

# NEWS FROM THE PIT

Arizona Poison and Drug Information Center



## How Much Does It Cost to Be Bitten by a Rattlesnake?

By Steve Dudley, PharmD, DABAT

The most common question I get whenever I give a rattlesnake lecture is “How much is it going to cost me if I’m bitten by one?” As a Chicago native, rattlesnakes were never high on my encounter list so after moving to Tucson I just considered being bitten by one a consequence of “play stupid games, win stupid prizes”. But seeing as only 13% of patients managed by the Arizona Poison and Drug Information Center were intentionally interacting with the snake before being bitten, a rattlesnake bite could truly happen to anyone in Arizona if you’re in the right (or wrong?) place.

Let’s not bury the lead, rattlesnake bites can be expensive. We’ll talk about the many factors that go into a hospital visit but the average hospital charge for an Arizona rattlesnake bite patient was \$95,000 in 2021. This doesn’t necessarily mean the patient was responsible for paying that amount but if their insurance didn’t cover rattlesnake bites, they certainly could have been. Make no mistake, there is no substitute for going to a hospital as antivenom is the only thing that will treat the envenomation and the only way to know that you’re not at risk for bleeding complications is through real time lab monitoring. While the monetary cost is the thing most people are curious about, there are so many more “costs” that a patient pays that people may not think about.

### NEWSLETTER HIGHLIGHTS

Physical cost, opportunity cost, and psychological cost of being bitten by a rattlesnake.

**Image 1: Sonoran Desert Sidewinder, *Crotalus cerastes cercobombus***

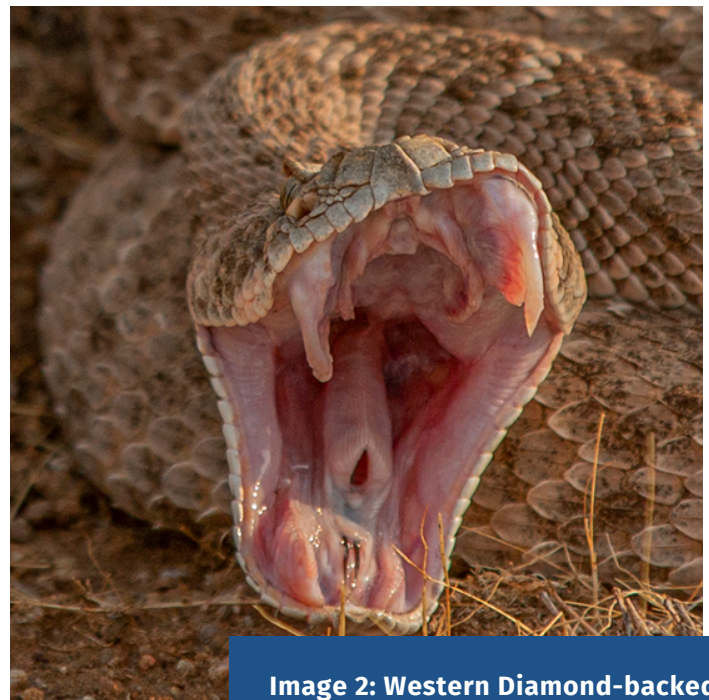
# How Much Does It Cost to Be Bitten by a Rattlesnake?

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Let's start with the reason you're reading this article: the monetary cost. For any rattlesnake bite, we must first determine if there is evidence that venom was delivered, making it a rattlesnake envenomation, versus a "dry bite". To do that, we need lab monitoring for at least 12 hours (CBC with platelets, fibrinogen, PT/INR). This is crucial because we routinely have patients who *look* stone cold normal after being bitten only to realize they have undetectable platelets and fibrinogen (for the non-medical folks, this means they don't have the normal ability to stop bleeding if it started). Once we see signs of an envenomation, we start antivenom. There are two rattlesnake antivenoms available in the United States and costs can vary by hospital, which affects how much they charge you. Of note, the average number of vials we've needed to treat RSEs are ~14 for Fab AV and ~17 for F(ab')<sub>2</sub> AV but severe envenomations may require more. Regardless of the price difference, you're looking at tens of thousands of dollars for antivenom alone in the average envenomation. Then you throw in other charges like labs, medication (such as any pain meds that may be needed), and the hospital bed which typically ends up being in the ICU for a day or two on average. If there are no signs of envenomation, your bill will be much less. This explains why the hospital charges for rattlesnake bites in Arizona widely ranged from ~\$2,000 all the way up to over \$400,000 in 2021.

Once you're discharged from the hospital you might think it's all over but that's not quite the case. Depending on the antivenom you received, you may have a higher risk of late coagulopathy (the impaired ability to stop bleeding mentioned earlier). If interested, we talked about these risks in an [earlier newsletter](#). Since we know this risk exists anytime there's a rattlesnake envenomation, we routinely recommend getting labs drawn after you leave the hospital so we can confirm this isn't happening. While labs in this setting aren't as expensive (roughly \$200 per visit), it is still a burdensome added cost. Sometimes, the coagulopathy returns and gets so severe that we need to recommend going back to the hospital for more antivenom. And if you lived in a medically underserved area, which is 65% of Arizona, you may have to travel quite a distance to get help again.

Here's the thing though, nobody talks about the "other" costs which can be equally bad, if not worse. There's a real misbelief by most healthcare providers in this country that once you get antivenom for a rattlesnake bite and leave the hospital, you're good to go. That's just simply not true. This happens because for decades all we've really focused on was the objective markers of a rattlesnake bite, specifically the hemotoxic effects because we can measure these with labs and see if things are getting better or not. Even when the patient leaves the hospital, we tend to focus on labs as the sole marker of recovery. In medicine there's a saying that you "treat the patient, not the number"; for the most part we've just ignored that with rattlesnake bite patients. If you take the time to just ask, like the Poison Center staff routinely does for months after they leave the hospital, they will commonly tell you they're struggling and desperately looking for help wherever they can get it.



**Image 2: Western Diamond-backed Rattlesnake in action.**



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## Physical Cost

This is probably the most easily recognizable and common issue. It makes sense to expect pain after being bitten by a rattlesnake. Fangs just forcibly pierced your skin! But that pain should go away, especially if you get pain medication in the hospital. Yet roughly 20% of the patients we talk to still have pain months after they're discharged. I'm talking 3-6 months and sometimes even longer. What's worse is the lack of appropriate care that can happen when providers don't attribute chronic pain with rattlesnake bite because they can't find evidence in the medical literature because we never asked. It's not just the pain that lingers, patients also sometimes report muscle weakness, loss of function, prolonged swelling, and numbness months after they leave the hospital as well.



**Image 3: Swelling in a hand (left) caused by an envenomation compared to a non-envenomated hand (right).**

## Opportunity Cost

If you're like most people, you have to work for a living. Especially if you're one of the estimated 64% of Americans who live paycheck to paycheck. Your job may be hard already but imagine how much harder it would be needing to stand and walk on a foot that was swollen and painful. Imagine typing or writing with a swollen and painful hand that doesn't have its normal range of motion. If you have the option to take paid time off, you'll probably need to use it. Our patients who had to miss work due to rattlesnake bite ended up missing 16 days of work on average. It's important to note that the time off ranged from missing 1 day to over 60, which shows how detrimental a severe envenomation can be. You also shouldn't assume that everyone who returned to work quickly was symptom free. If you don't have paid time off, things can get grim as patients have to choose between working through significant physical pain or risk getting fired and suffering from significant financial pain. That's not an exaggeration, we have had patients fired or forced into early retirement directly due to their rattlesnake bite. It's startling to think how a simple walk outside could have such devastating consequences.

## Psychological Cost

It shouldn't be a surprise to see how traumatic a rattlesnake bite can be. The combination of physical and financial suffering is tough, but remember, the vast majority of these patients weren't intentionally interacting with the rattlesnake. This often ends up being the result of hiking, working, walking outside, or even just being inside their home. One would expect patients to become more careful of their surroundings following a rattlesnake bite (which does occur), but we do see reports of patients experiencing new or worsening anxiety, insomnia, and nightmares as well.

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I wouldn't be a toxicologist if I didn't answer a simple question with a long, drawn-out response. But in this case, when someone asks how much it costs to be bitten by a rattlesnake, it really isn't as simple as it seems. While this has been underreported in the US medical literature, these same phenomena have been documented for years in Asian, African, and South American countries. As healthcare professionals, we must do a better job realizing the significant impact rattlesnake bites have on patients after they leave the hospital. This is part of the value of poison centers, in that we can offer the necessary continuity of care beyond the hospital, plus raise awareness and offer solutions to these underrecognized issues.

**Image 4: Dr. Steve Dudley, Arizona Poison and Drug Information Center Director.**

