

DOT MIL DOCS
DMD 90 - DR. CASTELLANI

Q: Welcome to Dot Mil Docs. This is episode number 90 of the military health system's official podcast. It's Thursday, December 17th, 2009. My name is Russell Carlson. And we are smack dab in the middle of winter safety month. So we're going to talk today about staying safe in the cold weather, both at home and in theater. Our guest this week is Dr. John Castellani, Research Physiologist for the United States Army Research Institute of Environmental Medicine. Dr. Castellani, welcome to Dot Mil Docs.

A: Thank you for having me today.

Q: I was wondering if you could begin by talking a little bit about what you do and what it does for DOD and the war fighter.

A: Okay. Well, I'm a research physiologist at the U.S. Army Research Institute of Environmental Medicine. We're located up in Natick, Massachusetts.

Q: Is that outside Boston?

A: That's outside Boston. And I work in a group who's goal really is to help sustain soldier performance in environmental extremes. For example, my division, the Thermal and Mountain Medicine Division, looks to improve performance, both physical and cognitive performance, in the heat, cold and high altitude environment. So the kind

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of work that we do is very relevant to our war fighters who are fighting both in Iraq and Afghanistan. And our job is to help them do their job better in those tough environments.

Q: And it does get quite cold in Afghanistan, doesn't it?

A: It does. It gets colder as one goes higher in the mountains. And in the winter, of course, just because of the time of the year, you can see temperatures suddenly dipping in the high altitude areas certainly below zero. And even in the lower valleys in the north, you can see temperatures below freezing for much of the winter.

Q: So what are say the most common types of cold injuries?

A: Well, we like to think of cold injuries really as three different things. The first one is hypothermia. Which essentially is just a lowering of your core body temperature. And so it's a generalized gold response. And it can be caused by many different factors. Most of the time though it's caused by a cold, wet environment. So that would be the first type of cold injury that we typically see a lot of. And then we like to group the other two into what we would call local cold injuries.

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The first of those being frostbite. Which most people are familiar with. And that is literally a freezing of the tissue in any part of your body. So the tissue temperature actually gets below 32 degrees. Actually, the tissue temperature actually has to get below about 27 degrees to start seeing freezing of the tissue.

Q: So that's what frostbite is, is when your tissue literally freezes.

A: That is correct. Frost nip, people are familiar with frost nip, is really what you might consider the very, very beginning of frostbite. So if you looked at someone's nose or their finger, you might see a really tiny white dot. And that would be the very beginning of frostbite. And actually, it's one of the signs that you could start looking for to have someone take some other measures. Either get out of that environment or do some other preventative steps. So it doesn't get any worse.

Q: What would frostbite look like?

A: It usually if it starts off sort of white is usually the first response. And then it may turn a little bit blue. And it sort of has a waxy appearance. And the skin gets a little bit, you know, to the touch, the skin in that area starts to get hard. So that's usually the beginning that

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we ask people, soldiers and other folks, to start looking for those kinds of signs and symptoms of someone. You know, some folks are going to start to feel numb beforehand. Usually, once you start getting the frostbite, of course, the tissue's starting to go. So you're not going to feel it as much. But it's the sign beforehand to actually the frostbite. Sort of that numbing, very painful, before the tissue actually starts to freeze. And then you'll again see that waxy appearance start to begin after that.

Q: What would you want to do say if you knew you had frostbite or somebody else had it?

A: Well, the biggest thing is obviously to get out of that environment to try to rewarm that tissue. The most impotent thing about someone with frostbite is ... and it's really important for soldiers, especially when they're out in the field ... is that you want to be able to warm it without a large heat load. For example, in the past some people have like, for example, tried to warm up hands and fingers, for example, over an engine or with exhaust or with other very high heat sources like a fire. But you actually want to try to rewarm it very slowly.

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And so, that's important. But the most important thing that we tell our soldiers out in the field is that if you're going to rewarm someone with frostbite, you want to make sure that it doesn't refreeze again. You're better off to allow tissue to remain frozen and get back to an area where you know you will have very little risk of it refreezing again as you start to rewarm it. Because you actually see a lot worse damage to tissue when you go through sort of these freeze/thaw/freeze cycles.

So it's really important that once you begin to rewarm, you need to try to make sure that that tissue remains not frozen at that point. Again, as I said, it's better off to keep it frozen until you get back to a place where you're comfortable.

Q: Where it can get gradually warm.

A: That's correct. I mean, typically we tell people that when they're rewarming from some kind of cold injury. To keep the water ... like, for example, you could immerse ... if your finger was frostbitten, to maybe immerse it in water that's around ... just tepid, somewhere around 102, 104 degrees Fahrenheit. But no higher than that.

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Q: Not scalding hot water.

A: That's correct. So it would be very sort of warm water, tepid water, that you get out, say, for example, out of a spigot. So I know a lot of people don't have access to a thermometer and things like that. But that would be the idea is just sort of the idea of like tepid warm water. Water that's actually, if people are very familiar in the kitchen is that water that you would want to start yeast with.

Q: Sure.

A: If you were going to bake bread. That's the temperature that you typically want to put someone's extremity in, to start to rewarm.

Q: Are there any cold injuries that we haven't covered?

A: There's one other that we see. It's actually again it's local, but it's not freezing. It's actually called non-freezing cold injury. Another popular name for that is also known as trench foot. Because it was mostly ... it was seen really to the first rate extent during the first World War when soldiers in Europe were standing around in trenches for long periods of time. And those trenches filled with water. And so the water wasn't frozen, of course. But it was very cold. It was probably somewhere

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between 40 and 55 degrees. And very long term exposure to an environment like that can cause tissue damage. More recently, we haven't ... the most recent time we've seen non-freezing cold injuries actually were in the British and Argentinean armies during the Falkland Islands War in 1982. Because again, the environment was the soldiers were fighting essentially in bogs. And were in these bogs for long periods of time. Those types of injuries take a long time to exacerbate or come about. You know, usually involve very long periods of exposure, 8, 10, 12, 24 hours of being continually exposed to that.

Q: So they're getting wet. And it's not warm. It's kind of maybe cold and just that amount of time of being say wet and cold.

A: That's right. And we see those kinds of injuries in other areas. Actually maybe not when you're standing in a bog or in a trench. But we also see it in soldiers, for example, who might be wearing boots that don't allow much in the way of sweat to evaporate out of the boot. Like vapor compression boots. You know, soldiers in very cold environments like Alaska are issued those. And that's why it's important to keep boots dry. Because if you were wearing the boots for really long periods of time, your

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feet are still getting a little bit cold. And then it was wet inside there. We see a little bit of non-freezing cold injuries from that kind of exposure or even in the hands and gloves, people wearing gloves again that are wet for really long periods of time. You know, that's where you might start to see some of those kind of injuries as well.

Q: Now, we hear on the news all the time about wind chill and wind chill factors. What is that?

A: Well, wind chill what it tells us is basically the cooling power of the environment. And what it does is it references it back to what you think about what it would be like if the temperature was at a certain point, but there was no wind. So to give an example, if the air temperature ... and actually, I'm actually going to find you a real number here.

Q: Okay.

A: So, you know, say the air temperature outside was ten degrees Fahrenheit, but there was no wind. Then the wind chill factor would be about ten. But you could have what we call a cooling environment from that same combination of the air temperature and then also the wind speed of ten that you would have say someone who was in a 25 degree

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Fahrenheit environment, but the wind was blowing at about 20 miles per hour.

Q: Right.

A: Or 25 miles per hour. That would sort of give you what you would call an equivalent temperature to what it would be like if you were standing in ten degree air, but there was no wind.

Q: Right. And we've all experienced that.

A: And we've all experienced it. You know, what's sort of new that's come out in the last five to eight years is that work has come out to kind of show what really the risk of getting a frostbite injury is related to the wind chill.

Q: Oh, really?

A: So as an example, typically ... and again, this actually surprises many people, is that you can get down to fairly low wind chill temperatures before you start to see an increased risk on a cold injury. Or a frostbite injury. That's not to say you can't get frostbite below 32. Actually, you need to probably get below about 27 to start to see some kind of injury. Because that's about where the tissue starts to freeze. It's like sea water. But what it is, is that, yeah, you could have injuries at those what I call warmer temperatures. But that's very rare. But you

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need a combination of a wind chill around, below or around, minus 15 degrees Fahrenheit before you see much more significant increased risk of a frostbite, for example. Wind chill only kind of has its effects on skin that's exposed.

Q: Right.

A: So again, your hands may get very cold. But in terms of the wind chill effect, it won't be there if you're wearing gloves. Most wind chill a lot of times will have effects on face, for example. Because that's an area that's typically not fully covered.

Q: Well ... go ahead.

A: No, I was going to say that plays a role as well. The wind chill was really designed for say someone who's standing on a bus stop. You know, waiting. Maybe gently walking back and forth, having the windblown on them. So we actually have ... so that's really what it's designed for. For soldiers, we talk about things that they want to add to that. We don't know, for example, if the sun was out. Because the wind chill was not designed with sun with a solar load. So if the sun's out, you may actually have maybe a little lesser of a chance of getting a cold injury because of the solar radiation that's coming down.

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Also, when you're exercising, you start to increase your body heat. And you actually increase blood out to the periphery a lot more. So that may also decrease your risk of getting frostbite. Even though the wind chill hasn't changed. So those are sort of very important things that people need to know about the wind chill.

The other thing that people don't tend to think about, and soldiers especially, when they're talking about wind chill is actually is creating their own wind. So if soldiers are in a cold environment and say they're doing ... it's a mount division, maybe doing skiing exercises or up in Alaska. You know, those folks are actually creating their own wind if they were skiing.

Q: Sure.

A: Down the rotor wind, the rotor draft. I'm not sure what you call it. From a helicopter, you know, also creates wind. It's artificial. So those kinds of things also need to be taken into account. Like instead of just a local thing that's going on. You could get the weather report and say, well, we don't have a risk of a wind child here.

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But maybe you would if you had some other wind sources that you weren't thinking about.

Q: Yeah, if you had some kind of extenuating circumstances.

A: So that's where it's really useful today to look at our wind chill chart. And actually for soldiers out there, one of the best places they can go to get some of this kind of information is our institute has put out it's the Army doctrine for the prevention and treatment of cold weather injuries. It's called TDMED508.

Q: Okay.

A: And it's located at our USARIEM website. So they can go there and actually, you know, you can get the wind chill charts. And it will tell you sort of whether you're in a green, yellow or red zone in terms of the risk. We also have in that particular document the generalized amount of time it would take, if you had exposed skin in that environment, how long it would take until you would get frostbite.

Q: What is that website? Do you have the address?

A: The website is www.usariem.army.mil.

Q: Okay. That's usariem.

A: It's usa, yes. Usariem.

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Q: Okay. With that, we are going to take a quick break for the Dot Mill Docs Health Beat, news and information from the military health system. When we come back, we'll talk more about cold weather safety with Dr. Castellani.

MS. ELIZABETH LOCKWOOD: Dot Mil Docs Health Beat. The DOD millennium cohort study which explores the long-term health effects of military service, including deployment, will expand its scope to military families starting in June. Nearly 150,000 service members are already participants in the twenty-one year study which began in 2001. But the study has until now overlooked family members. In June, the study will enroll a new panel of roughly 62,500 service members, about half of whom will be married. And researchers anticipate that about 65 percent will give permission to contact their spouses.

Researchers hope to have a sample of about 10,000 spouses total. And their feedback will go a long way towards fulfilling existing gaps in information. The Defense Vision Center of Excellence is scheduled to move into 4,000 square feet of space in the new Walter Reed National Military Medical Center in Bethesda, Maryland in 2011. The

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new location will include office space as well as an outreach and information center that will be open and available to everyone. Co-located with other optometry and ophthalmology offices, the Division Center of Excellence will be part of a veritable eye center at the new Walter Reed. The Division Center of Excellence currently operates from offices near the Pentagon in Roslyn, Virginia and was established in 2008 to improve care for service members with visual disorders or visual disturbances, including traumatic brain injury.

Finally, how do you keep pain at bay while suffering a battlefield injury? Army Colonel Chester Buckenmaier, III thinks he has the answer. Working as a regional anesthesiologist on the battlefield, Buckenmaier successfully kept a patient who had received a severe shackle injury pain free for sixteen days. That included an international evacuation process, five surgeries and an amputation. His success led him to explore other uses for regional anesthesia. And he believes he holds the key to a new era of pain management. All these stories and more are available at Health Dot Mil. Log on to stay up to date.

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This has been your Dot Mil Docs Health Beat. For the military health system, I'm Elizabeth Lockwood.

Q: Welcome back to Dot Mil Docs. We're going to pick it back up with Dr. John Castellani of the U.S. Army Research Institute of Environmental Medicine. Okay. We're talking about all these cold injuries that you can get. But I would imagine the first way that you can protect yourself is how do you dress?

A: That's correct. I mean, that's the biggest preventative measure that most people can take. And it really is quite simple. And it really hasn't change much from what mom told us. But it really is to dress in layers. Honestly, clothing itself, the biggest thing that it does to keep us warm is that it provides insulation from trapped air layers. With all the expensive clothing that we buy, which does help us and it's better than other things. But really what it's doing, it's trapping air. And it's the air that's providing the insulation against heat loss.

But there are some basic ideas that people should follow when they are dressing for the cold. So besides dressing in layers, you can talk about the kinds of layers that you typically would want to wear. So the first layer you put

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on against your skin would be what we call the base layer. And that base layer should have ... it should allow better sweat evaporation or allow moisture to move from your skin through the clothing and then into the next sets of layers or out to the air.

Q: Are there certain fabrics that are better for that?

A: Oh, there are. Kind of like polypropylene synthetics are good. Silk is also a natural good base layer. We tell people that the biggest thing that they don't want to wear as a base layer is cotton.

Q: Okay.

A: Because cotton tends to hold water. So it's not going to allow the water to go through. And there's sort of an old adage that we'd like to think about that cotton kills.

Q: Right.

A: We want to make sure that that base layer allows for evaporation and allows for sweat to move through it. So, yeah, polypropylene. And capalene is another kind of product that's out there. Those are the kinds of base layers that folks should wear. The new Army combat uniform at least the shirt is now made of a synthetic that allows for better wicking of moisture through it. And then the Army's extended cold weather clothing system which is

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designed for very extreme cold weather also, their base layer all synthetics. So that's an issued item for extreme cold environments.

So that's the base layer. And then your mid-layer basically provides your insulation. So that's where you're going to get your most bang for your buck for keeping your heat in. You know, again, we're looking at products like fleece. You know, the Army product uses like a polar tech fleece in there. So that is a very good insulative layer. For natural product, wool is a wonderful insulative layer. Little differences between us, fleece will allow for more sweat to get out of it. Where wool may hold the heat in ... hold the water in a lot more. But it will still retain its insulation with when it gets wet. So that's one of the benefits of wool in that regard. It can get very heavy though. Of course, if you're sweating a lot. But it will still retain its insulative value.

So that's the mid-layer or the insulative layer. And then the top layer usually is a wind proofing, waterproofing type of fabric. So nylon. Commercial products, again, is used in Army products is Gortex. Those are the types of

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things that are wind proof and waterproof. And that's what your top layer would be. And then depending on what you do, you know, what you're doing is how you mix and match those layers. You could have more layers if it's colder, you know, less layers if it's not.

The Army's generation three extended cold weather clothing system actually has seven different pieces to it. So it allows for one to mix and match, depending on what they're doing and what the environment is. You know, one of the things we really try to get across to soldiers and especially to the leadership of the soldiers is that everybody's different. And one of the biggest thing we don't want to see in the cold is a lot of sweating if it's possible. Because again, you're going to start making the clothes wet. And when you make it wet, it loses its insulative ability. And you lose more heat. You can start to think of the problems that would start to occur because of that.

Q: Yeah.

A: So we try to get across to leadership a lot that each soldier's different. So allow them ... educate them on how they should wear the clothing and then allow them to make

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their choices. You know, one guy may have four layers on. And another guy may have two, depending on what they're doing. So it's really important to get that point across. That really is an individual response. And people should be given that opportunity to make individual choices as long as they have the right education and the right equipment available.

Q: Now, how about eating and drinking in the cold, are there any specific foods to eat or stay away from?

A: No, that's one of the things that we try to get across to people is that in most cases the cold is not going to add a lot ... is not going to change your typical requirements for both food and fluids. But like any other activity, it depends on what you're doing. And some things that may, for example, increase the amount of calories you might need. In the cold, it's just the fact that if you were to wear a lot of cold weather clothes and you could add another twenty pounds to what you're wearing. So that adds the amount of work, you know, the amount of work you have to do gets higher. And so you're going to burn more calories just to do that work.

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If you're walking in snow, it's harder to walk in snow than it is on pavement. So there's a greater amount of energy you're using. You'll need more calories. So depending on what people are doing ... and again, this is probably more relevant to being out in the field than sort of in garrison if you were doing PT.

Q: Right.

A: We would say that in most cases, you could just maintain what you're normally doing in terms of your food. If you're out in the field for quite awhile and you are dressed a lot and carrying a lot of heavy equipment, you know, walking in snow a lot, then you could probably increase your energy intake maybe between ... again, it depends ... about 10-40 percent more.

So say someone who's burning around 3,000 calories a day. You know, it may go up to 3,300 calories to say 3,600 calories a day might be what they're burning now. So they may have to take that in. But we try to get across is that if you have adequate food supplies, we don't tell people that you eat more at different meals. So maybe just have the regular three a day meal. And then maybe snack in between.

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Q: Yeah.

A: And the types of food that you need to eat really aren't any different than you would normally for any other kind of exercise that you're doing. You know, you don't need to ... for a long time, we thought, you know, you would want to eat more fat. But, you know, we've proven over the years, ever since World War II that you don't need extra fat, for example. It doesn't help you. In fact, you may end up burning a little bit more carbohydrates just because of the work you're doing. So you might need to take in more kinds of carbohydrates.

You know, what we typically see with any other kind of athletic person and someone who's very active. So that's sort of the rule of thumb there. With fluid, again, people might think, well, I don't need as much fluids. But again, if you're working hard and you're wearing enough clothing, you can sweat a fair amount. And you may actually not sense it as much. Because it's evaporating very quickly. Because the air is typically dry in the cold. And it evaporates from your skin very easily. So you don't sense it as well.

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You may actually lose a little bit more fluid too if the air is very dry just through your breathing. And so because of that, yeah. But it depends on your activity level. Your water intake is going to probably be about what you'd see, you know, more or less during a typical day. You know, that kind of activity. Now, you can't compare it to being a very hot environment where you might really need to increase your water intake. But it's just your sort of normal, you know, again, if you're out in the field and you're working hard enough, you know, you're probably looking at maybe a quart an hour would be a generic, you know, a general kind of amount of fluid you should take in.

Q: So stay hydrated.

A: Yeah, stay hydrated. We always tell our soldiers, you know, if you're out in the field especially, just keep an eye on the color of your urine. If it starts to get very yellow, then see that as the time to start trying to increase how much water you're taking in. You know, studies we've done here at the institute have shown that actually if you're dehydrated a little bit, it doesn't seem to risk your increase of cold injury. It certainly doesn't ... it doesn't affect your ability to ... for example, shivering

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and constriction on the periphery as one way you try to shut ... you try to increase heat production or shutdown how much heat you lose. Dehydration doesn't seem to affect that. And one of the responses that's good for the cold is that in the periphery, like your ear lobes, your fingers, your toes and your nose is that you see the sort of increase and decrease in blood flow to those different regions on your periphery.

So what happens say if a person's hand's out in the cold and it's starting to get cold what will happen is that it will actually ... it will start getting cold, cold, cold. And all of a sudden, you'll see an increase in the skin temperature. And it will go through these cycles. And we've looked at that response. Because it's very much related to risk of frostbite. And we've shown that being dehydrated by as much as four percent doesn't seem to affect that response.

So it doesn't really seem to increase the risk of cold injury. Where you probably start seeing problems is just in performance. Just like you would in any environment. You know, if you had to work hard and get going, if you're

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dehydrated, you just can't sustain that work performance very well.

Q: Sure. Well, now are there any other risks of being in the cold or anything else that you want to bring up, talk about?

A: Yeah, there's quite a few actually for soldiers that are ... not that we don't typically see them maybe in other folks, the general public.

Q: Like what?

A: For example, carbon monoxide poisoning. A couple of things that folks do, and then soldiers will do this, is one of the things is that they'll get in a car, you know, or a Humvee. And they'll turn it on. But if they're in an area that's not very well ventilated. And that carbon monoxide can build up in some of those spaces.

Q: Sure. Because they're trying to heat up the automobile.

A: That's right. And the other thing is ... and this has changed a lot. Because we have much better cold weather gear for our tents and things. But old stove would emit a lot of carbon monoxide as well. But the newer stoves, that have actually been developed here on the Natick post, are much better and don't have that exhaust. You need to still make sure that you've properly setup your tent. You know,

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you get the exhaust leaving your tent area. But that's one of the things that soldiers are susceptible to is carbon monoxide poisoning. Just because they're trying to stay warm. Another thing that people don't tend to think about a little bit is sunburn. You know, you can get a sunburn even when the UVE index is pretty low.

Q: Yeah, usually you see skiers with sunburned faces.

A: Exactly. And so actually wearing sunscreen is still very important in a cold environment. Because you get the sun. You're getting direct sun. You also get reflected sun off the snow.

Q: Right.

A: So you get an increase in that as well. You know, another thing that goes in line with that is snow blindness. So we also want our soldiers to wear sunglasses in those environments where there's a lot of snow and the sun's out. Because that's also a potential problem.

Q: And what is snow blindness exactly?

A: Snow blindness, it's really sort of a sunburn of the eyes. So what happens is people might get a gritty feeling in their eyes and get like blurred vision. So really again easily preventable by just wearing eyewear or goggles. You know, we also could talk about people maybe also trying to

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wear sunglasses that are more of a wrap around kind, something you might see like with road cyclists. You know, it just keeps out anything coming in from the side as well. So that's one of the things we might see.

Some other things that we also might see with the cold is that for some people it actually makes their breathing a little worse. You know, there's something called cold weather or exercise induced asthma. So by bringing in cold air and also just having cold skin actually makes folks ... it actually can precipitate what, again, we call cold induced or sometimes exercise induced asthma. So you might not be susceptible for it in a normal environment. But the cold will bring it out.

Q: But this could happen to anybody who doesn't regularly have asthma?

A: That is correct. So people who are more allergy prone maybe more susceptible to getting it during heavy work in cold air. So some people ... I'll give you an example. I'm one of those that has a little bit of exercise or cold induced asthma in the wintertime that I don't have in the summertime. Again, it's probably a combination of the dry air in combination with just actually a reflect on your

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face. The cold air makes the face colder. And it actually causes some constriction in the airways in your lungs.

Q: And so again, I would imagine that what you want to do is get into a warmer environment. Not shock yourself warm.

A: Yeah, that's correct. Or there are some other products that you could potentially use. It depends on how worse it is, how bad it is. There's products that humidify air as it comes in. And they have like little heat exchangers right at the mouth. So you breathe through these devices. So they help. Basically, what happens as you breathe out, it humidifies this area. So as you breathe the cold, dry air in, it helps humidify that air a little bit more. So that's been shown to work a little bit. Actually covering the face and other parts of the skin actually has an effect. So it's, you know, there are some things that you could do. It's just working. We tell soldiers one of the things when you go to a cold environment and you've kind of got to work in it and see how it goes and then start making adjustments based on that.

Q: Sure.

A: Most people, on the whole, most soldiers who might have a little bit of this, you know, can still work. But they just need to be aware of this. Or if they start to get

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like a dry cough afterwards that lasts for a long time, that's something that they need to become aware of and deal with that. Yeah, some of the things that we might see, but that don't seem inherent, but in a cold environment, of course, as I mentioned earlier, as you go up in altitude, it gets colder. So you start running the risk of something else like altitude sickness or acute mountain sickness.

Q: The air gets thinner.

A: Yeah. Well, yeah. You start having a little less oxygen in your blood. And that makes folks basically have trouble up there. So you start to feel nausea, get sick to your stomach. You get a headache. And things that would affect your performance. So that's certainly something that's very important as well. Something that's not as important for soldiers, but maybe important for family members or even those who maybe have some other chronic diseases, is that we know actually the cold may make people have angina more.

Q: Really?

A: Because again what happens is one of the cold responses that we typically see is you try to clamp down the amount of blood that's going to your skin to try to keep the heat in. And when it does that, your blood pressure goes up.

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And blood pressure is one of those things that could participate an angina attack in someone who's susceptible to that. You know, again in the winter when you see people out shoveling and they're doing exercise, haven't done much work. And they're also doing the kind of work, for example, you're lifting snow. And it's heavy.

Q: Right.

A: And you're doing sort of what we call isometric work. You're static. You're not moving the muscle, but you've got to move that load, you know, heavy snow. That actually causes your blood pressure to go up. you put that in combination with a cold environment. And it leads to sort of a mix of things that can precipitate heart attacks and things like that. So that's something that's not, again, not maybe important for a young soldier. But again for family members and for soldiers who are starting to get up there in age.

Q: Sure. So the lesson is hire the neighborhood kid to shovel your driveway.

A: That's right. That's certainly important. I'm trying to think if there's anything else that fits here. You know, really those are the major ones. There is one thing that's very rare. It's not seen in a lot of people. But some

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people are actually allergic to colds. It's called cold urticaria. So what will happen is you'll actually start to get like redness and itching and swelling in the skin. Some people who are susceptible if you took an ice cube and put it on their forearm, after you took the ice cube off, you'd see it almost like an allergic reaction.

Q: Like a rash?

A: Exactly. So it's something that again most people are probably very familiar if that happens to them already.

Q: That's certainly interesting.

A: But for some people that are really susceptible, of course, if you end up with that kind of a response in your airways and things like that. Like if you were to breathe in really cold air very quickly, you know, if you started having an allergic reaction in those places, it could start to be problematic for them. Most people would know that already though.

Q: Well, Dr. Castellani, I want to thank you for coming on the program this week. I think you've really told us a lot about how to stay safe in the cold and I learned a lot.

A: Great. You're welcome.

Q: Well, thank you very much.

A: Have a good day.

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Q: And that does it for us this week on Dot Mil Docs. Again, the web address that Dr. Castellani gave us for the Army Research Institute of Environmental Medicine is www.usariem.army.mil. That's www.usariem as in Mike. Also, please do visit www.health.mil/wintersafety for more links to winter safety resources across the military health system and beyond. Next Thursday, Dot Mil Docs returns with guest Ron Horne. He is the Deputy Director for the Transition Assistance Program which provides helpful services to wounded warriors in an effort to prepare service members and their families for successful transition to civilian life. We will hear all about what they do and how they do it next week. Until then, see you on health dot mil.

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