and D- women with substance use disorder are more likely to have a history of incarceration than men are.

37:59

All right. And again, looks like most of you got the correct answer is C- women will suffer adverse effects from their use of similar level of alcohol much sooner than men will. Men are, as we already discussed earlier, much more likely to use illicit drugs than women are. Women are much more likely

to use drugs to cope with physical or emotional pain than men are. Whereas men are more likely to use drugs to celebrate or to have fun with friends. And men with substance use disorder are about three times as likely to have a history of incarceration than women with substance use disorder.

38:36

All right. Next, which of the following is most commonly used in addition to opioids by a person with an opioid use disorder? A- amphetamines, B-barbiturates, C- cocaine, D- nicotine? All right, a lot of people answering D right away there. Which is correct. If they asked you, which is the most commonly used drug in any such situation, the answer is almost always going to be nicotine. So you can just answer that one and be pretty sure you'll get it correct. Wow. And I'm actually out of questions. So what questions can I answer for everyone?

39:28

Whoa, I see someone unmuting.

39:31

How are we gonna get those handouts?

39:34

I'm looking at ways to attach it to the actual product. So in the e-Learning Center in the same place where you would see the recordings, I'm trying to get it there. If not there, I'll just send it as an email. But also I was going to suggest, Dr. Hayes, if you don't mind going through the handout, just to

39:50

Sure.

39:51

Show what's in there.

39:52

All right. So first is the null hypothesis which is what you look at when you're looking to see if a study has shown benefit or not. And the most important thing I think, for this is the type one and the type two error. So who can tell me what a type one error is? I hope all of you can, because it's right there on the screen actually. But type one error is when a study says that something, it has an effect when

it doesn't. So you, you know, give everybody with COVID hydroxychloroquine. And you come up with an answer that says, Yay, works. But you didn't do a very good job on the study, or you just got statistically weird answers. That is a type one error.

39:52
How about type two error? Does anyone know what a type two error is?

40:01
Stating that it is not an effect when one does exist?

40:57
Exactly. And for instance, if this will most commonly occur, if you have too small a study size. You know, you look at 60 people, you know, total, and it's not a huge effect, and you don't find that effect. But if you'd looked at 600, then you might find an effect.

41:21
Alright, so risk factor for an intervention, and then disease... attributable risk. So I'm actually going to for attributable risk, I find it easier. Can you guys see my Word document or no?

41:44
We cannot, only the PDF.

41:47
Let me bring up the word document then. How about now?

41:52
Not yet. Can't see your screen right now.

41:55
Oh,

41:56

let me try again. Okay, can you see it now?

42:03
Yes.

42:05
All right. So attributable risk is basically how much of the outcome is due to the risk factors. So in this particular case, without the risk factor, one of three people got it. And with the risk factor, two of three got it. So the attributable risk would be 1/3. And there's a fancy formula to do it. But I just basically subtract, you know, the absolute risk for the risk factor minus the absolute risk without the risk factor is the easiest way for me to think about it.

42:37
And then number needed to treat is just the inverse of that. So in this particular case, the attributable risk would be 1/3. And you would need to treat three people. Or in this case, since we're talking risk factors, it would be number needed to harm- you would need to give three people that risk factor to have one of them have the bad outcome from that risk factor. Does that make sense?

43:06
Yep.

43:08
All right. So um, and like I said, this should actually be number needed to harm since this is talking about a risk factor. But if you had instead, you know, a treatment on the left, then it would be number needed to treat.

43:25
All right, and then back to the cheat sheet. And again, he goes through all of these formulas. And like I said, I just take the absolute risk of- with the risk factor, absolute risk without the risk factor and subtract is easiest way for me to do it.

43:48
And then sensitivity and specificity and predictive values. I think all of us probably, at least for me, and I assume most people, you memorize this the day before any board exam, and then forget it three days later. And but sensitivity as a test is the number of true positives for the test over the total

number of positives. The specificity is true negatives over the total number of negatives. So obviously, the higher the number of false positives, you have lower the specificity. And the lower, the higher the number of false negatives you have the lower the sensitivity. We, in the clinical world don't care nearly as much about sensitivity and specificity as we do about the positive predictive value and the negative predictive value. The positive predictive value and the negative predictive value are going to vary depending on you know, the population you're testing. So that's not as easy to get an absolute value. Sensitivity and specificity of a test are going to be absolute. But the positive predictive value and the negative predictive value are going to change based on, you know, what the inci- or what the prevalence of the disease in your population is, and things like that. But, you know, assuming they've calculated positive predictive value, positive predictive value is the total positives, or total number of true positives over the total number of positive tests. And negative predictive value is the true negatives over the total number of negative tests. Does that make sense?

45:44

Yes.

45:46

Okay, great. And I think we already went through that. All right, what other questions do people have?

46:04

Also, I am seeing a couple of emails being shared on the chat. So just so you know, if you send those to me either now or if you email me directly, I will respond with the attached handouts. So feel free to do that.

46:47

All right, one last chance to ask questions. And I'm glad these were helpful for you, I hope everyone passes your board exams, and that they don't have too many epidemiology questions on them. So...

47:02

I think we are all hopeful for that. Some tips, just before we head out, as I said, I am grabbing those emails and sending that out. I know a lot of faculty suggest doing as Dr. Hayes just talked about- writing it down when you first come into the email, especially the little charts and formulas. And then also, this is available as a recording. So feel free to re-review, especially as you get closer to the exam date. Dr. Hayes, any other tips or comments you'd like to say before we end for the week?

47:37

So as far as epidemiology, I think what's most important is knowing the definitions, I didn't find there

was a lot of, you know, statistics on what percentage of patients have this, but there was a lot of, you know, what's the incidence? What's the prevalence? You know, trying to figure that out, so... And not nearly as many questions as I wanted on pregnancy, because that's my area that I really care about and feel like, everybody should be learning a lot about pregnancy. So...

48:08

Absolutely. But also, hopefully, there's good content in case they changed it. And there's more questions on pregnancy. There's good content to review here and also during your lecture. All right. I think that's all that we have for today. So thank you all for coming and for attending. And I hope to see you all again next week. And then look forward to those emails with the handouts. I guess one last thing I know, I promised last week that I would get the tips for the three court cases that are likely to come up on the exam, still working for those but I should have that by either next week or the last session that we have. So stay tuned for those tips. Thank you once again, Dr. Hayes, for being here and for your time. We really appreciate it. And I'll see you all soon.

48:51

All right. Thank you. Please take care. Bye bye.