Nathan, Ashley, and Candace, living with AHP

Get answers about acute hepatic porphyria (AHP)

Find helpful information about symptoms, diagnosis, and living with AHP.

Pinpoint® AHP
Acute Hepatic Porphyria

PinpointAHP.com

Could it be acute hepatic porphyria (AHP)?

Have you ever had **severe, unexplained abdominal pain** along with at least 1 other symptom? Such as:

- **Limb, back, or chest pain**
- **Nausea**
- **Vomiting**
- **Confusion**
- **Anxiety**
- **Insomnia**
- **Seizures**
- **Weak limbs**
- **Dark or reddish urine**
- **Constipation**
- **Diarrhea**
- **Hallucinations**

You may have had multiple doctor appointments, received a series of different diagnoses, and had treatments—even surgeries—that didn't help.

If this sounds at all familiar, the cause may be acute hepatic porphyria, or AHP.

AHP is a rare genetic disease with a wide array of symptoms that mimic those of other diseases, often making proper diagnosis difficult. People with AHP can wait years for an accurate and confirmed diagnosis. The good news is your doctor can check for AHP with a urine test.

This brochure provides education, resources, and information on the signs and symptoms of AHP, living with AHP, and ways AHP is diagnosed so you can start a conversation with your doctor and get answers.

"I can still remember sitting in the doctor's office when my test came back. He said that the results were positive—positive, not inconclusive!"

— Megan, living with AHP

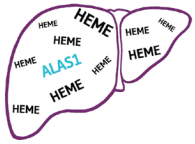
What is AHP?

AHP refers to a family of rare genetic diseases characterized by potentially life-threatening attacks and, for some people, chronic debilitating symptoms that negatively impact daily functioning and quality of life. There are 4 types of AHP:

AIP	VP	HCP	ADP
Acute intermittent porphyria	Variegate porphyria	Hereditary coproporphyria	ALAD-deficiency porphyria

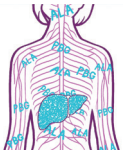
MOST COMMON → EXTREMELY RARE

What AHP does to the body



In AHP, **when ALAS1 activity is increased**, the heme production process is unable to keep up

This results in the **buildup of toxins** called ALA and PBG in the liver



These toxins are **released throughout your body**

ALA and PBG are **harmful to nerve cells** and have been associated with **attacks and other AHP symptoms**

Heme is essential to our body and is necessary for our liver to function properly. In people with a genetic mutation for AHP, one of the enzymes in the heme pathway doesn't work properly. In the liver, the heme pathway is controlled by an enzyme called ALAS1.

When ALAS1 activity is increased, the enzyme that doesn't work properly is unable to keep up. This results in the buildup of toxins called delta-aminolevulinic acid (ALA) and porphobilinogen (PBG) in the liver which are released throughout the body.

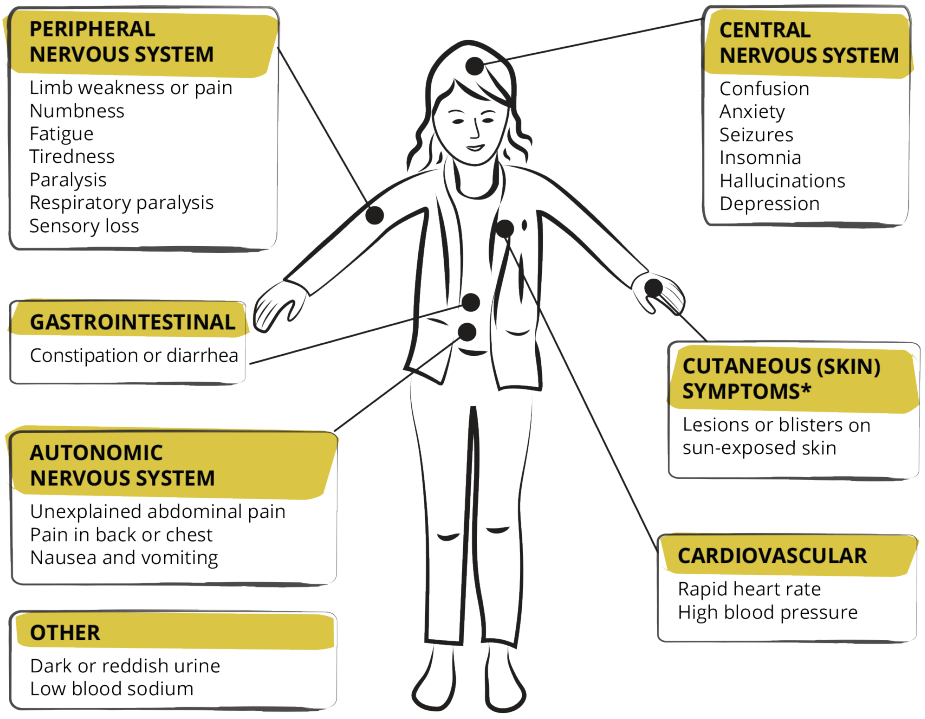
ALA and PBG are harmful to nerve cells and have been associated with attacks and other AHP symptoms. Sudden attacks are associated with widespread dysfunction within the nervous system and a wide array of symptoms which can mimic those of other diseases, making a diagnosis difficult.

Everyone experiences AHP in a different way

Acute attacks can be life-threatening and can last for days. Acute attacks are not the only sign of AHP—some people with AHP also experience debilitating symptoms daily, even when they are not having attacks. This is part of what makes diagnosis difficult.

What are the signs and symptoms of acute hepatic porphyria (AHP)?

The symptoms of AHP can vary from person to person and change over time. Not every person with AHP will experience all the symptoms listed here and throughout this brochure, and some people will have symptoms more frequently or more severe than others. Severe, unexplained abdominal pain is the most common symptom, occurring in **more than 90% of people who experience AHP attacks**. People with AHP are also likely to experience at least one of many other seemingly unrelated symptoms:



*Variegate porphyria (VP) and hereditary coproporphyria (HCP) primarily.

AHP can have a significant impact on a person's daily life

AHP is unpredictable and attacks are debilitating. It can take over your life with symptoms that can disrupt everything from sleep to the ability to work, and socialize. People with AHP may live in constant fear of attacks.

By the time I was 14, I had more unexplained attacks. My symptoms included tremors, seizures, sunburns and light sensitivity, frequent vomiting, abdominal pain, severe all-body pain, muscle weakness, memory loss, and diarrhea.

— Nathan, living with AHP

Diagnosing AHP

If you have symptoms you think may be due to AHP, talk with your doctor about getting tested. Visit **PinpointAHP.com** to download a ***Doctor Discussion Guide*** that will help you prepare to discuss AHP, as well as testing options, with your doctor.

The earlier the diagnosis, the better

Early, accurate diagnosis of AHP may make a real difference in a person's ability to maintain their quality of life by:

- **Taking steps to manage factors that may trigger attacks**
- **Understanding what is happening in their bodies and why**
- **Avoiding the complications that can result from misdiagnoses and unnecessary surgeries**

How AHP can be diagnosed

A urine test is the most common technique a doctor uses to help determine if a person has AHP.

URINE TEST

- AHP can be diagnosed with a urine test of PBG (porphobilinogen), ALA (delta-aminolevulinic acid), and porphyrin levels
- It is recommended to have a urine test during or shortly after an attack
- Porphyrin analyses may help identify the specific type of AHP, but are not used alone to diagnose AHP

GENETIC TEST

- A genetic test using a blood or saliva sample may help determine the specific type of AHP a patient has
- A genetic test can be useful for family members of people with AHP who want to know if they carry the genetic mutation
- Due to low disease penetrance in AHP, most people with a genetic mutation for AHP will not develop clinical symptoms of the disease

One genetic testing option:

Doctors can request no-charge genetic testing through the Alnylam Act® program for patients meeting certain criteria. While the program is sponsored by Alnylam Pharmaceuticals, all services are performed by independent third parties.

AlnylamAct®

For more information and program rules, download a brochure

Living with AHP: be aware of the triggers for acute attacks

Common triggers for attacks are shown below. Since triggers can be different for every person, there may be others that are not listed here.

Be aware of:

- The way some drugs in certain medication classes may affect AHP, including:
  - Seizure medications
  - Antihistamines
  - Hormones
  - Migraine drugs
  - Sedatives

  Speak with your doctor if you have any questions about your medications and AHP.
- Hormone level fluctuations during a woman's menstrual cycle
- Stress caused by:
  - Infections
  - Surgery
  - Physical stress
  - Psychological stress

Try to avoid:

- Drinking alcohol
- Smoking
- Fasting or extreme dieting

> *I knew from my nutritionist consult that I needed to eat a healthy, well-balanced diet.*
>
> *— Candace, living with AHP*

Looking for one-on-one AHP education? Connect with an Alnylam Patient Education Liaison. Visit **AHPPEL.com** to get your questions answered.

The purpose of Alnylam Patient Education Liaisons (PELs) is to provide education to patients, their families, and caregivers. PELs are employees of Alnylam Pharmaceuticals. They are not acting as healthcare providers and are not part of your healthcare team. PELs do not provide medical care or advice. All diagnosis and treatment decisions should be made by you and your doctor.

Living with AHP: how to get the help you need

Talk to your healthcare team

If you have AHP, it's important to keep communication lines with your healthcare team open. Sharing your symptoms and concerns can help them tailor a management plan that is right for you. Visit **PinpointAHP.com** to download a helpful ***Doctor Discussion Guide***.

Seek information and support

There are many educational resources available to you, as well as support groups for people living with AHP. Although you may not know anyone else with the disease, there are ways to find others with AHP and connect. You can also find helpful information through the following independent patient organizations:

Visit **American Porphyria Foundation** to learn more.
- **porphyriafoundation.org**

Visit **Global Genes** to learn more.
- **globalgenes.org**

Visit the **National Organization for Rare Disorders** to learn more.
- **rarediseases.org**

Visit the **United Porphyrias Association** to learn more.
- **porphyria.org**

Reach out to family

With a disease like AHP, it can be helpful if family and/or close friends understand the disease so they know how to best support you. Be sure to explain to the people close to you the importance of steps you're taking to avoid triggers.

Talking with others about AHP

Consider talking with family, friends, and possibly coworkers about AHP. Explaining AHP to them can help them understand the unique burden of this debilitating disease. It can be challenging but here are some tips that can make those conversations easier:

1. Start by saying that AHP is real
2. Tell them that some people with AHP may experience debilitating attacks
3. Explain that some people with AHP experience ongoing symptoms

Visit **PinpointAHP.com** to find additional resources for understanding and living with AHP.

Alnylam® PHARMACEUTICALS

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