

Written Transcript
On The Line Episode 3.8 “Ibuprofen”

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Charlie Palmer:

Welcome back to On The Line a Podcast for Today's Wildland Firefighters. We're coming to you from the beautiful KUFM studios on the campus of the University of Montana and we appreciate you tuning in for what has been kind of an elongated season three. This is episode eight of season three again, we're appreciative that you're tuning in. On January 30th of 2019 so just about a year ago, the world lost an extremely influential scientist, Dr. Stewart Adams. Now it's a name that probably does not ring a bell for most of you, but chances are you've been directly impacted by his work. Many, many times. Dr. Adams was a British pharmacist and in the early 1950s he was tasked out with finding a treatment for rheumatoid arthritis, which was as effective as steroids, but without any of the side effects. Now, aspirin had already been developed in the late 18 hundreds but it had to be given in such high doses that the risks of side effects like indigestion and bleeding were just simply too high. So over the course of 10 years, Dr. Adams and his team experimented with hundreds of different compounds trying to find a drug that would be well tolerated by those taking it and eventually they ended up with Isobutyl fetal propionic acid. I hope I did that justice and Dr. Adams was scheduled to give an important speech about his work in this new drug discovery of his at a conference in Moscow and so of course the night before he went out with some colleagues and they tossed back a few vodkas, maybe more than a few and so he ended up with a pretty significant hangover the next morning, the morning that he had to give his talk and so he took a 600 milligram dosage of his own new drug. The morning of that presentation and according to his report found it to be very effective at relieving his hangover symptoms. Probably not a protocol that would be tolerated today in terms of taking your own drug, being a subject in your own, a drug test. But anyways, the drug in question of course is ibuprofen and the rest, as they say is history. Now more than 50 years later, ibuprofen has become one of, if not the most popular painkiller in the world. So on the podcast today we have a couple of gentlemen who are highly qualified to talk about this very fascinating drug. Dr Robert Amrine is with Missoula Bone and Joint here in Missoula, Montana. He's a sports medicine physician and specializes in nonsurgical, acute and chronic issues for athletes of all ages. Rob, welcome. (Thank You.) And Dr. Eric Stone. Eric's from the Western Montana Clinic. Also here in Missoula. Dr Stone's a gastroenterologist and a doctor of internal medicine specializing in the diseases and abnormalities of the digestive system, pancreas, gallbladder and liver. Eric, welcome to you as well. (Thank You for having me.) We appreciate you being here.

Charlie Palmer:

So if you look at the demands of wild land firefighting, that'd be long mentally and physically taxing work shifts, operational environments with high ambient temperatures, add in nutritional challenges, maybe some hydration issues and the reality that you might be working up to or maybe even beyond 14 consecutive duty days. And what you end up with is a pretty significant set of workplace challenges. So it's accurate to label firefighters as tactical athletes. And so in many ways then these folks are athletic in nature. And so as a byproduct of these occupational demands they face, it's very possible. And in fact maybe even quite likely that a firefighter's going to end up with such things as muscle soreness or joint pain or a headache or any number of other ailments. And so with that then maybe as an opening

question, and Rob will throw this your way, just kind of a, an understanding of how do these things work?

Dr. Amrine:

Yeah, that's a good question. I think your historic discussion regarding the, in basically the invention of ibuprofen was for a goal to decrease inflammation. As we believe that inflammation is a source of pain inside the body. A lot of our slight injuries or overuse type of ailments, will cause inflammation. If we can control that, we can then therefore control pain and get back to exactly what we want to do, perform better as our jobs at our sports or even simply getting through our Workday. I'm sitting on a desk, unfortunately some things have side effects.

Charlie Palmer:

Eric, how about you? You want to add any to that in terms of, I mean to me they're magic pills. I mean, I, I've got something that aches, whatever that might be. Right now it's a shoulder and I'm cognizant of kind of some of the challenges with these things, but at the same time I absolutely know I take a couple of those and my shoulder issue feels a heck of a lot better. Well, what's going on in the body? What's, what's happening?

Dr. Stone:

So these medications target an enzyme called cyclooxygenase. And by targeting that enzyme, that's how they provide all their benefit for inflammation. There is a related Cyclooxygenase enzyme that's also quite prevalent in the GI track and in the stomach. And these medicines also block Cyclooxygenase, which is a key component of a lot of the protective mechanisms in the GI track. And a lot of the unwanted side effects in the GI tract that we attribute to ibuprofen is, is related to this fact. And that puts the individual at increased risk for complications such as ulcers or bleeding and even possibly a perforation.

Charlie Palmer:

Okay. So my understanding is just trying to prep for this podcast to find out kind of what they do is they block prostaglandins. Is that accurate or is that just the simplistic or not accurate?

Dr. Amrine:

No, I think that's, I mean in some things I think Einstein said when things are extremely complicated, humans tend to make it more complicated. So we need to make it simpler and basically by blocking the enzyme that Dr. Stone Mentioned is the cyclooxygenase, but does lead to something referred to as prostoglandins and prostoglandins have multiple roles throughout the body, but we're really trying to, with our target of ibuprofen or nonsteroidal anti inflammatory drugs in general, we're trying to use the prostoglandins that leads to more inflammation and block that. Unfortunately, there are prostoglandins and other types of hormones in the body that get blocked that are essential for other functions. And that's where we end up with our goofy side effects. But you're exactly right. Prostoglandins are heavily involved in this process.

Charlie Palmer:

Okay. And you made a good point as well as the title of this podcast is ibuprofen, but they're just one member of this NSAID class, correct?

Dr. Amrine:

Yeah, that's correct. And, and ibuprofen was the first over the counter nonsteroidal antiinflammatory drug. Shortly after that we have Neproxin or Neproxin sodium known as the brand name Aleve, which has been allowed to be sold over the counter. But then there's also multiple different types of nonsteroidal antiinflammatories. They're all within the same classification that are prescription only medicines such as a common one. In the West it is a prescribed called Meloxicam.

Charlie Palmer:

What kind of advice would you give to a wild land firefighter who's thinking about taking ibuprofen then or Neproxin to deal with some sort of a musculoskeletal issue?

Dr. Amrine:

I think our, our historic thought process on this was go ahead and use it. We think it's pretty safe. We didn't think there was a lot of side effects, but unfortunately with a lot of our medicines over time we've learned that there's a little bit more risks than what we initially thought. And when you alluded earlier that a wild land firefighters are tactical athletes and I couldn't agree more anybody that's out doing what the firefighters are doing in terms of being exposed to great heat illness risk being involved in work that is greater than what the body is often capable of doing, dehydration, all of those are positions that put the body at a taxing spot that simply the body doesn't work very well. Well, unfortunately what we've learned is that ibuprofen, Aleve, these nonsteroidal antiinflammatory drugs can get in the way of normal function of the body.

Dr. Amrine:

And really the things we've learned over time is their impact on heart health has been discovered and and more aware over the last 20 years. Their impact on Dr. Stone's specialty, which is gut health or really the stomach lining has been well understood now and then the as I refer to as the secret assassin is kidney health is actually impaired through the usage of ibuprofen and all those other scenarios, high heat, heat illness, dehydration, high levels of exertion or even getting to a spot called rhabdomyolysis. All can put your kidneys at risk and then the ibuprofen can make it an even a more tricky of a a situation. So it becomes all of a sudden a very challenging discussion is should you be even taking this in those high risk scenarios or not. And it's a game of trying to balance risk, like everything in medicine, like everything in life is how much risk are you willing to tolerate? How much should we tolerate and how much benefit are you actually getting from popping those pills?

Charlie Palmer:

So with respect to the GI system, what are some things that people need to watch out for when taking ibuprofen or any of these other NSAIDS?

Dr. Stone:

Not uncommon that when individuals start taking this, and sometimes this occurs even within the first week, they might start having some abdominal pain, maybe a little nausea. And although those can be early symptoms of medication themselves one thing we always want to be mindful of, could those symptoms as they persist suggest that that patient is moving down the road to maybe developing an ulcer or some other inflammation in either the stomach or the upper small bowel.

Charlie Palmer:

Are there things then that somebody could do to lessen the likelihood that an ulcer or one of these other issues might develop?

Dr. Stone:

Well from a GI standpoint, we would always recommend trying to modify your dose and to try to use the lowest dose that that might be effective for what you're using the medication for and that's usually for some pain relief. Also trying to limit the total time over which you will be taking this. The risk of you having a complication to one of these medicines is correlated to both taking higher doses and taking that for a longer period of time. If somebody does need to be on these medications, one thing that can reduce your risk for some of the GI complications that we see is starting another medication to reduce acid production in the stomach. And there are a lot of these medications that can be bought over the counter such as Prilosec or Prevacid and taking one of these medications in addition to ibuprofen or one of the other NSAID once a day can limit some of the complications we see in the GI tract with the medications.

Charlie Palmer:

Okay. So kind of to summarize what you said, if possible, take as few as you can and keep that as to as few a days as possible. And then you might also consider taking Prevacid or Prilosec or one of these other medications like that in addition to taking the NSAID to kind of stem off some of these other potential issues. (Correct.) Okay. Is there a safe dosage that you either you guys would recommend given these work conditions that we've talked about, which are really, really challenging?

Dr. Amrine:

I think that's a very challenging aspect is especially is a Dr. Stone answer in terms of the gut health. But in terms of kidney health, it's not very well known at what dosing is actually gonna potentially injure the kidney. The mechanism that could potentially hurt the kidney is really thought to be two different aspects. Number one is when you use it in anti-inflammatory, you can decrease the amount of blood flow that gets into a kidney. And that's probably one of the bigger risk factors for our athletic or our tactile athlete population because they, with heat stroke and exertion, you're decreasing the amount of blood that's going to get to the kidneys. So if you're also decreasing the blood with the use of the kidneys, that puts more of a strain on the kidney. Additionally, with dehydration, you're also getting less blood flow to the kidneys. So the combination of all that, maybe it's just a small dosing of ibuprofen, one or two pills that might be enough to injure the kidney.

Dr. Amrine:

Or it could be, you know, the, the way that a, a lot of us take these medicines, especially in times of stress and injury is that we just pour however many fit in our hand and then we just swallow them and don't know if we took two or took six. And that can be a one of the curses of these over the counter medicines. So I think the, how much is safe is highly debated and also dependent on what your other risk factors are, which are your core body temperature has been over the duration of your exercise, how hydrated you are, and then also how hard you're working. If you're just driving truck around all day, ibuprofen might not be that bad for you, but if you're in the throws and 14 hours and you're, you're a little tuckered might not be the best medicine to put in your body.

Charlie Palmer:

What alternatives that are available to maintain kind of the physical demands of the job, but then also recognizing that again, Rob like you mentioned these folks are tactical athletes and they just might be dealing with some nagging or persistent or chronic issues that they're wanting some relief from.

Dr. Amrine:

I think that's a good question and stay up late enough at night and watch sports a, you're going to see many advertisements trying to sell all these different ideas to you and the way that I look at trying to manage any tactical athlete or an athlete in general is that we provide appropriate care to them to try to maximize their musculoskeletal health and, and that really entails making sure that they do get some time off to recover, that if they do have an injury, have somebody that has some expertise in musculoskeletal health, whether that's a sports medicine doctor, whether that's an occupational health doctor that may be involved with the firefighting team. If you have an athletic trainer, which would be the ideal world, you have athletic trainers associated with each individual, a unit to take a look at the injury and try to simply figure out is this something safe to deal with and have good old Montana toughness on it and just rub some dirt on it or is this something they need to take a day off and sit out even though your work duties require you to be out there. And I think finding that aspect is one of the more important things is what's safe to work through and what is something that even though I know you're tough enough to work through it, you probably shouldn't. And that's a tough one. The difference of being dumb and tough and smart and tough is a very, very fine line.

Charlie Palmer:

I think in many ways you're talking about a population that, and again, not to stereotype or not to generalize, but, but at the same time from my personal perspective of 20 kind of years in and around it of just kind of this recognition piece of just how common they are as a medication. And how frequently they're taken and generally how little has put into any potential adverse side effects that might come from taking them. So what advice might you have for a population who might take these things in fairly high quantities?

Dr. Stone:

So from my point of view, these are a tool to help with your aches and pains and and to help you complete the task and physical exertion that your job requires. But ideally I look at this as more of a short term tool and I think it's always advantageous to avoid letting this become kind of a long term crutch over many months and many years. And that's when, at least from a gastroenterologist standpoint, we really start seeing a lot of the complications in those individuals that end up relying on these for months and months at a time. And I think when you start taking these medications, if you're still having uncontrolled pain, it presumably that's the reason you started these in the first place.

Dr. Stone:

I think taking a step back and kind of reconsidering why am I still having pain? Why? Why have I not responded? And maybe deciding if some other tools should be utilized at that point as opposed to continuing to ratchet up the dose over time, which is something I, I certainly see individuals do and in fact I see some individuals who after developing some abdominal pain, which I think is presumably related to the ibuprofen, their response to that is just to continue to take more ibuprofen in hopes that then it would actually start alleviating their abdominal pain and that's kind of a vicious cycle that I would really caution people to try to avoid and I agree with Rob utilizing at that point, expertise of physical

therapists and maybe occupational therapists and even seeking more formal medical attention I think is most prudent in that situation.

Charlie Palmer:

Okay. We kind of talked about this in our pregame meeting here before coming into the studio of the role, that kind of effective training can play and write if possible, taking as few of these things as possible and trying to mitigate that. Then with more effective training on the front end.

Dr. Amrine:

Yeah, it's sports training is, is changed drastically over the really, even the last 20 years, we've always had some tools in the past that have helped elite level athletes participate in somewhere unethical of sorts. And so we've, we've cleaned the sport up quite a bit and unfortunately what that has done is that's made us be even smarter on how we manage the human body. And there's an old mantra in sports medicine that goes, you get fit to play sports, you don't play sports to get fit. And basically what that means is that you want to become stronger, fitter and prepared for whatever the activity you're going to do before you ever do that activity. So we know that the human body can adapt and change to whatever strength demands we put into it. And if we can start to challenge the body higher and higher levels of strength demands before we ever get to what our real event is, our body will be better adapted.

Dr. Amrine:

So a firefighter that starts training in January for their potential early season of fighting fires in the South and in may or early June. If they're fit going into may, their injury risk is decreased and their tolerability of the workloads that are going to be put on them will be improved. So over time, we've seen this term that we refer to as the acute to chronic workload ratio and we're basically, we're trying to see how much is our workload changing on us if we change our workload fast, if we go from a couch potato to all of a sudden run around the mountains of Western Montana and a hundred degree heat, we're going to break pretty darn quickly. But if you've already been doing that before you ever step onto the job site and and fight a fire, your risk of being hurt, it goes down and your overuse injuries are going to go down. So maybe you never even have to even worry about this complexity of whether to take an ibuprofen or not. Doesn't mean you're not going to get hurt, but it mitigates that risk. So prepping for the season coming ahead is probably the best idea altogether. That old saying ounce of prevention and then wherever that goes from there. Right.

Charlie Palmer:

So if we're going to wrap it up, Eric, closing thoughts?

Dr. Stone:

Well, reiterating what I alluded to before, I mean I think these can be an effective aid for individuals that need them, but I really would just stress ideally we'd like for them not to be a longterm solution for the aches and pains that someone's dealing with.

Dr. Amrine:

One of the things that fascinates me the most about wildland firefighters is is your resilience, your toughness, your ability to just truly fight through the most miserable of potential scenarios. And that can put you in positions of pushing yourself through a little bit more pain than in then you need to. So I think

is number one as a baseline, I'd encourage you to be really smart about your body and your body is a machinery. If you abuse that machinery, it doesn't work very well. And that's where asking for help, how to get better, having somebody take a look at it, it's okay to to ask for guidance on what hurts and what doesn't hurt. And number two is I think in in all aspects is that there's reasonability in the usage of all medicines. If we use things sparingly and intelligently, risk factors are relatively low. We just don't want to get into that scenario where a lot of us get where we just start taking the pills as a Dr. Stone set a crutch to get by.

Charlie Palmer:

All right, so that's it for our chat on ibuprofen. Gentlemen, thanks so much for coming in and sharing your, your insights with our listeners. We appreciate you tuning into the podcast and just want to say that our thoughts here are with our Australian brothers and sisters who are currently dealing with fires of historic proportions in their country. Obviously there's firefighters from the U S and Canada and many other countries helping out those folks down under and we wish them the best in their efforts to get those things controlled. And again, we appreciate you tuning into the podcast. We're thankful for all of our listeners, wherever you might be. We'll see you next time on the line.

Charlie Palmer:

You've been listening to On The Line, a podcast for today's wildland firefighter, our audio engineer is, Mike Matthews, production assistant, Joey Moore, and I'm your host, Charlie Palmer. Thanks for listening and we hope to connect with you again in the future. On The Line.

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