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The National Allergy Strategy: research and data

High-quality research and health data are vital for allergy services.

Published: 21 October 2026 **Author:** Professor Jürgen Schwarze **Read time:** 7 Mins

Allergic diseases affect millions of people across the UK and are among the most common long-term health conditions. The new UK-wide National Allergy Strategy sets out an ambitious plan to address major research challenges in allergy care.

From food allergies and eczema to asthma, hay fever, insect venom and drug allergies, these conditions can have a major impact on wellbeing and daily life. Allergies can be life-threatening, causing severe reactions such as anaphylaxis. They can mean constant vigilance, disrupted schooling or work, anxiety and repeated visits to healthcare services.

Patient-informed research

Allergies are increasing in both children and adults, but access to allergy services varies widely across the UK. Diagnosis is often delayed, and many severe allergic reactions could potentially be prevented with earlier identification of risk, better education and more consistent support systems. The strategy recognises that, although the UK has internationally leading allergy clinicians and scientists, there are still major gaps in knowledge to address. These include questions as to how allergies develop and how to prevent them, how to diagnose and treat allergies more effectively, how to cure allergies, how to best prevent severe allergic disease and allergy deaths, and how to deliver the most effective allergy care in the NHS.

The vision is that high-quality, relevant, patient-informed research, aligned with health policy, will help to reduce the impact of allergic disease on individuals, families and communities. Achieving this will require prompt implementation of research findings in clinical practice. This research should lead to fewer emergency hospital admissions, fewer life-threatening reactions, more effective treatments and better quality of life.

A significant first step will be to identify the most important unanswered questions in allergy research through listening – not only to scientists and clinicians, but also to patients and families.

Understanding the social and environmental factors behind allergy

Allergy prevention will be an important focus. Researchers will need to better understand how allergies begin in the first place to prevent allergies from developing. Why do some people develop food allergies or asthma, while others do not? What role do genetics and environmental exposures, including diet and infections, play? Increasing evidence suggests that early life, including pregnancy and infancy, is a critical time when allergies first develop and may be a window of opportunity for preventing them. Research will explore factors such as infant feeding practices, antibiotic use, caesarean section rates and the diversity of maternal and childhood diets. The goal is to identify safe, practical strategies that could prevent allergies from developing, which would not only improve lives but also reduce long-term costs to the NHS.

Research into factors that promote and maintain allergy will also help develop new treatments and interventions that could potentially cure allergies or modify the disease so that it goes into remission. In this context, understanding the impact of environmental factors is very important. Air pollution and changes in allergen exposure due to climate change can increase the severity of allergic disease. Research will examine how rising temperatures and altered pollen seasons, as well as underexplored pollutants including microplastics, ultrafine particles and emissions from fuel burning, affect symptoms. Understanding the effect of interventions such as housing improvements or clean air zones could reveal important benefits for allergy-related health, particularly in areas with high population density and socioeconomic deprivation.

Allergies also have psychological and social consequences – living with the constant risk of accidental exposure to allergens can create anxiety for patients and their families. Social activities, travel and school or work life may all be affected. Research will therefore examine how to reduce the psychosocial burden of allergy, ensuring that care addresses emotional wellbeing as well as physical symptoms.

NHS data and artificial intelligence

An increased and improved use of NHS data is a major opportunity for allergy research. The NHS holds large amounts of information about patients' health, which provide opportunities to identify patterns of allergic diseases, predict risk or improve services. However, this data is not always easy to link or analyse. The strategy therefore calls for easier research access to linked data between GP surgeries and hospitals, supported by strong data governance and patient and

public involvement. Consistent clinical coding is also essential. If allergies are not recorded accurately and uniformly in health records, it becomes much harder to track outcomes or plan services effectively.

Modern data science and artificial intelligence (AI) offer new exciting possibilities for the analysis of electronic health records. AI-supported predictive models may help clinicians identify infants at high risk of developing asthma or food allergies, allowing early monitoring and interventions. They could also determine which patients are most likely to experience severe allergic reactions, improving personalised care plans. Furthermore, AI may help to accurately predict food or other allergies based on patient histories and laboratory results. This could replace hospital allergen challenges, reduce unnecessary admissions and lower risk to patients.

In addition to routine NHS data, allergy registries (structured databases that track allergy patients over time) can provide invaluable information about outcomes, treatment effectiveness and safety. To gain this information, existing and new registries need stable long-term funding and coordination across the 4 UK nations. The strategy proposes a new National Anaphylaxis Registry to monitor severe allergic reactions in community settings, including near-fatal events. By recognising clusters of severe reactions, this registry could become an early warning mechanism for patient safety risks, such as undisclosed allergen contamination in food products.

From research to clinical practice

Implementation will also be a crucial research focus in the strategy, ensuring that research findings are translated rapidly into clinical practice. Too often, promising innovations take years to influence patient care. A proposed expert panel would synthesise evidence, develop guidance and provide health economic analyses demonstrating the value of investing in novel approaches to allergy care. Their work would be closely aligned with policymakers to ensure fast translation of research findings into routine healthcare, so people affected by allergies benefit sooner from scientific advances.

To close the knowledge gaps and to achieve the research goals mentioned above, research infrastructure for allergy needs to be strengthened across all 4 UK nations. This includes making allergy a higher priority for major public funders, such as the National Institute for Health and Care Research and UK Research and Innovation. A proposed UK-wide virtual Allergy Research Centre would link experts across universities, hospitals and research institutions, supporting everything from laboratory science to community-based studies. Dedicated funding for a PhD training programme would help develop the next generation of allergy researchers, including clinicians and non-clinical scientists. Encouraging more healthcare professionals to participate in research would help to embed new findings into practice more quickly. All of this, together with international collaborations, will further strengthen the UK's position as a global leader in allergy research.

This research strategy will enable a shift from reactive to proactive allergy care – from simply responding to severe reactions or poorly controlled symptoms to predicting risk, intervening earlier and preventing disease where possible. By combining excellent relevant research, better data use, AI innovation and effective policy translation, the UK has the opportunity to significantly reduce the burden of allergic disease. For people living with allergies, this offers hope of clearer diagnoses, more consistent care, fewer emergencies and, eventually, ways to prevent and cure allergic disease.

Meet the author



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October 2026 Bulletin

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