

CUSD Cares Podcast

Vaping from a Medical Perspective, Part 2

Season 1, Episode 8 September 6, 2019

- Brenda Vargas: Hello everybody. This is Brenda Vargas, formerly Ramos. Welcome to CUSD Cares podcast. Thank you for joining us today. I am so incredibly pleased that I'm able to have with us today, Dr. James Bogash, who is very well versed on the topic of vaping. And I know there's a lot to know, but what's really important here is there are a lot of unknowns in vaping and so we hope after this podcast he's going to enlighten us and give us a little bit more information and possibly leave us with a little bit more questions as well. Dr. Bogash, thank you for joining us today.
- Dr. James Bogash: Thank you for having me Brenda.
- Brenda Vargas: You know I know that your practice is in chiropractic services, however, share with our parents your multitude of hats that you support our community in this effort in regards to vaping education.
- Dr. James Bogash: So it started with my role on the Chandler Committee on Youth and Substance Abuse as a chiropractor. Obviously with the opioid epidemic. I feel we play a role, but I'm also a medical research geek and have been for 20 plus years. So I've written over 4,000 articles and health and maintaining health is a big understanding of mine. So when the issue of vaping started to come up, it just seemed a natural progression for me to start educating on stuff that we already knew.
- Brenda Vargas: And thank you for doing that. I know that you've done some work with ICAN as well and teaching courses and have done some webinars and reaching out to our community so you have certainly jumped in there with us in order to help and assist us in making sure that we are spreading the word and educating others about vaping. So we'll just jump right into it. And there's so much to know and possibly some of the things that you share today, might go over your heads, parents because it has for me, I've had to kind of dig a little deeper and read a little more, which there's nothing wrong with that, but I know that parents that have youth in schools period, not just our schools, there has been definitely an uptick in the last few years with vaping or e-cigarettes. And there's been a lot of talk as to how this is detrimental to their health. I've heard everything from is it linked to lung disease, seizures, neurological symptoms such as fainting and tremors? Tell us what to know as far as what's in this stuff?

Dr. James Bogash: I think you've kind of hit the nail on the head is that as of right now we have some idea of the damaging effects, but there's some long term effects that we probably won't know until long term because these studies take a long time to not only fund and run but then publish. So what we do know already currently is a little on the scary side considering it's been a relatively short period of time that we've been looking at this question. and you're right about the uptick in the frequency of people, kids especially who've been, vaping has been a little scary. And with the readily accessible devices like the JUUL, it's made it even easier to conceal your use of them. And you don't have the cigarette smell that goes with them. And so there's a lot of things that people think are advantageous when the overall picture is not. The other thing has been that I think part of the uptake is that people have considered that it's safe. It's just some flavor and some propylene glycol and some glycerin and that's fine. It doesn't harm anybody. But we'll talk briefly about how that's very untrue.

Brenda Vargas: Changing gears a little bit, let's talk about the nicotine because typically the concern from those of us, what I would consider lay people not in the medical profession are really concerned with the high levels of nicotine, which I know is a concern. But in our conversation previous you mentioned it's more than just that.

Dr. James Bogash: Yes, the nicotine is obviously a concern in going back to the JUUL because of the popularity of that, the typical JUUL pod contains about 200 puffs. It's about the equivalent of about a pack of cigarettes. So from a concentration standpoint it actually has a higher concentration of nicotine and nicotine certainly has its own challenges especially in the youth developing brain and blood vessels. How much it has an impact on that when we start extending beyond that, so people would go, well it has nicotine, but we know what nicotine does, which is just quite true. We have a very good idea of what nicotine does to the human body, but then we start looking at some of these other compounds and I'll cover those right now. Probably the first thing we'd look at would be heavy metals, people think for those of us that grew up in the 70s and eighties we're not talking about Ozzy Osborne and Iron Maiden, so things like lead, zinc, cadmium, mercury, things that we don't want in our bloodstream and there's no safe levels of them. The problem is that the vape device or the coils are made up of metals and those metals can actually leach into the solution and then they become inhaled. The other problem is that there is definitely a difference in quality of the coils. The ones that come from China, just like everything else may be contaminated with things like lead and cadmium that some of the stuff made here are not. And yet most people have no idea where the coil they are using comes from.

Brenda Vargas: Absolutely not. Most users I'm guessing are probably looking at the bottom dollar.

Dr. James Bogash: The cheapest. Especially teens—they don't ask the question why this device is "X" and this one, is 10X the cost, but we know that heavy metals show up in the juice and then they show up in the aerosol vapor that we inhale. And I've already mentioned a couple of them. I won't go into some of the details on the

different kinds, but we do know that things like cranking up the voltage can increase the amount of heavy metals, the frequency of vaping, the age of the device. All of those things contribute to an increase in heavy metals. Because as the coil starts to break down, we get more of those heavy metals that make it into the juice and then into the inhaled vapor. So I think the industry has recognized this and so they've worked towards trying to turn down the voltage a little bit. Thinking that we're now safe from that. And I'll cover that in a second. Why that's not even safe. So, heavy metals are probably one of the concerns that most people understand that taking in mercury and lead is not good for us in any form.

Brenda Vargas: A little common, they've heard of it. They've heard of lead poisoning.

Dr.James Bogash: And lead in items coming over from China is not uncommon. We know that some of the kids toys and dog treats and things like that were loaded with toxins. The other thing we look at is the volatile compounds. So VOCs and in case you don't know what VOCs are -think gasoline, paint fumes, formaldehyde, we all know as much as we may love that smell of gasoline coming off when we're loading up our car, we know it's not good for us. That's why we have specific devices at a gasoline station to recapture them. So you don't really smell gas like you used to in the 70's because we know they aren't good for us. So in one particular study they looked at 16 year olds and they looked at the urine for the breakdown products of these VOCs, these Volatile Organic Compounds. So it's not a matter of whether they are being exposed. We knew they were the body tried to deal with them and that showed up in the urine and they found that these compounds were higher in e-cigarette users but not cigarette smokers. So that's one class of compounds that we're exposed to that we aren't exposed to in cigarette smoking and these VOCs are well known to cause things like cancer which is probably highest on the list of things we're concerned about. The other thing that becomes a concern is when we do heat up the propylene glycol and vegetable glycerin that is kind of a tableting base or a juice base that these compounds by themselves are probably okay. They just sit there. They're not designed to be inhaled because when things go through our respiratory tract is a much different experience than it is going to our digestive tract. But it's not just propylene glycol and vegetable glycerin. It is the super-heated propylene glycol and vegetable glycerin. So that changes it entirely. So somebody is saying that, well it's just glycerin. Well that's fine, but super heated glycerin that we're now inhaling, we've aerosoled it, created compounds that are known to aggravate conditions like asthma a lot of times.

Brenda Vargas: Which meant a lot of youth have, a lot of people have asthma.

Dr.James Bogash: And interestingly enough, sometimes people with challenges pick behaviors that we know are not good for us- as an example-people on statin drugs have a tendency to eat worse, exercise less, and make poor choices. So asthmatics have a tendency to vape at a higher rate than do people without asthma or teens, I should say. Yes, a little, little scary in there, but a lot of times people hear that and then they talk about the exposure to popcorn lung from the

microwave. And it's very easy to dismiss and saying those are at much higher levels. And so clearly occupational exposure, if something goes wrong and you're in a factory and you're exposed to large amounts causes lung damage, but it's a dose effect. So you're still getting exposed at lower levels. It's kind of like mercury, like do you want a little bit of mercury or do you want a lot of mercury? the answer is none. You don't want any mercury.

Brenda Vargas: And over the course of time, and how often makes a difference, and how young we're being exposed to those and then what ended up happening?

Dr.James Bogash: So that's the super heated. So they're like, well, we'll just turn down the voltage and we'll make everything easier. And we just recently had a study looking at acetals (Acetaldehyde) which are a compound that are created at room temperature from the flavorings in there. So the flavorings now create these acetals. So it doesn't even have to be super heated. Even at room temperature, the bad reactions that are occurring, these acetals are very easily vaporized. So they end up in the juice and then we end up absorbing them because the respiratory, the lung, the lining of the lungs, the respiratory epithelium is a relatively permeable source and there's a lot of things that we absorb that way that we don't absorb as easily from things like the skin or from the GI tract. So it becomes a challenge that we're now getting more things into the body if we do it through the respiratory tract.

Dr.James Bogash: So the acetals is a relatively new finding and when that kind of debunks the whole "well we just won't superheat it, we'll keep it a cooler, we'll turn the voltage down." We know that there's things at room temperature that are creating problems.

Brenda Vargas: Well, I wonder at room temperature in the state of Arizona, right? If you're out and about, it's really not at room temperature, especially at this time.

Dr.James Bogash: ...and leave it in your car? Or as it was delivered to the vape shop, was it in the back of a truck? Was it out of the cartons? So a couple of the things to consider as well is that we know that vaping actually increased infection risk. So one particular study looked at pneumococcal adhesion. So basically bacterial adhesion bacteria that caused pneumonia were more likely to adhere to the lining of the lungs in vapors than in non vapors. So especially when we start coming into flu and respiratory illness season, vapers are more likely to develop pneumonia as a result of that. And then we'd develop pneumonia and then we get antibiotics and then we start disrupting your normal flora and it starts a whole...

Brenda Vargas: and they're more susceptible once they get it one time. Later on in life, right? Especially as they go off to college and are in community type bathrooms sharing with many others. Peers.

Dr. James Bogash: I think overall, probably the scariest study I've come across over the years was one that looked at vapors, smokers, so noncombustible, combustible use and nonsmoker, non vapors. And when our body reacts to something, when our cells react to something, they do it by making proteins. Those can be good proteins, those can be bad proteins. But if we look at our cells and we look at proteins being made, it's a sign that our body is interacting or reacting to something. So they took biopsies of again, vapers/ non vapers, vaper/smokers and non vaper/non-smokers and looked at the tissue under microscope and they found that there were between the vapers and smokers, there was something like 150 different compounds, different proteins that were being expressed. I actually have it here, over 300 different proteins that were produced in smokers of vapers airways that weren't in nonsmoker and non vapers. And then only 78 of the proteins were similar in the vapers in smokers. So that means that there were 113 unique proteins expressed in the cells lining the airway in vapors that weren't in smokers. We have no idea what this means long term, but clearly the cells lining the respiratory tract were experiencing trauma and starting to react to it. And then when they what's called the gross description, when they just kind of looked at the tissues, they were described as damaged and red.

Dr. James Bogash: So they are erythematous and friable. And so it was clearly not only from microscopic level, but from a visual level. We saw that the vapors airways were damaged, it was causing problems with them. So I think that's probably the scariest thing that we see is we have this whole subset of things that are happening that we really won't know what's going on. You and I talked briefly before we started recording about the first recorded case in 2015 of a case of what's called lipoid pneumonia.

Brenda Vargas: Could you explain that?

Dr. James Bogash: So basically they tied it to a 31, 32 year old woman that was vaping. They ruled everything else out and it turned out that she had, instead of a bacterial pneumonia where bacteria is causing the inflammation, it was these small lipid droplets that were a result of probably the inflammation that damage to the lung lining that was causing that. They looked back at this study as a result of probably 150 cases or so that have popped up around the country, of these weird reactions. They fall into about four different classes, but the lipoid pneumonia is one of them. And this was probably the first case description of what was happening to that. And that patient ended up hospitalized on steroids and antibiotics and it was not a good scenario. And it's worst case scenario from an pneumonia, even pneumonia you can give antibiotics, but lipoid you can't. The body just has to work on clearing it. You can reduce some of the inflammation with steroids. It was not fatal in that particular scenario, but her lungs were damaged for the rest of her life.

Brenda Vargas: I think that's the biggest piece since, as we mentioned in our previous conversation prior to recording, we don't know. There are a lot of unknowns, and I think just knowing the little bit that we do know about what you just

mentioned when they're looking at the tissues is because it's unknown. Why take the risk?

Dr.James Bogash: But clearly we can say that it's not safe. There's no aspect about it that's safe and it's not just this whole idea that it's just flavoring and some glycerine and we'll be okay is clearly not the case.

Brenda Vargas: Well, and that's how it's possibly being presented from youth to their parents or caregivers. It's nothing, it's no big deal. Right. It's just flavoring. That is the ultimate reason why we're doing this. If a parent was unsure, I know that a lot of us want to trust our youth and they're at that stage right where they're living and learning and making their mistakes as we once did at that age. What are signs, if any, what can we tell parents what to look for? I mean, Dr. Bogash, I'm sure you've read a lot and talk to a lot of people in this industry. Is there anything that they can look for?

Dr.James Bogash: Well, obviously just the vaping itself, just the devices, like the JUULs, the problem is It looks like a little jump drive.

Brenda Vargas: It certainly does.

Dr.James Bogash: And so it's easy to hide and it's just a matter of being vigilant with your children and not being permissive. If you do find something, it's not okay. We also know that that vaping becomes a gateway, not a gateway drug, that would be a strong description, but a gateway to combustible smoking. So this whole idea that we'd use vaping as a source of quitting smoking is not turning out the way we planned. We now have vapers and smokers.

Brenda Vargas: At least not with our youth.

Dr.James Bogash: Correct. Yes. And it's also gateway to marijuana use. So those are two concerns. We've seen a reduction in cigarette smoking over the years and what's happened is we're worried that that's going to start turning around cause the vapors will then increase the risk of using combustible cigarettes. So we may see this wave starting to turn around in the next couple of years as kids are more likely to take up combustible smoking.

Brenda Vargas: Yeah. And there's no way for a parent to tell if that's really vape juice or is that something else like wax, which is marijuana.

Dr.James Bogash: So if you're not really diligent, your kids could be sitting in their living room and there is somewhat of a smell to the wax. It's not a strong smell and it doesn't leave-if the wax is contained in the device, most likely you can't just look at the device or smell the device. Once it's been used it will let off some of an aroma, but nothing near like combustible.

Brenda Vargas: Is it a myth or is it truly the case when looking at wax, which is marijuana inside a vape, that it's a little thicker?

Dr. James Bogash: Yes, that's generally one of the reasons they call it wax. And the concentrations are also must higher in the THC concentrations are higher in wax then they generally are in combustible.

Brenda Vargas: So a few things to kind of be a red alert to parents if they're looking and finding themselves in this situation. I know you just talked very briefly as far as recommendations for parents being vigilant, taking it seriously and not being permissive. Any other proactive measures? Let's say they find themselves in this situation where they had no idea and their student has certainly establish a practice because of their peers. Because it's easy because it's accessible, any of the above. What would be your recommendation from a medical standpoint? Because I know obviously from our lens, the counseling standpoint, there's so much that needs to be uncovered as far as that communication piece and possibly looking to get some professional help to uncover the need.

Brenda Vargas: Right? But from your standpoint what has been your experience?

Dr. James Bogash: So first of all, now the nicotine does become a player because if they're using nicotine based juices, then we have that nicotine dependence. But then there's also the habit form of that, using it to calm or relax, those calming, relaxing, or there are much better ways to teach your children to calm their brain, calm their mind. I know you and I talked about that we're both rabid ice chewers. And that has a tendency to kind of focus and calm my brain and so we need to find our tools that are safer even though a dentist may disagree with us. But the other thing to consider is if you're a vaper and a lot of times we justify our own behaviors saying it's safe and our kids pick up those things from us.

Brenda Vargas: They're like sponges aren't they?

Dr. James Bogash: They are and whether we want them to or not, in the back of their mind, they think, well, if they're doing it, it's okay. Right? It's safe. So we need to evaluate our own behaviors. I teach the same thing from a lifestyle standpoint, my son, who is 13, an a eighth grader, his diet's really varied because my diet is varied. So he learns that from the parents.

Brenda Vargas: It's hard to look in the mirror. I mean we're both parents, so we understand all you parents here in the same boat. It's living and learning and now you have the information and now that you know to do better or at least go down that road to try to do better. Right. We can't be perfect. We're all human, that's for sure.

Speaker 3: So what I want parents to take away from this, Dr. Bogash, you said 200 puffs equals a pack of cigarettes out of one of those vapes out of the JUUL.

Brenda Vargas: That is typically what's being used.

Dr.James Bogash: Yes and the JUUL is typically a higher concentration than a lot of the other ones.

Brenda Vargas: So thank you for mentioning that because that does seem to be the most popular one even though we know that there are other apparatuses. The one that's most popular with youth is the JUUL. I don't know if part of it has to do with the name and it sounds a little catchy, but I'm sure that has something to do with it. And it's small. Any other takeaways for parents? I know you gave a lot of information. Some parents might hear this, listen to this podcast twice, hopefully as you talked about some of the chemicals and the heavy metals and some of the cause for concern. What are three important things that you want parents to take away from this conversation?

Dr.James Bogash: I think the important thing is on the front end, being diligent. My son knows that I have the right to look at his phone or anything or through his backpack or anything. I reserve that right. Whether I exercise it or not, he knows that that's always there. We always need to keep an eye on our kids and make sure that if we find something, to derail that very quickly. I think if a kid just started vaping today it's much easier to get them to stop than it is if they've been doing it for a year. The other thing is to understand that this is not a safe activity. And we've perceived that for a long time, but it's not, there's nothing safe about vaping.

Dr.James Bogash: If you do happen to notice your child having some increased respiratory issues, if they're asthmatic and they need more medication or if they've had more respiratory illnesses or this little cough or clearing their throat more, these are things you need to pursue because if there haven't been any other changes that may be that the child's being exposed to vape and even sometimes second hand vaping can create those because those heavy metals and all of those compounds are still in the vape.

Brenda Vargas: We didn't even go into the second hand piece, but yes it's just like second hand smoke is bad. It's no different.

Dr.James Bogash: And then third hand because those heavy metals will now settle on things like dust particles and as those dust particles get spilled, get kicked up, we now have a second chance to inhale those heavy metals.

Brenda Vargas: That is a whole separate conversation!

Dr.James Bogash: Tertiary exposure and I think just being proactive. I think part of educating your children on the front end that this is not a safe scenario. Have them watch any of the variety of information. We've done some through CCYSA and ICAN, we've done some webinars on this topic. I know that some of the Chandler schools use a program we put together as a diversionary if they get caught with vaping, they can choose to watch this.

Brenda Vargas: We are going to have some parent series and education series in person. We just know it's always hard for parents to kind of peel away at the end of their

day. So we wanted to give them an avenue to have this information through the podcast.

Dr. James Bogash: So starting those things on the front end and having those discussions may derail them from ever starting vaping in the first place so that if they're going to take that first puff, they're going to know it's not good for them.

Brenda Vargas: You know your students best parents, some of them react well to that. Scared straight. Hey, take a look at this picture in regards to what happens when someone is using e-cigarettes or in their case probably JUUL. And there are a couple of websites we are going to be listing on our counseling and social services website. But some of them it's just giving them the education to know what are the possibilities because it can be scary and I think that it's okay for them to be scared too.

Dr. James Bogash: Yes. Some of them are scary pictures. The pictures where the device exploded, because these are batteries. Remember, was it the Samsung note eight or whatever that you can't take on planes? Batteries can explode. And there's been some really scary episodes of people being injured because it's right there in your face. People have been disfigured, severely-teeth blown out, jaws broken. Burns from the battery going. So you want scary pictures? They're certainly out there.

Brenda Vargas: They are certainly out there. I'm sure it can be googled. Especially I'm thinking in our very high heat state. It's probably more susceptible for some of those things to kind of go off and react differently when we're sitting at a 150 degree weather and who knows how hot it gets inside of your vehicle.

Brenda Vargas: I appreciate so much you spending time with us and really assisting us in educating parents. Dr. Bogash, if a parent wants to reach out to you, how would they do that?

Dr. James Bogash: Couple of different ways. If you're a Facebook advocate, there's only two James Bogashes on there and one of them has hair. That one's not me. Also I've got a medical blog at modernhealthmyths.com. I post a lot of information in Long Tail articles about health and how to manage chronic conditions. And then just at the clinic -Life Care Chiropractic- it is lifecarechiropractic.com, and a phone number and an email address and everything are on there. I'm pretty readily accessible. If anybody has any questions.

Brenda Vargas: Well, we certainly appreciate your time very much carving out of your day. We know you're busy. Parents. If you'd like to reach out to Dr. Bogash, his information as he just shared. We will also list it on our website. If you have any questions, please reach out to me, Brenda Vargas- vargas.brenda@cusd80.com. Thanks for joining us today and hope to see you guys again at one of our parent presentations.

Speaker 1: [inaudible].