

Alarming Doubling of Child Seizures Linked to Medications and Illegal Drugs in the US

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STORY AT-A-GLANCE

- › Child seizure cases from medication exposure doubled from 1,418 to 2,749 between 2009 and 2023, with first-generation antihistamines, antidepressants, painkillers and synthetic cannabinoids being primary culprits
- › Children prescribed first-generation antihistamines showed a 22% higher seizure risk, with those aged 6 to 24 months experiencing 1.5 times greater risk compared to non-users
- › Long-term antihistamine use may increase dementia risk, with heavy first-generation antihistamine users having up to a 51% higher risk compared to non-users
- › Common medications like diphenhydramine cross the blood-brain barrier, disrupting normal brain activity and lowering seizure thresholds in vulnerable children
- › Natural alternatives like quercetin, stinging nettle and vitamin C may provide safer options for allergy relief without the neurological risks associated with antihistamines

The surge in child seizures across the U.S. is both alarming and deeply concerning. Over the past few years, parents and health care providers have noticed a troubling increase in seizure incidents among young children. This rise is not just a statistic; it impacts families, disrupts lives and raises urgent questions about the safety of commonly used medications.

Medications, especially first-generation antihistamines, play a significant role in this troubling trend. These drugs, often prescribed for everyday ailments like the common cold, are now linked to a higher risk of seizures in children. The misuse of illegal drugs compounds this risk, creating a perfect storm that endangers our youngest and most vulnerable population.

Understanding the factors driving this increase will lead to better prevention strategies, safer medication practices and ultimately, healthier children. The implications of these findings extend beyond individual cases, highlighting the need for systemic changes in how we approach medication use in pediatric care.

Identification of Seizure Risks Associated with Antihistamines

Doctors began to notice an unsettling trend: children who were prescribed first-generation antihistamines appeared to be experiencing seizures more frequently. Case studies emerged showing young children, particularly those between 6 and 24 months old, suffering seizures shortly after taking these common medications.

Medical professionals started to piece together these incidents, identifying a clear pattern linking the use of first-generation antihistamines to an increased risk of seizures. These drugs, widely used to treat symptoms like runny noses and itching, were found to cross the blood-brain barrier, disrupting normal brain activity and lowering the seizure threshold in vulnerable children.

Once past the blood-brain barrier, these medications interfere with histamine neurotransmission. Histamine plays a vital role in regulating brain activity, including maintaining the balance of excitatory and inhibitory signals between neurons. When antihistamines block histamine receptors, they disrupt this balance, which leads to increased neuronal excitability and a lower threshold for seizures.¹

The mounting evidence from these observations prompted researchers to investigate further. They sought to quantify the risk and understand the underlying mechanisms, leading to comprehensive studies that validated the initial concerns. This discovery

highlighted the need for more cautious prescription practices, especially for the most susceptible age groups.

First-Generation Antihistamines Significantly Raise Seizure Risk in Young Children

The study, published in JAMA Network Open, revealed that children prescribed first-generation antihistamines experienced a 22% higher risk of seizure events compared to those who did not receive antihistamines.²

The researchers utilized a comprehensive nationwide dataset from Korea's National Health Insurance Service, analyzing data from 11,729 children who visited emergency departments for seizures and had been prescribed first-gen antihistamines prior to their hospital visit. The findings were statistically robust, with an adjusted odds ratio of 1.22, indicating a reliable association between antihistamine use and seizure risk.

A particularly vulnerable group identified in the study includes children aged 6 to 24 months. In this age bracket, the risk of seizures associated with first-generation antihistamines was about 1.5 times higher than in those who did not use these medications. This heightened risk suggests that very young children are especially susceptible to the neurological effects of these drugs.

The developmental stage of children in this age group is characterized by rapid brain growth and evolving blood-brain barriers. These factors likely contribute to the increased absorption of antihistamines into the central nervous system, thereby elevating the risk of adverse neurological outcomes such as seizures.

Robust Findings After Adjusting for Confounders

The association between first-generation antihistamines and increased seizure risk remained significant even after adjusting for various confounding factors. The study accounted for variables such as age, sex, residential area, economic status, season of the index date and perinatal conditions. This thorough adjustment ensures that the

observed relationship is not attributed to other underlying factors, strengthening the validity of the findings.³

To further validate their findings, the researchers conducted multiple sensitivity analyses.⁴ These included varying the time windows for antihistamine exposure, focusing solely on new users of first-generation antihistamines and excluding compound medications. Across all these different analytical approaches, the association between antihistamine use and increased seizure risk remained consistent.

These robust results across various sensitivity tests reinforce the reliability of the original findings. They suggest that the increased seizure risk is a genuine effect of first-generation antihistamines rather than an artifact of the study design or data limitations. Such consistency is essential for building confidence in the study's conclusions and for informing clinical practice.

Antidepressants and Illegal Drugs Are Also Driving Child Seizures

Recent findings presented at the European Emergency Medicine Congress have further highlighted the alarming increase in child seizures due to medication or illegal substance ingestion.⁵

According to data gathered from the U.S. National Poison Data System, the number of children experiencing seizures after swallowing medications or illegal substances has doubled between 2009 and 2023. The most common substances involved include over-the-counter antihistamines like diphenhydramine, prescription antidepressants such as bupropion, painkillers like tramadol, and illegal synthetic cannabinoids known as K2 or spice.

The data showed an increase in seizure cases from 1,418 in 2009 to 2,749 in 2023, which corresponds to an average yearly increase of 5%. Among children aged 6 to 19 years, the number of cases doubled, while children under 6 years experienced a 45% increase in seizure cases over the 15-year period.

Dr. Conner McDonald from the University of Virginia emphasized that seizures are among the most severe symptoms of poisoning and lead to long-term damage or even death, depending on various factors such as the duration of the seizure and the child's pre-existing health conditions.⁶

Professor Christopher Holstege with the University of Virginia School of Medicine added that the increased availability of substances such as diphenhydramine, which can be purchased in large quantities, and other drugs – both legal and illegal – has made them more accessible to children, heightening the risk of accidental ingestion and subsequent seizures.⁷

The findings underline the urgent need for safer storage and distribution of these medications. Suggestions include limiting the quantities available in a single package and using blister packs to reduce the risk of children accessing large amounts of pills.

According to Dr. Barbra Backus, chair of the European Society for Emergency Medicine's abstract selection committee, it is crucial for parents to store all medications – whether prescribed, over-the-counter or illegal – out of children's reach to prevent accidental poisonings and the associated risk of seizures.⁸

The study's findings have significant implications for pediatric health care practices. Given the increased seizure risk in children, health care providers are urged to exercise caution when prescribing first-generation antihistamines. Alternative treatments with lower neurological risks should be considered for managing symptoms like runny noses and itching in children.

Furthermore, these findings highlight the need for heightened vigilance and monitoring of children who are prescribed these medications. Parents should be informed about the potential seizure risk associated with first-generation antihistamines and advised to report any unusual symptoms or behaviors in their children promptly.

Antihistamines Increase Dementia Risk

Beyond seizures in children, research suggests that the cumulative effects of antihistamine use, particularly first-generation antihistamines, could also have implications for your brain health as you age.

A study involving a large group of patients in Taiwan with allergic rhinitis — a common allergic condition — has highlighted a connection between antihistamine use and an increased risk of developing dementia.⁹ The research examined the health records of 677,971 people who were newly diagnosed with allergic rhinitis between 2011 and 2017. Participants were grouped into two categories: those who used antihistamines and those who did not.

The study measured the amount of antihistamine use through a metric called "cumulative defined daily dose" (cDDD), which considers how much of the medication you've taken over time. Participants were then divided based on their cumulative doses: nonusers, those with less than 60 cDDD, between 60 and 120 cDDD, and more than 120 cDDD.

Here's what the findings revealed: for individuals who used first-generation antihistamines, the risk of developing dementia increased as their cumulative dose rose. For those taking less than 60 cDDD, the adjusted hazard ratio (aHR) — a number that reflects your relative risk — was 1.13, meaning a 13% increase in dementia risk compared to nonusers. For doses between 60 and 120 cDDD, the risk jumped to 29% higher, and for those with over 120 cDDD, the risk increased by 51%.

For those using second-generation antihistamines, such as cetirizine or loratadine, the risk was also elevated, though not as much. For doses less than 60 cDDD, there was an 11% increased risk; for 60 to 120 cDDD, it was 19% higher; and for doses over 120 cDDD, the risk stood at 26% greater.

The takeaway here is that both first- and second-generation antihistamines carry a higher risk of dementia with increasing cumulative dosage. However, first-generation antihistamines, which have stronger [anticholinergic properties](#), pose a higher risk compared to second-generation antihistamines.

Anticholinergic drugs block acetylcholine, a neurotransmitter involved in many brain functions, including memory and learning. This interference with acetylcholine might explain the increased dementia risk. First-generation antihistamines like diphenhydramine are known to have more pronounced anticholinergic effects, which could contribute to the greater risk observed in the study.

If you're frequently reaching for an antihistamine to control your allergy symptoms, this study suggests it might be time to reevaluate your choices, particularly if you're concerned about long-term brain health.

Safer Choices for Allergy Relief – Exploring Natural Alternatives

As the evidence mounts regarding the risks of antihistamines – ranging from increased seizure risk in children to a higher chance of dementia in adults – it's worth considering safer, natural alternatives for allergy relief.

Quercetin, for instance, is considered a natural antihistamine. It's a plant compound, or flavonoid, found in many fruits, vegetables and herbs, such as apples, onions and capers. Quercetin helps stabilize mast cells, which release histamine – a compound involved in allergic reactions. By doing so, it may reduce the release of histamine and help alleviate symptoms like itching, sneezing and swelling.

Another option is **stinging nettle**, a herb known for its anti-inflammatory and antihistamine properties. Studies suggest that stinging nettle extract helps reduce symptoms of hay fever and other allergic reactions. It's often available in capsule or tea form, making it easy to incorporate into your daily routine.

Vitamin C also deserves a mention. Known for its antioxidant properties, vitamin C helps reduce the production of histamine in your body, easing allergic symptoms. Increasing your intake of vitamin C-rich foods like citrus fruits, bell peppers and kiwi – or taking a high-quality supplement – provides natural relief without side effects.

Supporting Your Body's Natural Defenses

Besides specific natural antihistamines, supporting your immune system overall makes a big difference in managing allergies. Probiotics, found in foods like yogurt, kefir and fermented vegetables, may help balance your gut microbiome, which plays a critical role in immune health. A well-functioning immune system reduces the severity of allergic reactions.

Environmental adjustments are another way to minimize allergy symptoms without medication. Consider using a HEPA filter in your home to reduce airborne allergens or keep windows closed during high pollen seasons. Simple steps like frequent handwashing, removing shoes indoors and showering before bed may also help reduce exposure to common allergens.

In the end, allergies are a challenge, but they don't have to come at the expense of your long-term health. By staying informed and considering all your options, you can breathe easier – both now and in the years to come.

Sources and References

- ^{1, 2, 3, 4} [JAMA Network Open. 2024;7\(8\). doi: 10.1001/jamanetworkopen.2024.29654](https://doi.org/10.1001/jamanetworkopen.2024.29654)
- ^{5, 6, 7, 8} [European Emergency Medicine Congress October 2024](#)
- ⁹ [Rhinitis August 2024, Volume 12, Issue 8, P2155-2165](#)