The threat of anaphylaxis in Europe, unmasked
How to prevent anaphylaxis and inequalities caused by divergent access to first-line emergency treatments across Europe?

Anaphylaxis is a severe and potentially life-threatening allergic reaction that results in a drop in blood pressure, a narrowing of the airways, and difficulty breathing, which can turn fatal within minutes.

The estimated incidence of anaphylactic shocks in Europe is 1.5 to 7.9 per 100,000 people per year, a study found in 2013. And, based on data from 13 studies worldwide, for any person with a food allergy, the chance of dying from anaphylaxis in one year is 1.81 in a million, according to a study carried out by researchers at Imperial College London.

In this Special Report, EURACTIV takes a look at the state-of-play of anaphylaxis in member states and EU institutions, from the prevalence reporting to the availability of life-saving adrenaline autoinjectors (AAIs).
Anaphylaxis is 'underestimated' life-threatening allergic reaction

Adrenaline auto-injectors in public places could save lives, experts say

Stakeholders push for stronger EU regulations to battle anaphylaxis

Defibrillators in public spaces: a role model for emergency medicines availability?

Anaphylaxis can cause death. Food allergy community call to support a battle for life.
Anaphylaxis is ‘underestimated’ life-threatening allergic reaction

By Max Griera and Sofia Stuart Leeson | euractiv.com

Anaphylaxis, a severe and life-threatening reaction triggered by allergies, is a major health risk due to its rapid onset while immediate access to adrenaline auto-injectors (AAIs) is not equal in the EU.

It results namely in a drop in blood pressure, a narrowing of the airways, and difficulty breathing, which can turn fatal, quickly.

Additionally, after the first anaphylactic shock, patients also run the risk of being exposed to biphasic anaphylaxis, a second shock that can occur 20 minutes to 72 hours after the first one.

Today, there are about 150 million people with an allergic condition such as allergic rhinitis, asthma, atopic eczema or a food allergy, in Europe.

Based on data from 13 studies worldwide, for any person with a food allergy, the chance of dying from anaphylaxis in one year is 1.81 in a million, according to a study carried out by researchers at Imperial College London. For those aged 0-19, the risk is 3.25 in a million.

‘Underestimated’ in Europe

The estimated incidence of anaphylaxis in Europe is 1.5 to 7.9 per 100,000 people per year, a study found in 2013.

“Anaphylaxis is underestimated”, though, as there is a lack of case monitoring and food allergy diagnosis, European Federation of Allergy and Airways Diseases Patients Associations (EFA) President Marcia Podestà told EURACTIV.

The Commission, for the moment,
does not hold data on the prevalence of anaphylactic shocks, a spokesperson confirmed.

From the EU Parliament side, Portuguese MEP and medical doctor Sara Cerdas (S&D) told EURACTIV she is “fully aware of the threats and risks of allergies and anaphylactic shocks”.

“Further actions can be taken in this regard” at the EU level, “even though the Commission has not proposed recent initiatives to address this issue”.

New initiatives, such as the European Anaphylaxis Registry, are trying to battle underreporting with a bottom-up approach, where health professionals voluntarily register the cases from their local hospitals.

A present threat

Due to its prevalence and unpredictability, people with allergies need to be consciously aware of their surroundings and environment, to prevent a potential anaphylactic shock.

“A severe nut allergy impacts every single aspect of our lives,” Shelby Wigmore, a mother and media volunteer at Anaphylaxis UK, told EURACTIV.

“Meals out have to be carefully planned & thoroughly discussed with staff. Even having an ice cream in a park has to be carefully thought out,” she added.

“As my daughter gets older, it will affect where, when, how and if she can do things like go to a festival, go travelling. She has to explain herself constantly when she turns down unsafe food,” said Shelby, adding that her family has received support from Anaphylaxis UK, which has been educating and providing resources and ideas for the wider public and raising awareness of what it means to live with a life-threatening allergy.

Immediate access to adrenaline is crucial within the first few minutes of going into anaphylaxis shock, which can be administered with an adrenaline auto-injector (AAI), a device meant to be used while waiting for the arrival of emergency services.

Around 68% of doctors in Europe tend to prescribe one AAI, and only 32% of doctors prescribe two injections according to a study carried out by the European Academy of Allergy and Clinical Immunology.

Access and availability needed

The problem, though, remains to ensure wide access to AAls, as there is a disparity in European countries when it comes to requiring a prescription to acquire them and availability in public spaces, which has led to fatal cases.

In Ireland, a 14-year-old teenage girl died on the street after having an allergic reaction to peanuts at a Chinese buffet and being denied an AAI from the pharmacy next door because she did not have a prescription.

“The problem is that you need to be properly diagnosed as a severe food allergic person to have access to your auto-injectors”, EFA President Marcia Podestà told EURACTIV, pointing that “a lot of people is missed in the process” due to the underdiagnosis of food allergies in Europe.

On top of that, availability is also an issue because “it depends on the country” and even in the region within each country, she added.

Another key issue “in the minds of many people” is the correct labelling of food products, as they might be mislabelled and still contain traces of allergenic-provoking food, which may cause unexpected fatal anaphylactic shocks, Dr Natacha Santos, immune-allergologist and anaphylaxis expert told EURACTIV.

For example, 21-year-old girl allergic to dairy in February 2023 died after eating a supposedly vegan Tiramisu which contained traces of milk.

Along those lines, S&D MEP Sara Cerdas says the EU could further regulate food labelling to address “the current lack of a full transparent labels that clearly inform consumers”.

On a regulatory level, Dr Santos believes that availability and training are the “two main key factors” that are important to have. Indeed, many governments are following suit on these recommendations.

For example, Ireland signed into legislation a law that would train non-medical persons to administer AAIs back in 2015, while other countries are working towards making AAls more available in public spaces.
Anaphylaxis is a life-threatening allergic reaction that can lead to fatality within minutes, requiring rapid access to emergency treatments such as adrenaline auto-injectors, however, there is no EU-wide legislation, with different measures in place across the bloc.

The first-line emergency treatment for anaphylactic shocks is adrenaline auto-injectors (AAIs), classified as an essential medicine by the World Health Organisation (WHO) and as a life-saving treatment for anaphylaxis by the European Medicines Agency (EMA).

"Within one or two minutes, we can already see an improvement in most patients", Dr Natacha Santos, national coordinator of the Portuguese Allergy and Clinical Immunology Society, told EURACTIV.

**Access to AAIs in public spaces**

The EMA recommends that AAIs should be readily available to individuals at risk of anaphylaxis, including those with known allergies or a history of anaphylactic reactions. However, there is no EU-wide harmonisation or compulsory mechanism to make AAIs available in public spaces.

As a result, the AAIs availability regulations have so far been implemented individually by member states, particularly regarding schools, as children are more likely to be affected by acute allergic reactions.

UK policymakers back in 2014 improved the availability of AAIs in schools, passing legislation called the *Children and Families Act* which gave schools the authority to purchase and store AAIs, also allowing them to supply them to pupils who have been diagnosed with anaphylaxis or are at risk of anaphylactic reactions.

Following the UK’s example,
facilitating access to AAIs in schools has increasingly become a priority in other European states such as Ireland, Italy, and Portugal. The latter passed a regulation in 2022 to allow schools with more than 1,000 students to stock AAIs for emergencies.

After the death of a 14-year-old teenager due to being denied an AAI because of lacking a prescription, Ireland passed a law in October 2015 allowing pharmacists to supply and administer emergency medicines in emergencies.

In Italy, only the Veneto Region has established a law by which AAIs can be kept in schools with a medical certificate for the individual patient, but it is still not allowed to be held in stock for general emergency uses to avoid prosecution of school workers, Antonella Muraro, President of the European Academy of Allergology and Clinical Immunology (EAACI) told EURACTIV.

Reducing costs

The cost is also crucial to achieving equal access to AAIs across the EU.

“Cost is a significant element as there has been an increase in prescribing in all countries where it is reimbursed”, Muraro said, regretting a lack of EU-wide legislation.

“The only efforts were made at the level of a campaign in 2014-2015 that involved scientific societies, patients, pharmacists, institutions and resulted in the 2016-2017 EMA recommendation to dispense two self-injectors to all at-risk patients who should always carry them”, she added.

One of the leading countries in this area is Portugal, which fully reimburses its AAIs. "The big revolution in our practice was a law published in October 2020 that allows for the full reimbursement of autoinjectors," Dr Santos told EURACTIV but stressed that much remains to be done.

A (European) way forward

Stakeholders agree that emphasis must be placed on training people to properly use AAIs which should be available in all public spaces, especially restaurants where anaphylactic shocks are most likely due to food allergies.

“I strongly believe that will be the next step”, Dr Santos said, adding that it is essential for teachers and education staff to be provided with compulsory training, be it on-site or online, to better react to acute allergic reactions.

But for Marcia Podestà, President of the European Federation of Allergy and Airway Diseases Patient Associations, training must be taken a step further and provided as first-aid technique. “Everybody needs to be trained on how to use it”, she said.

Experts agree that a European response is needed to make AAIs more accessible in public spaces.

“It would be very important to have a European regulation rendering adrenaline available in public spaces,” said Dr Santos, advocating for a regulation to have adrenaline autoinjectors available in restaurants.

“We could even have some sort of certification of restaurants that are trained and have adrenaline autoinjectors so that people with allergies know that this place is following all the regulations and all the standards, and they can be safe in this place,” she suggested.

The same applies to the provision of AAIs in other public places, their reimbursement, training of staff and citizens, all of which require a European set of rules and guidelines, which are still largely insufficient to address the problem and reduce the number of anaphylaxis-related allergic reactions in the European Union.
While the EU has a strong regulatory framework to ensure the quality and safety of life-saving adrenaline autoinjectors, food allergy stakeholders push for more measures also in terms of food labelling.

Anaphylaxis is a life-threatening allergic reaction that can lead to death within minutes after exposure to allergenic components. When faced with an anaphylactic shock, the best first-line emergency treatment is adrenaline-autoinjectors (AAIs) directly administered to the victim.

Regarding AAIs, the European Commission considers that “the availability of safe medical devices for European patients is our priority”, an EU official told EURACTIV.

The pillar of this priority is the Medical Device Regulation, which ensures high consumer protection and quality standards for medical devices introduced in the EU’s internal market.

In that sense, while the EU regulates the type of AAIs made available, it does not have any kind of harmonisation measure to ensure its wide availability – something stakeholders call for.

Food allergy stakeholders further feel left behind in the current EU’s health regulatory framework.

“We are claiming as EFA [European Federation of Allergy and Airways Diseases Patients’ Associations] to be taken on board because they are talking about asthma, COPD, but not allergic reactions. And we are here and we are a lot of patients and we are risking our lives with this”, EFA President Marcia Podestà told EURACTIV.
Ensuring AAs’ quality and safety in the internal market

The EU closely regulates the authorisation of medicines in the internal market, including adrenaline auto-injectors, via the European Medicines Agency (EMA). All AAs – and other medicines – authorised in the European Economic Area are registered in the Article 57 database.

The EU does have a harmonised approach when it comes to monitoring the quality of AAs and ensuring consumer protection in the single market, a Commission official confirmed.

For example, in 2014, a review of AAs under Article 31 of Directive 2001/83/EC took place, following concerns that currently available devices may deliver adrenaline under the skin instead of into a muscle which could delay response to treatment, potentially leading to death.

Following the concerns, EMA’s Committee for Medicinal Products for Human Use (CHMP) concluded that companies marketing AAs should develop more effective educational material for patients and healthcare professionals to ensure the product’s optimal use.

This opinion was forwarded to the European Commission, which issued a legally binding decision applicable in all member states in August 2015.

Dr Natacha Santos, immune-allergologist and anaphylaxis expert, Marcia Podestà, President of EFA, and Antonella Muraro, former President of the European Academy of Allergy and Clinical Immunology, all agree that is not enough, as they argue it is essential for teachers and education staff also to be provided with compulsory training, be it on-site or online, to better react to acute allergic reactions.

Another example of the EU’s role in AA quality control is the recent detection of defective devices via the EMA’s rapid alert network, which affected Germany, Norway, Netherlands, Spain, Czechia, and Sweden, all of which withdrew the defective AAs from the market.

The EMA is monitoring the situation, and further actions will be coordinated if necessary, an EU official told EURACTIV.

Lastly, Antonella Muraro said, “A campaign in 2014-2015 that involved scientific societies, patients, pharmacists, and institutions resulted in the 2016-2017 EMA recommendation to dispense two self-injectors to all at-risk patients who should always carry them”.

The recommendation, however, is not applied in all member states, which generates inequalities of access to AAs among EU citizens, Muraro added.

More thorough food labelling

The EU strongly regulates food labelling, as it is crucial for consumers with food allergies to quickly identify the products used for any given product to prevent the possibility of an anaphylactic shock.

The EU Regulation, No 1169/2011, on providing food information to customers, harmonises the presentation of allergens to consumers and establishes that products containing any of the 14 determined allergens must be labelled.

According to Dr Natasha Sanots, this regulation does not go far enough as products may be mislabelled and still contain traces of allergy-provoking food, which may cause unexpected fatal anaphylactic shocks, Dr Natacha Santos told EURACTIV.

Products may have been in contact with other allergens accidentally, and the current regulation does not oblige producers to label the risk of cross-contamination, EFA says.
Advocates propose implementing a public access system for adrenaline-autoinjectors (AAIs) in public spaces to battle anaphylaxis inspired by Automatic External Defibrillators (AEDs) best practices, but challenges remain ahead.

Anaphylaxis is a life-threatening allergic reaction that can lead to death within minutes after exposure to allergic components, the estimated incidence in Europe is 1.5 to 7.9 per 100,000 people per year, a study found in 2013.

For any person with a food allergy, the chance of dying from anaphylaxis in one year is 1.81 in a million, according to a study by researchers at Imperial College London.

"Anaphylaxis is underestimated", though, as there is a lack of case monitoring and food allergy diagnosis, European Federation of Allergy and Airways Diseases Patients Associations (EFA) President Marcia Podestà told EURACTIV.

When faced with an anaphylactic shock, the first-line emergency treatment is live-saving AAIs directly administered to the victim. However, its availability greatly varies across Europe.

While member states like Portugal have passed advanced legislation on AAIs – like making these devices mandatory for schools with over 1,000 students as well as mandating teacher training – a majority of member states are still behind.

For this reason, stakeholders claim the EU should step in and ensure equal access to AAIs in public spaces across member states, similar to AEDs.

Survival rates rose up to 65% when people suffering a cardiac arrest received cardiopulmonary resuscitation (CPR) with early defibrillation by an AED, a study found.
“We need to think of including life-saving treatments in a package, a safety package in public settings, like defibrillators”, EFA President Marcia Podestà added.

**Best practices and challenges**

In proposing the wide availability of safety kits containing AAIs, Podestà compares it to the already-existing member state regulations to ensure wide access to AEDs.

AEDs are publicly available in a number of EU countries such as Czechia, France, Germany, Estonia, Finland, Croatia, Italy, Ireland and Latvia.

On top of wide availability, many emergency response organisations have registries mapping AEDs’ locations. With this tracking, when bystanders call 112 the operator can give them the location of the nearest device in case of emergency, according to the European Emergency Number Association.

“I understand that we need to run the same journey that doctors run with defibrillators”, she said.

Along the same lines, former president of the European Academy of Allergy and Clinical Immunology (EAACI) Antonella Muraro points out that the public availability of AEDs is an example of how cross-sectoral collaboration can help achieve a wide availability of AAIs.

“Joint action by all stakeholders is usually persuasive and rewarding for access and use of a drug or device”, she told EURACTIV.

But AEDs are far from being the perfect role model.

The EU has a strong regulatory framework for production and marketing requirements for manufacturers, importers, and distributors to be able to introduce AEDs to the single market, including health and safety standards. Such requirements are outlined in the Medical Devices Regulation as a class III item, Public Affairs Director at the European Emergency Number Association (EENA112) Benoit Vivier told EURACTIV.

However, just like with AAIs, there is no EU-wide framework harmonising its availability or mapping, “regrettably, as we see large discrepancies between EU countries”, Vivier said.

And, even though AEDs' availability in public spaces is more consolidated across member states, some laws restrict their use to people who have received prior training, Vivier said, adding that “people using them without training are now always prosecuted”.

This is an issue also encountered by advocates of publicly available AAIs, which call for wide training for citizens.

Another problem to make AAIs widely available remains shortages, frequently experienced by consumers, according to EFA President Marcia Podestà and Dr Natasha Santos, national coordinator of the Portuguese Allergy and Clinical Immunology Society.

Acknowledging the shortages, Podestà believes providers could face increased demand if AAIs were to be mandatory in all public spaces, relying on the recently approved pharmaceutical strategy to prevent drug shortages across the EU.
Anaphylaxis can cause death. Food allergy community call to support a battle for life.

By Marcia Podestà | Food Allergy Italia

According to the EAACI Anaphylaxis Guidelines 2021, “anaphylaxis is a life-threatening reaction characterised by the acute onset of symptoms involving different organ systems and requiring immediate medical intervention”.

Marcia Podestà is President of Food Allergy Italia.

The World Allergy Organization (WAO) Anaphylaxis Guidance 2020 defines anaphylaxis as “a severe and systemic hypersensitivity reaction, usually with rapid onset and which can cause death”.

Allergic reactions to drugs, Hymenoptera stings, or food can cause such lethal episodes. The most acute reactions can lead to permanent damage, such as cerebral ischemia, myocardial infarction, or death.

As patients, our first call is to have a harmonised definition of anaphylaxis.

According to International guidelines, the prompt use of intramuscular adrenaline as first-line management is recommended with the availability of adrenaline autoinjectors (AAI) to patients in the community. Autoinjectors are designed to deliver a single and pre-dosed amount of adrenaline. They are designed to be easily used by the patient themselves or a carer. The goal is to allow patients at risk to have life-saving...
treatment at any time and use it in an emergency, especially if not close to health facilities, while they wait for emergency medical assistance.

In 2015, the European Medicines Agency (EMA) recommended several measures, including introducing more effective educational material and structured, comprehensive training for people at risk of anaphylaxis, to ensure that patients and carers successfully use adrenaline autoinjectors. It is crucial to educate patients, caregivers but also school personnel and caterers on when and how to use adrenaline autoinjectors, as many reactions occur at school or restaurants.

A number of different AAIs are available, each of which has slightly different mechanisms. Device-specific training is therefore essential for each autoinjector and with further training if the device is changed.

EMA also recommends prescribing two AAIs to obviate any risk linked to a lack of effect of the administration for patients at risk of anaphylaxis. It is possible that a single adrenaline autoinjector is not enough during an anaphylactic shock. In the absence of clinical improvement or if deterioration occurs after initial treatment, or if the device is not used properly, further administration of self-injectable adrenaline is required. These potentially fatal risks can be avoided with a second AAI. Therefore, patients at risk of severe allergic reactions should ensure they are familiar with the devices that have been prescribed and carry two autoinjectors with them at all times in case a second dose is needed while they wait for emergency assistance.

Regrettably, the effective implementation of the EMA recommendation in all European countries must be completed and more cohesive.

In some countries, adrenaline autoinjectors are not available or affordable, or supply issues exist. Sometimes, there is difficult for the patient to access the life-saving treatment for various reasons: the lack of allergy services that can quickly manage the therapeutic plan, the long waiting lists that do not allow for immediate prescription and supply, and the reimbursement, as the autoinjector cost is also essential to achieving equal access to AAIs across the EU. In Europe, AAIs have been fully reimbursed in Italy since 2005 and in Portugal since 2020.

Nevertheless, the response to anaphylactic shock must be prompt and cannot be subordinated to the times, often very long, of the National Health Systems.

To mitigate the differences between countries, it is necessary to achieve equal access to anaphylaxis treatments throughout the national territories, providing for the delivery of the two AAIs, to the individuals entitled to them, as required by the EMA recommendations.

Finally, it is also necessary to increase the knowledge of all medical and healthcare professionals on the methods of use and the advantages of using self-injectable adrenaline and to activate a specific training campaign for this target. Despite the guidelines and the EMA recommendations, the EAACI Task Force clinical epidemiology of anaphylaxis found that 68% of the experts usually prescribe one adrenaline autoinjector, while only 32% prescribe two.

The food allergy community call for help so that there are no more anaphylaxis deaths from failure to treat promptly.

We call on European authorities and national governments to support a battle for life because the adrenaline autoinjector can save a citizen’s life in minutes during anaphylactic shock. We call the health authorities for prompt and equal access to the life-saving treatment of anaphylaxis, the availability of two adrenaline autoinjectors for every patient at risk and structured, comprehensive education for patients, caregivers, school personnel, caterers but also to medical and healthcare professionals throughout all European countries.
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Contact us

Gerardo FORTUNA
Editor, Agrifood & Health
gerardo.fortuna@euractiv.com
tel. +32 (0) 00 00 0000

Marco VENOSTA
EU Affairs Manager
marco.venosta@euractiv.com
tel. +32 (0) 2 226 58 19