

## BACKGROUND

Alpha-gal syndrome (AGS), also known as alpha-gal allergy or tick bite meat allergy, is an allergic reaction to the alpha-gal sugar molecule found in many mammalian products such as red meat and dairy. The occurrence of this allergy is linked to the bite of the lone-star tick (*Amblyomma americanum*), though other tick species may also cause AGS. Patients with Alpha-gal syndrome can have reactions ranging from mild to life-threatening and should be managed by an allergist or other healthcare provider.

## WHO DOES IT IMPACT?

Most cases of AGS have been reported in the southeastern and south-central regions of the United States where higher populations of lone-star ticks are found. As the lone-star tick range continues to spread farther north, Pennsylvanians may be at risk for AGS. There are also different tick species that are linked to AGS diagnosis in other parts of the world.

## COMPLICATIONS

Patients with AGS have allergic reactions to mammalian products such as red meat (beef, pork, lamb), dairy products, gelatin, as well as carrageenan and some medical products containing alpha-gal. The symptoms and severity of each reaction is variable ranging between mild to life-threatening and may require hospitalization.

## SIGNS AND SYMPTOMS

AGS reactions are different between individuals and can include nausea, vomiting, heartburn, indigestion, diarrhea, hives, and anaphylaxis. The symptoms of AGS vary and not all individuals exposed to the bite of lone-star ticks will develop AGS. The severity of symptoms is also variable between individuals and can be delayed in comparison to many other allergic reactions. Reactions often occur 2-6 hours after exposure which can make it difficult to connect symptoms to the trigger.

## CAUSES AND TRANSMISSION

The occurrence of AGS is linked to the bite of lone-star ticks in the US and is thought to result from transmission of alpha-gal sugar molecules carried in the saliva of the tick. The introduction of this molecule to the human can trigger the human immune system to develop an allergic response to the alpha gal molecule when introduced to the body. The development of AGS may be more likely in persons who have received multiple lone-star tick bites.

## TESTS AND DIAGNOSIS

Signs and symptoms of AGS can be paired with laboratory testing for alpha-gal specific antibodies. Skin testing for allergy to red meat may also be used to diagnose AGS. A history of tick bites and reactions to mammalian derived products may also be used to diagnose AGS.

## TREATMENT



It is suggested to refrain from mammalian product consumption if diagnosed with AGS. Checking ingredients and origins of food or medical products can help to avoid unintentional exposure to alpha-gal. Care may also need to be taken when eating at restaurants and social gatherings to avoid reactions. In cases of serious reaction, an epinephrine auto-injector may also be prescribed. It is recommended that persons diagnosed with AGS seek care from an allergist.

## WHAT CAN YOU DO?

It is not well known how long AGS symptoms persist, but it has been suggested that they may decrease or disappear over time. Without further bites from alpha-gal carrying ticks, a decline in symptoms rather than recovery may be more likely. Preventing tick bites can decrease the risk of developing AGS along with other tickborne diseases. Treating shoes, clothes and outdoor gear with permethrin can help limit tick encounters. Applying an EPA registered insect repellent before spending time outdoors and showering after time spent outside especially doing high-risk activities such as yard work, gardening, hiking, camping, or hunting can help reduce the risk of tick bites. Doing thorough tick checks on yourself, family members, and pets after being outside is also recommended. Ticks should be removed as soon as they are found, using proper technique to ensure full removal. (Please see: [Tick Removal](#) | [Ticks](#) | [CDC](#) )

## RESOURCES FOR MORE INFORMATION

PA DOH Vectorborne Disease webpage: [Vectorborne Diseases \(pa.gov\)](#)

CDC Alpha-gal website: [Alpha-gal Syndrome For Healthcare Providers Factsheet](#) | [Ticks](#) | [CDC](#)

*This fact sheet provides general information. Please contact your physician for specific clinical information.*

**If you have any questions, contact us at 1-877-PA-HEALTH.**