

HOUSE OF LORDS

Science and Technology Committee

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6th Report of Session 2006–07

# Allergy

## Volume I: Report

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**NOTE:**

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Reference in the text of the Report as follows:

(para) refers to a paragraph in the Report

(Q) refers to a question in oral evidence

(p) refers to a page of written evidence

## ABSTRACT

Allergy in the United Kingdom has now reached epidemic proportions, with new, more complex and potentially life threatening allergies. Allergic disorders can seriously impair quality of life for sufferers, and in some cases, can even lead to death. Their treatment is a significant cost to the National Health Service, and they can have a detrimental impact upon the education of children at school or the performance of adults at work. The burden of allergy is borne by the allergic individual on a daily basis, but the social and economic cost extends across the whole nation.

There is a severe shortage of allergy specialists in the United Kingdom, so the clinical services lag far behind those of many countries in Western Europe, and have not kept pace with the rising prevalence of allergy. Problems with data collection mean that statistics are imprecise, and a lack of training has resulted in a National Health Service in which a significant proportion of general practitioners are unable to diagnose and manage allergic disorders, and have nowhere to refer patients with complex allergies.

The development of the immune system in the first months of life—and the role of early exposure to allergens such as peanuts—urgently requires further research to ensure that public policies are underpinned by sound scientific evidence. There is a lack of evidence-based research which has resulted in poor public information on the everyday factors which allergy sufferers may encounter, such as food and its labelling, housing conditions and methods used by complementary practitioners.

We have made a number of specific recommendations on allergy services. We recommend that allergy centres led by a full-time allergist should be developed, where various specialists with an interest in allergy come together to diagnose and manage patients with complex allergic disorders. These allergy centres should be a source of education and training for doctors, nurses and other healthcare workers at every grade, to improve the knowledge of those working within the primary and secondary care sectors. They should also advance research, enabling effective treatments to be developed, and should provide the clinical database required for epidemiological studies. Clinicians within the allergy centre should work together with local schools, employers, charities and others to educate the general public, and particularly patients and their families, on allergy matters.

But NHS allergy services are only part of the story and we have also made a number of other recommendations covering a broad range of issues. These include: maintaining clinical surveillance systems to monitor allergic disease; calling for further research into the ways in which the indoor environment influences allergy development; reviewing how children with hayfever are supported throughout the examination system; assessing the training that teachers receive in dealing with allergic emergencies; assisting individuals with occupational allergies to return to work; amending food labelling legislation to specify the amount of allergens contained within products; analysing the costs and benefits of immunotherapy treatment; and withdrawing advice which recommends peanut avoidance for pregnant women. But all our recommendations must be underpinned by effective education and training of those involved at every level.

We call on the Government and all those involved in supporting people with allergy, to address these issues to improve patients' quality of life, tackle the rising prevalence of allergy in the future, and reduce the significant burden of allergy in the United Kingdom.

# Allergy

## CHAPTER 1: INTRODUCTION

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### Scope

- 1.1. In July 2006 we appointed a Sub-Committee to explore the impact of allergy in the United Kingdom upon patients, society and the economy as a whole. The scope of our inquiry covered a broad range of policy issues, and the initial Call for Evidence is reprinted in Appendix 3. Our report encompasses an assessment of recent trends of allergy prevalence, the social and economic burdens that allergic disorders cause, current allergy treatments and research strategies, and policies which impact upon allergy patients such as housing standards, food labelling and the work and school environment.
- 1.2. Our report follows a series of reports on health service provision for allergy patients, including *Allergy: the unmet need* published by the Royal College of Physicians in 2003,<sup>1</sup> *The Provision of Allergy Services* produced by the House of Commons Health Committee in 2004,<sup>2</sup> and the Department of Health's *A review of services for allergy* published in 2006.<sup>3</sup> These reports concluded that there was a lack of baseline data regarding allergy in the United Kingdom, and that improvements were needed to the way in which allergy was treated within the National Health Service.
- 1.3. In light of the amount of information already available on the provision of health services for allergy, we have not made this the main thrust of our report. However, the wealth of evidence we received on allergy services, and the strong opinions of many of our witnesses, have made it clear that the state of allergy services in the United Kingdom also impacts upon the accuracy of data collection methods, influences research strategies, and is responsible for the way in which patients approach their disorders. We have therefore examined allergy services in Chapter 9.
- 1.4. This report comes at a time when the prevalence of allergic disorders in this country has been claimed to have reached epidemic proportions, and the topic of allergy is never far from the media spotlight. This is therefore a timely opportunity to examine the impact of allergy upon the United Kingdom. Although it is unlikely that a cure for all forms of allergy will be found in the near future, we have made a number of recommendations which we believe will contribute to the prevention, treatment and management of allergic disorders. We trust that the Government and other relevant stakeholders will respond positively and so help to reduce the significant burden of allergy within the United Kingdom.

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<sup>1</sup> Royal College of Physicians, *Allergy: the unmet need*, 2003.

<sup>2</sup> Health Committee, 6th Report (2003-04): *The Provision of Allergy Services* (HC 696-I)

<sup>3</sup> Department of Health, *A review of services for allergy*, 2006. (Hereafter referred to as DH *A review of services for allergy*).

### Acknowledgements

- 1.5. The membership of the Sub-Committee is set out in Appendix 1. We received valuable written and oral evidence from the witnesses listed in Appendix 2. In November 2006 we held a seminar at the Royal Society of Medicine, to which a number of academics, clinicians and charity representatives contributed. In the course of our inquiry we have visited allergy services in Germany and Denmark, the Danish National Board of Health, the Evelina Children's Hospital in London, and an allergy clinic at Addenbrooke's Hospital, Cambridge. We have also visited two companies who manufacture allergen products: ALK-Abelló in Copenhagen and Allergy Therapeutics in Worthing. We wish to thank very warmly all those who have assisted us in our work.
- 1.6. Finally, we are very grateful to our Specialist Adviser, Professor A. B. Kay of Imperial College London, for his expertise and guidance throughout our inquiry. We stress that the conclusions we draw and recommendations we make are ours alone.



## CHAPTER 2: THE NATURE OF ALLERGY

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### Introduction

- 2.1. Since the late 1950s the incidence of allergy in developed countries has risen steadily. In the United Kingdom the incidence of common allergic diseases has trebled in the last twenty years, to become one of the highest in the world.<sup>4</sup> Recent estimates suggest about a third of the population will develop symptoms due to allergy at some point in their lives.<sup>5</sup> No comparable increases in prevalence have been observed in developing countries, but although many hypotheses have been proposed, the true reason for the “allergy epidemic” in the westernised world has yet to be found.
- 2.2. The pattern of allergic diseases in the United Kingdom, as in many other developed countries, has also changed over the last 50 years. An increasing number of people suffer from food allergy, allergic rhinitis and atopic eczema, and new allergies have emerged such as oral allergy syndrome and latex allergy. The involvement of multiple organs is now seen more frequently and certain allergic conditions appear to be more severe or potentially life-threatening. As an example, peanut allergy is now increasingly common in young children.<sup>6</sup>
- 2.3. During the course of our inquiry it has become clear that the term “allergy” is used in different ways by doctors and lay people. Our aim in this chapter therefore is to define what allergy means, to distinguish it from intolerance, and to examine the basic mechanisms involved.

### Allergy

- 2.4. The term “allergy” was first coined by Clemens von Pirquet in 1906 to describe an altered or changed reactivity of the immune system to foreign proteins,<sup>7</sup> irrespective of whether this resulted in immunity or a harmful effect. However, today most clinicians restrict the use of the term to situations where an exaggerated sensitivity (hypersensitivity) results from a heightened or altered reactivity of the immune system in response to external substances. These foreign substances that provoke allergies are called allergens and enter the body either by inhalation, swallowing, injection, or contact with the skin, eye or airways. The Royal College of Physicians reported that common allergens include “grass, weed and tree pollens, substances present in house dust ... [particularly the faeces of housedust mites], fungal spores, animal products, certain foods, and various chemical agents found in the home and at work.”<sup>8</sup>
- 2.5. Allergy is not a disease but a mechanism which may play a role in a number of disorders.

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<sup>4</sup> *op cit.* Royal College of Physicians, *Allergy: the unmet need*, 2003, p ix.

<sup>5</sup> *op cit.* DH *A review of services for allergy*, p 31.

<sup>6</sup> *op cit.* DH *A review of services for allergy*, p 27.

<sup>7</sup> Kay, *Clinical and Experimental Allergy* 36, 2006, “100 years of ‘Allergy’: can von Pirquet’s word be rescued?,” pp 555–559.

<sup>8</sup> *op cit.* Royal College of Physicians, *Allergy: the unmet need*, 2003, p 3.

*Allergic mechanisms: atopic (IgE-mediated) allergy*

- 2.6. Atopic allergic conditions arise when individuals produce increased amounts of the allergic antibody immunoglobulin E (IgE), a type of antibody which binds particularly strongly to specific receptors on mast cells (specialised cells found in connective tissue and airways). When the cell-associated IgE comes into contact with the specific allergen against which it is directed, the molecules of IgE become “cross-linked” by that allergen, and the mast cell becomes activated. This results in the release of inflammatory chemicals such as histamine and leukotrienes (see Figure 1). Acute symptoms of allergy such as sneezing, spasm of the airways, itching, rash and tissue swelling are caused by histamine, and when there is a large release into the circulation, as in anaphylaxis, histamine causes a fall in blood pressure. Leukotrienes have a more prolonged course of action, causing airway narrowing and swelling which leads to shortness of breath and wheeze.<sup>9</sup>
- 2.7. The symptoms of chronic allergic disorders, such as a continuous blocked nose or on-going wheeziness, may result from another molecular pathway involving immune cells known as T helper 2 (Th2) cells. This pathway involves the release of cytokines and chemokines, small messenger proteins which recruit other cells into the reaction.<sup>10</sup>
- 2.8. The majority of people who suffer from IgE-mediated allergy are said to be “atopic”. The European Academy of Allergology and Clinical Immunology (EAACI) defines atopy as “a personal or familial tendency to produce IgE antibodies in response to low doses of allergens, usually proteins, and, as a consequence, to develop typical symptoms such as asthma, rhinoconjunctivitis or the atopic eczema/dermatitis syndrome (AEDS).”<sup>11</sup> This means that atopic individuals are more likely to develop these allergic conditions than non-atopic individuals. However, not all atopic individuals do so.
- 2.9. Atopy is associated with disorders such as hayfever, allergic asthma and eczema. The disorders discussed in this report are mainly atopic in nature, so when the term allergy is used in an unqualified way, it refers to atopic allergy.

*Allergic mechanisms: non-atopic (non-IgE-mediated) allergy*

- 2.10. However, allergy is not as simple as this brief summary seems to suggest. Some conditions are not dependent on IgE but still involve an abnormal immune response to a wide variety of external environmental agents. These conditions are known as non-atopic (non-IgE-mediated). The mechanisms of non-atopic disease are less clearly understood but some disorders (i.e. contact dermatitis) may involve a different subset of immune cells known as T helper 1 (Th1)<sup>12</sup> (see Figure 1).

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<sup>9</sup> *op cit.* Royal College of Physicians, *Allergy: the unmet need*, 2003, p 3.

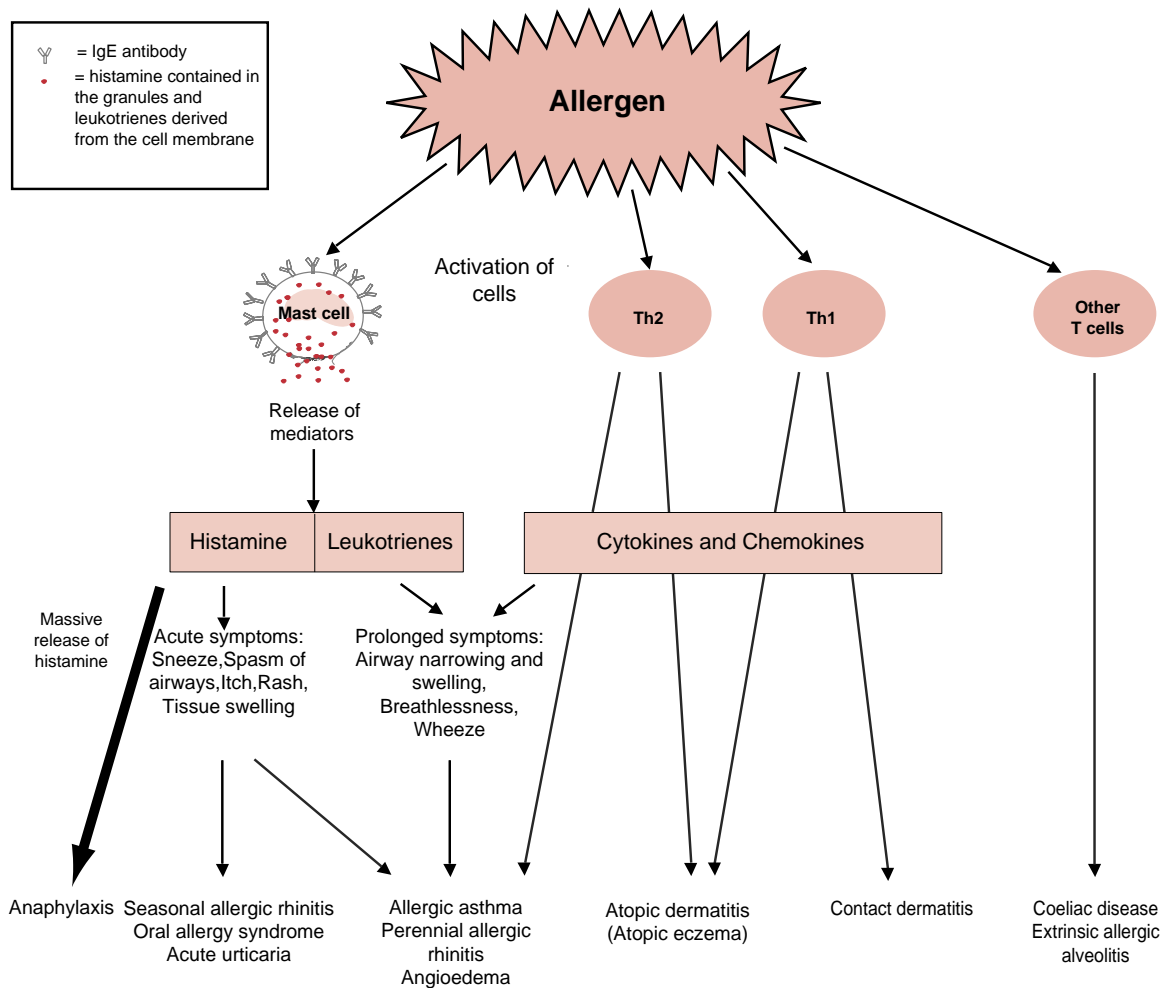
<sup>10</sup> *op cit.* Royal College of Physicians, *Allergy: the unmet need*, 2003, p 4.

<sup>11</sup> See <http://www.eaaci.org/allergydefinitions/english.htm>.

<sup>12</sup> Lebec et al., *Cell Biology and Toxicology* 15, 1999, “Mechanisms of drug-induced allergic contact dermatitis,” pp 57–62.

FIGURE 1

### Schematic representation of the main mechanisms of allergies and their diseases



### The range of allergic disorders

2.11. Allergy plays a role in various disorders and allergic reactions can be acute, chronic, mild or severe. For conditions such as asthma, rhinitis, eczema and urticaria, commonly regarded as allergic in origin, allergy plays a role in some patients but not in others. As an example, asthma may be triggered by allergy, but can also be caused by viral infections, pollution and stress. Skin disorders such as dermatitis, urticaria and angioedema, can be caused by both atopic and non-atopic allergic mechanisms as well as non-allergic pathways. Thus, although swelling, itching and redness are found in many of these conditions it is often very difficult to establish a clear association between a specific allergy and the skin disease. The Royal College of Physicians' report noted that the importance of allergy may also change with time. For example, milk and egg allergy are prevalent in young children but these are often replaced by other allergies as the individual ages.<sup>13</sup> Throughout this report the term "allergic disease" is used as a generic term to refer to disorders in which allergy can play a role. The most common allergic disorders are described in Table 1.

<sup>13</sup> *op cit.* Royal College of Physicians, *Allergy: the unmet need*, 2003, p 5.

- 2.12. Although many patients exhibit hypersensitive reactions to food, only some of these cases are caused by true IgE-mediated food allergy, such as an allergy to peanuts. In other cases there may not be any evidence to suggest that their problem is associated with an alteration in the immune system, so their condition is known as a “food intolerance”. Examples of these are patients who are unable to digest lactose (due to a constitutional deficiency of the enzyme lactase), patients suffering from food-induced migraine and those who suffer from irritable bowel syndrome (a gut disorder of unknown cause). Various other conditions may be attributable to external agents but do not involve allergic sensitisation, such as alcohol intolerance (caused by a deficiency of the aldehyde dehydrogenase enzyme) and reactions to sulphites, nitrites and food additives.<sup>14</sup>
- 2.13. Other disorders, such as chronic fatigue syndrome and multiple chemical sensitivity (see para 8.26), may be attributed to allergy even though there is a lack of evidence to suggest they have an allergic basis. The Royal College of Physicians’ report commented that these disorders can have a significant impact upon the lives of patients and their families, so it is important to investigate these conditions fully in order to carefully diagnose and manage the underlying disorder.<sup>15</sup>

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<sup>14</sup> *ibid.*

<sup>15</sup> *ibid.*

**TABLE 1**  
**Categories of disease related to allergy<sup>16</sup>**

Disorder	Symptoms	Common allergens or other causes	Main disease mechanism	Other key features
Allergic rhinitis:  • Seasonal allergic rhinitis (hayfever or rhinoconjunctivitis)	Blocked, runny nose, sneezing, itching and streaming eyes  Worst symptoms occur at the height of summer when vast clouds of grass pollens become airborne	Pollen (commonly grass, but also tree and weed pollen)	IgE-mediated	Mild winters and warmer springs mean that pollination in the United Kingdom now starts earlier than it did 50 years ago. Therefore symptoms can be well established by the first week in May and peak around mid-June to early July. When pollen counts are very high, some wheeziness can also coexist with rhinitis, in a condition known as seasonal allergic asthma
• Perennial allergic rhinitis	Chronic symptoms occur all year round	Housedust mite, allergens derived from cats, dogs, horses and pet rodents. In some patients, perennial rhinitis is due to non-allergic causes such as infection or structural abnormalities of the airway. A small minority of patients also have underlying immunodeficiency problems		

<sup>16</sup> Selected information taken from *op cit.* Royal College of Physicians, *Allergy: the unmet need, 2003.*

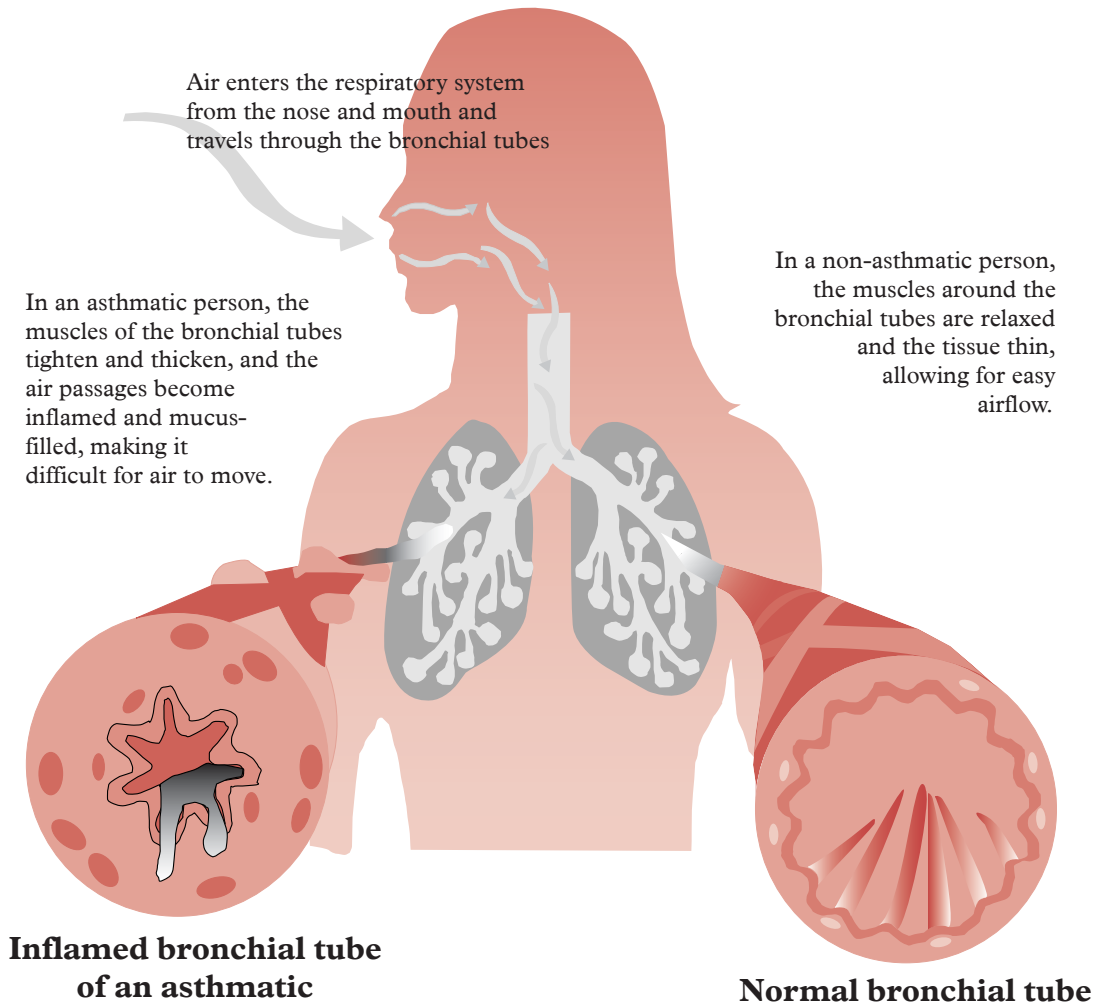
Disorder	Symptoms	Common allergens or other causes	Main disease mechanism	Other key features
Asthma	Characterised by episodes of wheezy breathlessness, but may also present as an isolated cough, particularly in children. “Non-atopic” asthma often starts later in life and can be more severe	The cause is still uncertain, and it is often difficult to determine the role of allergy. Allergy to housedust mite, pollen, moulds and pets can trigger an attack in a significant proportion of patients; food allergens and additives may rarely trigger symptoms. A significant proportion of patients are not sensitised to allergens so are “non-atopic” or “intrinsic” asthmatics	IgE-mediated	Pathology involves inflammation and muscular contraction of the large and small airways (bronchi and bronchioles—see Figure 2). The consequence is an irritable, easily constricted airway in which a variety of non-specific irritants causes airflow obstruction (bronchial hyper-responsiveness). Triggers include viral infection, exercise, certain drugs, and exposure to fumes or tobacco smoke
Anaphylaxis:	Anaphylaxis describes a group of symptoms affecting several parts of the body, caused by a hypersensitivity reaction to an allergen in a previously sensitised individual. “Anaphylactic shock” is an extreme hypersensitive reaction characterised by an overwhelming sense of impending doom, a dramatic fall in blood pressure, swelling in the throat and mouth, chest tightness, breathlessness from severe asthma and unconsciousness. In a small number of cases, anaphylactic shock results in death		IgE-mediated	A rash may herald that a more severe reaction will occur in the future, but in some cases anaphylactic shock occurs without any previous warning

Disorder	Symptoms	Common allergens or other causes	Main disease mechanism	Other key features
<ul style="list-style-type: none"> <li>• Sensitivity to insect venom</li> </ul>	<p>Some reactions are life-threatening but most result in a temporary irritation or swelling around the site of the sting</p>	<p>Can be caused by wasp or bee stings</p>		
<ul style="list-style-type: none"> <li>• Sensitivity to drugs</li> </ul>	<p>Rash anywhere in the body</p>	<p>Almost any drug, but the most common causes are penicillin and other betalactam antibiotics</p>		<p>Only a small proportion of adverse drug reactions have an allergic background, and an even smaller proportion are IgE-mediated</p>
<ul style="list-style-type: none"> <li>• Sensitivity to foods</li> </ul>	<p>Rash anywhere in the body, especially around the mouth and throat</p>	<p>Peanuts, tree nuts (such as almonds, hazelnuts, walnuts and brazil nuts), milk, eggs, fish and shellfish</p>		
<p>Oral allergy syndrome</p>	<p>Swelling in the lips, mouth, tongue or throat</p>	<p>Occurs in tree, grass, weed and latex allergy sufferers immediately after contact with certain foods. A significant proportion of people who are allergic to birch trees, suffer oral allergy syndrome after eating raw apples</p>	<p>IgE-mediated</p>	<p>The reaction is caused by a cross-reaction between the allergen to which the patient is sensitised, and the food protein</p>
<p>Urticaria and Angioedema:</p> <ul style="list-style-type: none"> <li>• Acute</li> </ul>	<p>Itching and swollen, red welts known as “hives” or “wheals” on the surface of the skin (urticaria) or deeper in the skin, particularly around the mouth and eyes (angioedema)</p> <p>Rash suddenly occurs and usually disappears within 24–48 hours</p>	<p>Food allergy, especially to peanuts, tree nuts or shellfish. Viral infection is more commonly the cause than food allergy</p>	<p>IgE-mediated</p>	

Disorder	Symptoms	Common allergens or other causes	Main disease mechanism	Other key features
<ul style="list-style-type: none"> <li>• Chronic</li> </ul>	Symptoms last intermittently or continuously for more than three months, but often clear up without treatment	Underlying cause is rarely found	Non-IgE-mediated	
Atopic dermatitis (Atopic eczema)	Chronic, recurrent inflammation of the skin, characterised by intense itching which particularly affects the flexures (creases of skin) at joints such as the wrists, elbows, ankles and knees	Egg or cow's milk allergy sometimes triggers symptoms in children, but this is rarely the case in adults. A number of external influences may trigger or exacerbate symptoms, including emotional stress, irritation of the skin by wool or nylon, infections and vaccinations	IgE-mediated	Patients often also suffer from other atopic disorders such as allergic rhinitis, asthma or both. It is currently thought that atopic dermatitis usually develops first and this then predisposes an individual to the production of IgE and the development of other atopic disorders
Contact dermatitis	Redness, scaling and itching at sites of exposure to the irritant. Can lead to thickening of the skin (lichenification)	Most commonly due to an irritation caused by external substances, but may also result from non-atopic allergic sensitisation to substances in the workplace, or nickel, lanolin and cosmetics	Non-IgE-mediated	
Extrinsic allergic alveolitis (EAA): e.g. <ul style="list-style-type: none"> <li>• Farmers' Lung</li> <li>• Bird Fanciers' Lung</li> <li>• Animal Handlers' Lung</li> </ul>	Shortness of breath, with or without cough, and in the acute phase there are usually muscular aches, fever and a lack of energy	Repeated or prolonged exposure to agents found in bacteria, animal products and chemicals  Bacteria found in straw, mouldy hay or grain  Bird droppings and feathers  Dried urine, hair or animal dander	Non-IgE-mediated	EAA describes a group of lung disorders caused by an inflammation of the alveoli (air sacs in the lung)



<b>Disorder</b>		<b>Symptoms</b>	<b>Common allergens or other causes</b>	<b>Main disease mechanism</b>	<b>Other key features</b>
Coeliac disease	Diarrhoea, failure to thrive (in infants and children), weight loss (in adults) and fatigue	Caused by an allergy to gliadin, a protein found in wheat, barley and rye	Non-IgE-mediated	Occurs in genetically predisposed individuals at all ages after infancy. It is an allergic disorder although the basic mechanism is autoimmune. Management requires a lifelong gluten-free diet	

**FIGURE 2****Why asthma makes it hard to breathe**

Source: American Academy of Allergy, Asthma and Immunology

**BOX 1****The genetics of allergy and asthma**

The development of allergic disease depends on interactions between a variety of environmental factors and a susceptibility to developing an allergy. In recent years, several genes have been described which suggest that events at the lining of the airways, or outermost layer of the skin, may be important in the development of asthma or atopic dermatitis.

Several potentially important genes have been shown to influence asthma susceptibility, but their precise role remains unclear. Atopic dermatitis has also been shown to be linked to several chromosome areas.<sup>17</sup> However, despite these discoveries it is doubtful whether genetic modification will play a role in the management of allergy in the foreseeable future.

<sup>17</sup> Willis-Owen, *Allergy and Allergic Diseases 2nd edition*, 2008 (in press), "The genetics of asthma and atopic dermatitis."

### The progression of allergic disorders

- 2.14. The “allergic march” describes the progression, or natural history, of allergic disorders in atopic individuals. In general no allergy symptoms are detectable at birth although specific IgE antibody responses to food proteins such as egg and milk may be observed during the first months of life, even in completely breastfed infants. Atopic dermatitis is usually the first manifestation of allergy in infants, but many children with eczema or food allergy in infancy develop rhinitis or asthma in the pre-teen years, which persist into early adulthood, and can last several years or decades.<sup>18</sup>
- 2.15. However, Professor John Warner, Professor of Paediatrics at Imperial College London, pointed out that having eczema *per se* does not necessarily lead to the development of other conditions such as asthma, but it is more likely that common underlying factors “predispose you to both conditions” (Q 92). Dr Warren Hyer, a consultant paediatrician at Northwick Park and St Mark’s Hospital, told us that “people progress through different manifestations of the allergic march at different rates” (Q 656), but the mechanisms of the allergic march were still unclear, and some individuals might experience spontaneous remission with age.
- 2.16. The prognosis for each patient is mostly determined by the severity of the condition and the presence of atopic sensitisation. During our visit to Odense University Hospital in Denmark, Dr Arne Høst, Head of the Department of Paediatrics told us that children who suffered from non-IgE-mediated allergic reactions to cow’s milk tended to have a good prognosis whilst children with IgE-mediated cow’s milk allergy had a higher risk of the allergy persisting, and a higher risk of developing other food allergies, inhalant allergies or asthma and rhinoconjunctivitis.<sup>19</sup>
- 2.17. Asthmatic wheezing is also seen in early infancy, usually only transiently, but can continue throughout school age and adolescence. Although childhood asthmatics seem to outgrow their disorder in adolescence, partly due to an increasing lung capacity with growth, Professor Warner noted that “the majority, if you do sophisticated lung function tests, still show an abnormality,” and many have “a recurrence of symptoms” by the age of 30 (QQ 95–96). This was because, as Professor Peter Burney, Professor of Respiratory Epidemiology and Public Health at Imperial College London told us, people “do not generally lose their allergies” with age (Q94).
- 2.18. As development of allergy depends on both genetic and environmental factors, the risk of a baby developing atopic symptoms within the first two years of life is strongly related to allergic disease in its parents and siblings. But nutrition, exposure to environmental agents and lifestyle are also important which, as discussed in Chapter 4, may explain why the prevalence of allergy in many developing countries is far lower than that seen in the Westernised world.

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<sup>18</sup> Illi et al., *Journal of Allergy and Clinical Immunology* 113, 2004, “The natural course of atopic dermatitis from birth to age 7 years and the association with asthma,” pp 925–931 and Illi et al., *The Lancet* 368, 2006, “Perennial allergen sensitisation early in life and chronic asthma in children: a birth cohort study,” pp 763–770.

<sup>19</sup> Note of the visit to Denmark, Appendix 8.

## CHAPTER 3: DATA COLLECTION

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### Introduction

- 3.1. Allergy is a complex immunological mechanism which can manifest itself in several different organs of an individual at once. So for example, hayfever involves itching in the eyes and runny nose, and sometimes this is also associated with wheeze. Increasingly, allergic individuals suffer from several atopic allergic conditions at the same time so, for example, a patient could have rhinitis caused by housedust mites and eczema triggered by a food allergy.
- 3.2. Allergy, and the allergic disorders that result from it, are therefore extremely complicated to research, monitor and treat. This chapter outlines the problems involved in collecting data on allergy prevalence, and aims to explain the current gaps in establishing the allergy burden. To understand fully the problems involved with collecting data, it is necessary to look briefly at the way in which allergy patients are treated in the United Kingdom, although the provision of allergy services is discussed in detail in Chapter 9.

### Data collection problems

#### *Clinical services*

- 3.3. Allergy UK, a charity which supports allergy patients across the United Kingdom, reported that “for the patient the major problem is the lack of knowledge at primary care level. GPs do not recognise allergic symptoms when presented with them due to a lack of training in allergy” (p 292). Dr Glenis Scadding, a consultant allergist at the Royal National, Throat, Nose and Ear Hospital agreed, saying “GPs are not adequately trained to deal with allergic diseases. In medical schools the amount of allergy training is absolutely minute, if it exists at all” (Q 788). This lack of GP training in allergy means that in many patients the allergic basis of their symptoms is often not recognised, and referrals may be made to several organ-based specialists, who might not necessarily have an adequate training in allergy either. Problems with the clinical services therefore makes it difficult to accurately assess the prevalence of allergy, as Professor Tak Lee, Director of the MRC-Asthma UK Centre in Allergic Mechanisms of Asthma noted “we also have to take into account the other patients in dermatology clinics, respiratory clinics and so on,” and not just the few who find their way to an allergy centre (Q 240).
- 3.4. The EAACI also pointed out that “much of the current provision of alternative and complementary services for allergy is driven by failure of provision within the state-funded healthcare sector” (p 70). Thus, disillusion with the provision of services within the National Health Service (NHS) causes many patients to self-care or seek treatment through private practitioners, so NHS statistics will significantly underestimate the true number of people suffering from allergic disease.

#### *Sources of information and classification systems*

- 3.5. As “allergy” is not a single disease there is no definitive database which records the incidence of all allergic disorders within the United Kingdom.

Different organisations collect data in different ways, making it difficult to obtain an accurate overview of allergy in total. Charities tend to carry out patient-based surveys which often rely on subjective statements and opinions, and usually focus on the particular sub-section of allergic disease relevant to their organisation, such as food allergies or asthma. In contrast, the Department of Health (DH) relies heavily on the clinical records produced from primary and secondary care consultations, based on the clinical manifestation or the clinical service needed to treat the patient. Academic epidemiological studies are more likely to categorise the disorders according to the pathological processes involved.

- 3.6. The range in severity of allergic disorders also poses a problem. For example, the symptoms of food allergy range from a mild rash to severe anaphylaxis but there is no standardisation of a diagnostic threshold and so Dr Richard Pumphrey, Consultant Immunologist, St Mary's Hospital, Manchester claimed that "a small change in your criteria could produce a 30-fold change in the numbers of people you are counting" (Q 439). In addition, the diagnostic classification systems on NHS patient records do not enable allergy to be consistently recorded. For example, Dr Mark Levy, representing the Royal College of General Practitioners, noted that a patient with allergic rhinitis referred to an Ear, Nose and Throat (ENT) specialist, might be coded as "ENT consultation" not "allergy consultation" (Q 353).
- 3.7. In 2002 the DH introduced allergy as a disease code, but the department admits that this code is underused. Professor Martin Marshall, Deputy Chief Medical Officer and Director General of the Healthcare Quality Directorate, said the DH hoped that the introduction of a new Systemized Nomenclature of Medicine (SNOMED-CT, a semi-automated classification system) would "classify the allergy in a much more specific way" (Q 8). However Dr Shuaib Nasser, an allergy consultant at Addenbrooke's hospital, pointed out that this system was at an "embryonic stage" (Q614) and Professor Aziz Sheikh, Professor of Primary Care Research and Development at the University of Edinburgh, commented that "consistent training" across all the different NHS sectors would be needed to ensure accurate data entry. But Professor Sheikh added that approximately 40 countries already used SNOMED-CT so "in terms of international comparisons through routine data sets the potential is phenomenal" (Q 106).
- 3.8. **We recommend that the Department of Health should ensure the Systemized Nomenclature of Medicine (SNOMED) system is supported by appropriate training, to ensure its efficacy as a simple consistent classification system to record allergic disease, monitor its prevalence and inform the commissioning of allergy services.**

#### *Occupational allergic disorders*

- 3.9. Obtaining accurate data on the prevalence of work-related allergic disorders is particularly difficult because occupational illnesses can have many causes, not just allergy. Allergy to flour causes Bakers' Lung in bakery workers, but Professor Anthony Newman Taylor, Chairman, Industrial Injuries Advisory Council pointed out that other occupational asthma, such as that caused by "an irritant chemical, such as chlorine or sulphur dioxide" is not allergy-related (p 92).
- 3.10. The Health and Safety Executive (HSE) collects data on occupational diseases through a range of sources. Their lead source is usually the survey of

self-reported work-related illness, but this fails to give “reliable estimates” of the prevalence of occupational lung and skin disease (Q 58). The HSE also co-ordinates the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR) which requires employers and self-employed people to report cases of occupational illness. Professor Raymond Agius, Director of The Health and Occupation Reporting (THOR) network, claimed that RIDDOR suffered from “substantial under-reporting” (p 93) because, as the British Occupational Health Research Foundation (BOHRF) commented, “patient consent” was required to report a case of occupational illness (p 340). Mr Rob Miguel, Health and Safety Officer at Amicus the Union, added that employment law in the United Kingdom deterred people from reporting disease because “if a worker is deemed not to be able to do his job then he can be laid off” (Q 264).

- 3.11. For occupational asthma and contact dermatitis, the HSE therefore relies “quite heavily” on data produced from THOR network, run by the Centre for Occupational and Environmental Health at the University of Manchester (Q 58). The THOR network includes a number of occupational health surveillance schemes which collect information from occupational specialists who voluntarily report cases of work-related illness. Of relevance to allergic disorders are the EPIDERM project, which monitors occupational skin disorders, and the Surveillance of Work-related and Occupational Respiratory Disease (SWORD) scheme, which collects information about respiratory disorders.
- 3.12. However, some witnesses criticised the accuracy of the THOR data. Professor David Gawkrödger, Honorary Treasurer, British Association of Dermatologists, told us that there was “a core group of reporters who report every single case of occupational skin disease that they see” but another sampling group only reported for one month every year. He added that “you only have to have suspicion” that an allergen is involved to report it, and pointed out that verification by occupational allergen testing was not required. Furthermore, general practitioners (GPs) were “not educated sufficiently” to recognise occupational skin disease, so the numbers produced by the THOR schemes were “an estimate not a firm figure” (Q 635) because, as Professor Newman Taylor pointed out, “only about 12 per cent of the workforce” can access an occupational physician (Q 265). The BOHRF felt that their “voluntary” nature also accounted for the under-reporting of these schemes (p 340).
- 3.13. Mr Patrick McDonald, Chief Scientist and Director of the Corporate Science and Analytical Services Directorate at the HSE, described an extension to the THOR scheme, THOR GP, which is “based on GPs who have had occupational health training” (Q 58). But Dr David Orton, Consultant Dermatologist, Amersham Hospital, Buckinghamshire pointed out that allergens causing dermatitis were “not only found at work” but also in “people’s domestic environments” so diagnosis required expert interpretation of the results of skin tests. Similarly, Professor Newman Taylor pointed out that investigations into occupational asthma also had to be carried out “in specialist centres” (Q 304). In an attempt to improve data capture, the HSE is contributing to two European Union (EU) working groups, the European Statistics of Accidents at Work project and the European Occupational Disease Statistics group, which are trying “to standardise the position for work-related illness and injury” (Q 66).

- 3.14. Professor Agius told us how the THOR schemes compensate for factors that lead to underreporting (Q 298), but described their funding as currently under threat. Although the GP reporting scheme had been granted HSE funding until November 2008, the specialist schemes were relying on reserve funds and charitable support. He noted that “the HSE provided us with a commitment in principle 10 months ago to fund specialist schemes for a further five years, but they tell us that they are under severe financial constraints and so far that commitment has not been made good into a contract, which we seriously need because we have good staff leaving” (Q 302).
- 3.15. Mr Ivan Lewis, Parliamentary Under Secretary of State for Care Services, told us that there were “ongoing contractual negotiations” (Q 836) to “guarantee funding of data collection within the THOR GP scheme until 31 December 2010 and the THOR Specialist scheme until 31 December 2011” (p 320). However, Professor Agius told us that the HSE’s latest offer would only fund around a quarter of the full economic costing. The University of Manchester had suggested another option to the HSE where “with their agreement, we could save money on extant work that we are doing for them and thus reduce our costs for the extension of the THOR schemes even further” but this would still leave a “substantial gap” (p 111).
- 3.16. **We welcome the involvement of the Health and Safety Executive in EU working groups to standardise the collection of data on occupational illness. The use of common standards in the diagnosis of occupational allergic conditions would allow international comparisons of disease incidence, and enable the evaluation of disease reduction strategies. We recommend that the Health and Safety Executive should fund The Health and Occupation Reporting network with the full economic cost of its surveillance programmes, and we urge the Government to ensure support for this work in the future.**

## CHAPTER 4: THE EXTENT AND BURDEN OF ALLERGY IN THE UNITED KINGDOM

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### Introduction

- 4.1. Reports on allergy appear almost weekly in the media and the vast majority of the population either suffer, or know somebody who suffers, from an allergic condition. The true prevalence of allergy is unclear, partly because many reports tend to focus on a particular disease manifestation or population sub-group. Nevertheless, broad conclusions about the recent trends are evident and this chapter examines allergy prevalence within the United Kingdom and the rest of the world, the possible reasons for these trends, and the burden that allergic disorders cause.



**TABLE 2**  
**Useful sources of data on allergy prevalence**

Type of Source	Examples of Source	Data	Advantages and Disadvantages
Routinely collected clinical data: a) Hospital admissions and secondary care data	World Health Organization (WHO) Statistical Information System	Records the prevalence of various diseases and health problems worldwide, using many types of health records including death certificates and hospital records	These data do not provide a reliable assessment of allergic disease prevalence because allergic disorders are normally managed within outpatient departments or in the community. They do however offer an important insight into disease severity and burden
	Hospital Episode Statistics	A database of hospital admissions in England	
b) Primary care	Scottish Morbidity Record 1	The Information and Statistics Division, Scotland, collects information on in-patient and day-case episodes in Scottish hospitals	The information provided is often restricted due to patient confidentiality. GPRD and DIN are restricted by the cost of obtaining and analysing the data but have extensive detail. RCGP WRS is free but limited in the type of allergic conditions covered
	General Practice Research Database (GPRD)	Anonymised longitudinal records from selected general practices in the United Kingdom, collated by the MHRA	
	Doctors Independent Network (DIN)	Anonymised large United Kingdom GP database	
	Royal College of General Practitioners Weekly Returns Service (RCGP WRS)	Information on general practice consultations across England and Wales	
Prescribing Analysis and Cost	Details of the number and cost of prescriptions issued		

Type of Source	Examples of Source	Data	Advantages and Disadvantages
	Primary Care Clinical Informatics Unit, Aberdeen, Scotland	Information on consultations from a sample of general practices across Scotland	
	Practice Team Information, Scotland	Practice Team Information collects data from a sample of Scottish practices on patients' encounters with members of the practice team, including general practitioners, and practice and community nurses	
	Quality and Outcomes Framework, England and Scotland	These include quality indicators for asthma care. Data from the asthma register used for assessing quality outcomes can be used as a measure of prevalence	
Specifically commissioned by the Department of Health	QRESEARCH project conducted by the University of Nottingham	An analysis of the epidemiology of allergic disorders, based on data collected routinely from general practices	
Population based surveys	Health Survey for England	A series of annual surveys since 1991 conducted by the Department of Health on various health aspects. It covers asthma, hayfever and eczema periodically, but has not covered other allergic disorders	Population-based surveys capture a wide range of symptoms and are particularly useful when monitoring disease prevalence over a length of time at repeated intervals

Type of Source	Examples of Source	Data	Advantages and Disadvantages
	Scottish Health Survey	Consists of a series of three national surveys of the Scottish population conducted in 1995, 1998 and 2003 on various health aspects, commissioned by the Scottish Executive Health Department. The only relevant data these surveys provide is on asthma	However, they must include meaningful allergy-related questions which are worded in the same way in each language following translation
	European Community Respiratory Health Survey (ECRHS)	Data on the prevalence of allergic disease and low lung function in adults from 14 countries (mostly European). After the original ECRHS I survey, a follow-up survey, ECRHS II, began in 1998	
	International Study of Asthma and Allergies in Childhood (ISAAC)	Records the prevalence of asthma, allergic rhinitis and eczema in children worldwide, using questionnaires in three different phases	
Birth cohort	Avon Longitudinal Study of Parents And Children (ALSPAC)	Analysis of parents and children in the West of England to examine which biological, environmental and social factors contribute to health or disease. This forms part of the European Longitudinal Study of Pregnancy And Childhood (ELSPAC)	
	British 1958 birth cohort	The National Child Development Study is a longitudinal study which studies all the people born in England, Scotland and Wales in one week in March 1958	

Type of Source	Examples of Source	Data	Advantages and Disadvantages
	Isle of Wight Birth Cohort Study	A birth cohort study to examine asthma and allergy within the population of the Isle of Wight	
Mortality	National Statistics; General Register Office for Scotland	Routine data on numbers of deaths in the United Kingdom from death certificates. These can be used to calculate population based rates	Only useful for allergies in which there is a relatively high mortality
	World Health Organization	Collates global mortality data using the International Classification of Diseases	

### The prevalence of allergy in the last 50 years

- 4.2. Data produced by the sources listed in Table 2 show that the prevalence and incidence of allergic disease have markedly increased over the past 50 years. Professor Burney reported that “an increasing prevalence of asthma was first noted in studies of Birmingham school children, starting in the mid 1950s,” and since then, the prevalence of asthma and wheezing appears to have doubled “approximately every 14 years” until the mid 1990s (p 37). The trends for other atopic disorders such as hayfever and eczema are similar, although there is less information on these disorders.
- 4.3. In 2004 the scale of the “allergy epidemic” became apparent: 39 per cent of children and 30 per cent of adults had been diagnosed with one or more of asthma, eczema and hayfever; and 38 per cent of children and 45 per cent of adults had experienced symptoms of these disorders in the preceding 12 months.<sup>20</sup> The rate of change was demonstrated by the QRESEARCH study which showed that at the end of 2005, approximately one in nine people had a recorded diagnosis of “any allergic disease,” including any one of asthma, hayfever, eczema, anaphylaxis or peanut allergy. This figure represented a 27.7 per cent increase in prevalence over a four year period.<sup>21</sup>
- 4.4. However, there is some evidence to suggest that the incidence of certain allergic disorders may have reached a plateau or even declined in particular age groups since the 1990s. Professor Burney told us that the incidence in children appears to be “flattening off ... though this is not seen in all countries. In some places the prevalence is still going up, in some places it seems to be going down, so for the first time there is a rather mixed set of evidence” (Q 100). We examine the evidence for each disorder in turn.

#### *Allergic rhinitis*

- 4.5. The QRESEARCH study found that 3.3 million people in England have a recorded diagnosis of allergic rhinitis at some point in their life, and one person in every 135 of the population was diagnosed during 2005.<sup>22</sup> However, increases over the past five years have been relatively small: the ISAAC study found a slight increase in prevalence of rhinoconjunctivitis symptoms amongst the six to seven year old age group, and a decrease in 13–14 year olds over a period of approximately five years.<sup>23</sup>
- 4.6. Patients with allergic rhinitis may have seasonal and/or perennial symptoms, so distinguishing between the causes in epidemiological surveys is difficult. A recent study found a very high prevalence of seasonal allergic rhinitis (hayfever) across Western Europe, but concluded that it is frequently undiagnosed.<sup>24</sup> The World Health Organisation workgroup, Allergic Rhinitis

<sup>20</sup> Gupta et al., *Clinical and Experimental Allergy* 34, 2004, “Burden of allergic disease in the UK: secondary analyses of national databases,” pp 520–526.

<sup>21</sup> QRESEARCH and The Information Centre for health and social care, *Primary care epidemiology of allergic disorders: analysis using QRESEARCH database 2001–2006*, 2007, pp 69–70. (Hereafter referred to as QRESEARCH report).

<sup>22</sup> *op cit.* QRESEARCH report, pp 48–49.

<sup>23</sup> Asher et al., *The Lancet* 368, 2006, “Worldwide time trends in the prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in childhood: ISAAC Phases One and Three repeat multicountry cross-sectional surveys,” pp 733–743. (Hereafter referred to as “Worldwide time trends”).

<sup>24</sup> Bauchau and Durham, *European Respiratory Journal* 24, 2004, “Prevalence and rate of diagnosis of allergic rhinitis in Europe,” pp 758–764.

and its Impact on Asthma (ARIA), has therefore proposed classifying allergic rhinitis by whether symptoms are intermittent or persistent, in an attempt to improve the monitoring of the prevalence of rhinitis.<sup>25</sup>

### *Asthma*

- 4.7. According to QRESEARCH, an estimated 5.7 million people in England are affected by asthma, and one person in 192 in the population was newly diagnosed during 2005.<sup>26</sup> In 2006, the ISAAC Phase III study reported that the incidence of asthma symptoms had risen in six to seven year olds in the United Kingdom, from 18.4 per cent to 20.9 per cent over a period of approximately five years. The prevalence of asthma symptoms in 13 to 14 year olds was higher, at 24.7 per cent, but the incidence within this age group had actually decreased from 31 per cent.<sup>27</sup>
- 4.8. Dr Mark Rosenthal, a consultant respiratory paediatrician from the Royal Brompton Hospital, suggested that the prevalence of asthma had probably reached a plateau or was “possibly even falling” (Q 650). There has been a steady decline in child hospital admissions since 1990, and asthma related deaths in childhood remain uncommon.<sup>28</sup> The newly recorded incidence of asthma within primary care also decreased from 6.9 per 1000 person-years in 2001, to 5.22 per 1000 in 2005,<sup>29</sup> possibly due to a greater awareness of the disease and the availability of more effective treatments. However the allergy burden is unclear: Professor Burney pointed out that “there are a lot of other conditions that are probably not allergic which make people wheeze” (Q 98).

### *Anaphylaxis*

- 4.9. Hospital admissions due to anaphylactic shock rose seven-fold from 1990/01 to 2003/04.<sup>30</sup> During the 1990s, approximately 20 deaths each year were identified as having been caused by anaphylaxis, although this figure does not include additional undetected fatal reactions such as those to antibiotics, where an autopsy might only identify the infection for which the antibiotic was taken.<sup>31</sup> The Anaphylaxis Campaign also reported that the number of deaths due to food anaphylaxis was often underestimated “because of misdiagnosis or misreporting” (p 172). According to the UK fatal anaphylaxis register, for the period 1992–1998, around half the number of anaphylaxis deaths were due to “medical interventions such as drugs used in anaesthesia or injections for special X-ray investigations,” with the rest being caused by stings, foods or rare causes such as latex, hair dye or parasitic worms (p 180). The pattern of fatal anaphylaxis to food during this period was similar to that reported from 1999–2006, when 48 deaths occurred in people ranging from five months to 85 years old, caused by milk (6), peanuts (9), tree nuts (9), fish (1), shellfish (1), snail (1), sesame (1), egg (1),

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<sup>25</sup> See <http://www.whiar.org/>.

<sup>26</sup> *op cit.* QRESEARCH report, pp 32–33.

<sup>27</sup> *op cit.* “Worldwide time trends.”

<sup>28</sup> Office for National Statistics, *The Health of Children and Young People*, 2004, Chapter 7.

<sup>29</sup> *op cit.* QRESEARCH report, p 33.

<sup>30</sup> Gupta et al., *Thorax* 62, 2007, “Time trends in allergic disorders in the UK,” pp 91–96.

<sup>31</sup> Pumphrey, *Current Opinion in Allergy and Clinical Immunology* 4, 2004, “Anaphylaxis: can we tell who is at risk of a fatal reaction?”, pp 285–290.

tomatoes (1) and “uncertain” allergen deaths (18).<sup>32</sup> Data on anaphylaxis due to drugs, latex and exercise and other causes are incomplete.

#### *Allergy to insect venom*

- 4.10. Specific United Kingdom data are lacking but European studies estimate that about two per cent of the adult population has had a systemic reaction to bee or wasp stings.<sup>33</sup>

#### *Drug allergy*

- 4.11. Adverse reactions to drugs can be both allergic and non-allergic. Allergy and anaphylaxis to anaesthetic agents, antibiotics, aspirin and non-steroidal anti-inflammatory drugs are responsible for most drug hypersensitivity cases, but reliable data on the true incidence of these reactions is absent. Many people claim to be allergic to penicillin but only a small proportion will actually have that diagnosis verified by thorough investigation. One study showed that approximately only 14 per cent of patients with a convincing history of penicillin allergy were skin test positive.<sup>34</sup>

#### *Food allergy*

- 4.12. The Institute of Food Research (IFR) told us that the lack of agreement on the diagnosis of food allergy made estimates of the prevalence of food allergy “generally imprecise.” The greatest burden of food allergies is in children, with approximately “5–7 per cent of infants” experiencing an allergic reaction, although egg and milk allergies tend to resolve with age. Some food allergies persist and the IFR estimates that around “1–2 per cent of adults” suffer from a food allergy (p 286). Although the persistence of childhood allergy is unusual, once a food allergy is established in an adult it is rarely cured.<sup>35</sup>
- 4.13. The increase in peanut allergy has been extraordinary. QRESEARCH found a 117.3 per cent increase in the prevalence of peanut allergy from 2001 to 2005, and estimated that 25,700 people in England are affected. One in every 12,420 people was newly diagnosed during 2005.<sup>36</sup>
- 4.14. New food allergies are regularly being described, for example to fruits, vegetables, soya, sesame, mustard, chick pea and kiwi fruit (Chinese gooseberry), but the reasons for the prevalence and rising trends of these new allergies, including the oral allergy syndrome, are basically unknown. Professor Jonathan Hourihane, Professor of Paediatrics and Child Health, Cork University Hospital, pointed out that many of these new allergies appear to persist into adulthood to a greater extent, so in the future “we may see a hardcore of up to three per cent” of adults with serious allergies (Q 650).

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<sup>32</sup> Pumphrey and Gowland, *Journal of Allergy and Clinical Immunology* 119, 2007, “Further fatal allergic reactions to food in the United Kingdom 1999–2006,” pp 1018–1019.

<sup>33</sup> Fernandez et al., *Clinical Experimental Allergy* 29, 1999, “Epidemiological study of the prevalence of allergic reactions to Hymenoptera in a rural population in the Mediterranean area,” pp 1069–1074.

<sup>34</sup> Stember, *Allergy and Asthma Proceedings* 26, 2005, “Prevalence of skin test reactivity in patients with convincing, vague, and unacceptable histories of penicillin allergy,” pp 59–64.

<sup>35</sup> Moneret-Vautrin and Morisset, *Current Allergy and Asthma Reports* 5, 2005, “Adult Food Allergy,” pp 80–85.

<sup>36</sup> *op cit.* QRESEARCH report, pp 63–64.

*Oral allergy syndrome*

- 4.15. People with oral allergy syndrome typically suffer from at least two allergies: a food allergy to fruits, vegetables and/or certain nuts, as well as hayfever caused by tree or grass pollen allergy. A recent Danish study reported that approximately 30 per cent of pollen allergic adults also suffered from food allergies, particularly involving fruit or nuts.<sup>37</sup>

*Urticaria and angioedema*

- 4.16. Urticaria and angioedema are amongst the commonest problems referred to allergists. Some studies estimate that one in five of the population have urticaria at some point in their lifetime,<sup>38</sup> and hospital admission rates for urticaria more than doubled from 1990 to 2000. However, the rates for angioedema appeared unaltered.<sup>39</sup>

*Atopic dermatitis (atopic eczema)*

- 4.17. Eczema has steadily increased since the 1980s, and Professor John Harper, Professor of Paediatric Dermatology at Great Ormond Street Hospital, suggested the prevalence in children was between “10 to 15 per cent” but cited “some studies approaching 20 per cent” (Q 650). QRESEARCH estimated that 5.8 million people in England are affected by eczema and 1 in every 74 people was newly diagnosed in 2005.<sup>40</sup> Six to seven year olds in the United Kingdom have the highest incidence of eczema amongst the Western European countries surveyed in the ISAAC study, with the prevalence increasing from 13 per cent to 16 per cent over a period of approximately five years. However, just as with asthma, eczema saw a decrease from 14.7 per cent to 10.6 per cent in the 13–14 year old age group.<sup>41</sup>
- 4.18. Professor Gawkrödger estimated that “approximately 50 per cent” outgrew atopic eczema in their teens leaving around “10 per cent of adults” with atopic eczema “to a greater or lesser extent” (Q 612). Professor Harper added that “in a smaller percentage, maybe around one per cent, this is quite severe” (Q 650).

*Multiple allergies*

- 4.19. Asthma, eczema and allergic rhinitis often occur together; Professor Sheikh told us that “multiple allergic disorders also seem to be increasing” (Q 104). This comorbidity, or multiple allergic disease, often requires multiple referrals to different organ specialists. QRESEARCH defined patients with more than one of asthma, hayfever, eczema, anaphylaxis or peanut allergy, as having “multiple allergic disease.” It estimated that 2.3 million people in England suffered from multiple allergic disease, and that the prevalence rate had increased by 48.9 per cent between 2001 and 2005. In 2005, patients

<sup>37</sup> Osterballe et al., *Allergy* 60, 2005, “The clinical relevance of sensitization to pollen-related fruits and vegetables in unselected pollen-sensitized adults,” pp 218–225.

<sup>38</sup> Nettis et al., *British Journal of Dermatology* 148, 2003, “Clinical and aetiological aspects in urticaria and angio-oedema,” pp 501–506.

<sup>39</sup> *op cit.* Office for National Statistics, *The Health of Children and Young People*, 2004, Chapter 7.

<sup>40</sup> *op cit.* QRESEARCH report, pp 40–41.

<sup>41</sup> *op cit.* “Worldwide time trends.”



with multiple allergic disease consulted a GP 4.9 times per year, and a nurse 2.1 times per year on average.<sup>42</sup>

### *Sensitisation and allergy symptoms*

- 4.20. Allergic sensitisation (atopy) and allergic symptoms are not synonymous. Only a proportion of patients who are skin prick positive to allergens will actually exhibit symptoms. The development of disease symptoms therefore depends on a variety of factors.
- 4.21. Amongst adults born before 1970, recorded sensitisation rates increase over time, with increasing prevalence rates of allergic disease in each subsequent generation. This increase will probably continue in the future, but Professor Burney told us that “we do not have that information for children yet” as the ISAAC study only measured the prevalence of symptoms potentially attributable to allergy, rather than sensitisation (Q 100). It is likely that sensitisation levels amongst children will continue to rise in the future. As a result, the same will probably also be true of allergic disorders but, due to the lack of data, “there is less evidence” for this (Q 120). Therefore it is important that data on childhood sensitisation is collected, and that sensitised people are monitored to examine what happens in terms of disease in later life.
- 4.22. Information from children on sensitisation and symptoms is especially important and must be followed up to assess the progression of allergic diseases in order to predict workload. We recommend that future epidemiological studies measure not only the incidence of allergic symptoms, but also record the prevalence of confirmed allergic sensitisation.**

### *International comparisons*

- 4.23. Most of the information comparing asthma and allergy incidence around the world comes from ISAAC studies, a unique project which has attracted worldwide interest and unprecedented large scale participation. The increase in allergy and atopy in the United Kingdom has been mirrored in many other developed countries in Western Europe, the United States, Canada, Australia and New Zealand. However, developing countries in Africa and the Middle East still report a relatively low prevalence of allergy.
- 4.24. ISAAC Phase One demonstrated large variations worldwide in the prevalence of asthma symptoms in children, with the highest prevalences reported from centres in the United Kingdom, New Zealand, Australia and the Republic of Ireland, followed by most centres in North, Central, and South America. The lowest prevalences were from centres in Eastern Europe, Indonesia, Greece, China, Taiwan, India, and Ethiopia. Both rhinoconjunctivitis and atopic eczema, of which the United Kingdom has the second highest prevalence, were reported from across the globe but for both these disorders, centres reporting low prevalence rates tended to also encounter little asthma.<sup>43</sup>

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<sup>42</sup> *op cit.* QRESEARCH report, pp 78–80.

<sup>43</sup> Beasley et al., *The Lancet* 351, 1998, “Worldwide variation in prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and atopic eczema: ISAAC,” pp 1225–1232.

- 4.25. ISAAC Phase Two studies focused on smaller projects. Comparisons of the United Kingdom (which exhibited a high rate of asthma) and Albania (with a low rate of asthma) showed that the degree of allergic sensitisation in these two countries was actually similar,<sup>44</sup> highlighting the role that the environment must play in allergy disease development. The ISAAC Phase Three study examined variations over time in asthma, allergic rhinoconjunctivitis and atopic eczema worldwide, and assessed the relationship with environmental data.<sup>45</sup>
- 4.26. Although allergy in adults is less well documented than in children, Professor Burney told us that the examination of specific IgE from the blood of adults in Europe showed that the United Kingdom had some of the highest prevalences of sensitisation, and “correspondingly higher levels of disease.” In addition, the ECRHS revealed that the only countries with similar, or higher, rates of sensitisation to the United Kingdom “were other English speaking places like Australia and New Zealand” (Q 108).

### Possible explanations for the increase in prevalence

- 4.27. At our seminar, Professor William Cookson from Imperial College London, explained that the development of an allergic disorder depends on both genetic and environmental factors. Genetic factors are complex: several genetic variations can predispose different individuals to the same disorder, and any one allergy can manifest itself in a variety of ways, which differ from one patient to another.
- 4.28. But Professor Adnan Custovic, Professor of Allergy at the University of Manchester, noted that the genetic background of the population had not changed significantly enough in the last 50 years to explain the dramatic rise in the prevalence of allergy. The increase in allergic conditions over the second half of the 20th century must therefore be due to environmental factors.<sup>46</sup> Whereas the genetic mechanisms of allergic reactions are relatively well understood, no consensus has yet been reached regarding the degree to which various environmental factors are responsible for the dramatic increase in allergy prevalence.
- 4.29. Some of the environmental factors which may specifically contribute to the development or exacerbation of allergic disorders include:
- The “hygiene hypothesis” as supported by the protective effects of early childhood infection, bowel flora, farming and the proximity to animals, and a “traditional” lifestyle
  - Diet
  - Allergen exposure
  - Atmospheric Pollution
  - Tobacco smoke.

We now consider each of these in turn.

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<sup>44</sup> Priftanji et al., *The Lancet* 358, 2001, “Asthma and allergy in Albania and the UK,” pp 1426–1427.

<sup>45</sup> *op cit.* “Worldwide time trends.”

<sup>46</sup> Note of the seminar, Appendix 4.

*The hygiene hypothesis*

- 4.30. In the 1980s, David Strachan put forward the “hygiene hypothesis” in which he proposed that children exposed to poor hygiene and increased infections in early life had lower levels of IgE sensitisation and allergic disease. Some studies have since suggested that a large number of siblings increases the probability that a child will suffer infections, and that repeated infection during early childhood makes the immune system more robust and less prone to the development of allergies.<sup>47</sup>
- 4.31. Other studies generally supported this hypothesis. Disorders associated with lack of hygiene, such as enteric infections, appear to protect against allergy.<sup>48</sup> As allergic disorders are relatively rare in Africa, parasitic infections were purported to play a protective role, but studies have been inconclusive and parasites probably, as Professor Burney told us “have a different effect and on a different part” of the allergic mechanism, so do not form part of the “hygiene hypothesis” (Q 112).
- 4.32. It has also been suggested that particular patterns of bowel flora, observed in people living in underdeveloped or unhygienic conditions, are allergy-protective. For example, marked differences in bowel flora have been found between genetically similar allergic and non-allergic infants living in Sweden (an area with a high prevalence of allergic conditions) and Estonia (an area with a low prevalence).<sup>49</sup> Professor Sheikh told us that giving babies “lactobacillus and bacteria in early life, perhaps in combination with other approaches” might halt the progression of allergic disorders (Q 98) and in one study probiotics have been shown to reduce the development of atopic eczema.<sup>50</sup>
- 4.33. Population studies have been particularly interesting. Before the unification of Germany, poorer children in the East exhibited lower prevalences of allergic disease than those in the West. But following unification, and the changes in environment that resulted from this, the frequencies of hayfever and atopic sensitisation in these children rose significantly.<sup>51</sup>
- 4.34. Support for the “hygiene hypothesis” has also been obtained from studies examining the importance of traditional rural lifestyles, particularly where pregnant women and children live in close proximity to animals, as children brought up on farms have been shown to have a lower prevalence of IgE sensitisation, wheeze, asthma and hayfever than those brought up in the countryside but not on farms.<sup>52</sup> Children who regularly drink raw,

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<sup>47</sup> Strachan, *British Medical Journal* 299, 1989, “Hay fever, hygiene and household size,” pp1259–1260.

<sup>48</sup> Matricardi et al., *British Medical Journal* 314, 1997, “Cross sectional retrospective study of prevalence of atopy among Italian military students with antibodies against hepatitis A virus,” pp 999–1003 and Matricardi et al., *British Medical Journal* 320, 2000, “Exposure to foodborne and orofecal microbes versus airborne viruses in relation to atopy and allergic asthma: epidemiological study,” pp 412–417.

<sup>49</sup> Björkstén et al., *Clinical and Experimental Allergy* 29, 1999, “The intestinal microflora in allergic Estonian and Swedish 2-year-old children,” pp 342–346.

<sup>50</sup> Kalliomäki et al., *The Lancet* 357, 2001, “Probiotics in primary prevention of atopic disease: a randomised placebo-controlled trial,” pp 1076–1079.

<sup>51</sup> von Mutius et al., *The Lancet* 351, 1998, “Increasing prevalence of hay fever and atopy among children in Leipzig, East Germany,” pp 862–866.

<sup>52</sup> Braun-Fahrlander et al., *The New England Journal of Medicine* 347, 2002, “Environmental exposure to endotoxin and its relation to asthma in school-age children,” pp 869–877 and Riedler et al., *The Lancet* 358, 2001, “Exposure to farming in early life and development of asthma and allergy: a cross-sectional survey,” pp 1129–1133.

unpasteurised milk in the first year of life and are exposed to other bacteria seem to be less likely to develop allergies.<sup>53</sup>

- 4.35. Support for the allergy-protective effect of the traditional lifestyle has also come from studies on Steiner school children who follow an anthroposophic lifestyle. This lifestyle involves the minimal use of medications, delayed vaccinations, a lower use of antibiotics and paracetamol, and a diet consisting of organic or fermenting vegetables. Children following this way of life were shown to have a much lower rate of IgE sensitisation, asthma, hayfever and eczema than children attending non-Steiner schools in the same area.<sup>54</sup>
- 4.36. The “hygiene hypothesis” has stimulated much debate. However, the interventions designed to reverse the rising trends in allergy have not proved as successful as initially hoped. As Professor Harper told us “if you actually have children who are exposed to infection there is no evidence whatsoever that this reduces ... [their] risk of allergy or atopic dermatitis. In fact, there are many papers on infection in early life triggering eczema and asthma” (Q 654). So the hygiene hypothesis is far from the whole story.

### *Diet*

- 4.37. Diet during pregnancy and infancy is likely to play a role in developing allergic disease. Dr Graham Devereux, Consultant at the Department of Environmental and Occupational Medicine, University of Aberdeen, told us that “maternal ingestion of nutrients, particularly vitamin E, possibly vitamin D and even zinc” could confer protection against allergies in the child (Q 99). An increased risk of asthma and atopy also appears to be associated with a low intake of fruit, vegetables, fish, butter, dairy fat, antioxidants, magnesium and n-3 fatty acids, and a high intake of sodium, margarine and n-6 fatty acids.<sup>55</sup>
- 4.38. It is probable that a true window exists in early life where the role of nutrition in protection against atopic disease is critical. Professor Warner told us “exclusive breastfeeding for at least the first four months of life reduces the rates of early food allergy and eczema.” However, a longer-term protective effect on later allergic manifestations is less evident (Q 163).
- 4.39. The role that food allergen consumption plays during early life is still uncertain, although there has been some suggestion that early exposure to allergens such as peanuts may protect against allergy (a subject which will be explored further in Chapter 6).

### *Allergen exposure*

- 4.40. Epidemics of asthma have occurred in response to high levels of allergen in the air, supporting the theory that the rise in allergy is simply due to increased exposure to allergens. Such examples are the asthma epidemics in Barcelona associated with the dust of soybean particles created during

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<sup>53</sup> Schaub et al., *Journal of Allergy and Clinical Immunology* 117, 2006, “The many faces of the hygiene hypothesis,” pp 969–977.

<sup>54</sup> Flöistrup et al., *Journal of Allergy and Clinical Immunology* 117, 2006, “Allergic disease and sensitization in Steiner school children,” pp 59–66.

<sup>55</sup> Devereux, *Nature reviews: Immunology* 6, 2006, “The increase in the prevalence of asthma and allergy: food for thought,” pp 869–874.

unloading of soybean cargo at the docks,<sup>56</sup> and “thunderstorm asthma” which is caused by a massive concentration of pollen during a storm.<sup>57</sup>

- 4.41. However, allergy prevention is not simply a question of allergen avoidance. Measures which reduce the level of housedust mite, a known potent allergen, do not necessarily lead to a reduction in asthma symptoms.<sup>58</sup> To complicate the situation further, pet ownership might sometimes confer protection against allergies, as Professor Burney and Dr Devereux commented “children brought up with dogs have less sensitisation” and “cats are beneficial” (QQ 115, 117). This is possibly because pet products, including bacteria, may induce some form of immunological tolerance which is allergy-protective. Thus allergen exposure alone does not explain the increase in disease prevalence.

#### *Atmospheric pollution*

- 4.42. Some witnesses have suggested that the increase and change in pollution over the last 50 years is responsible for the increase in allergy incidence. Air pollution is a general term that covers a wide range of pollutants; whereas the infamous smog of the mid-20th century was largely the product of domestic coal burning, air pollution is now largely caused by vehicle emissions. The impact of such pollution upon allergic diseases will be explored further in Chapter 5.

#### *Tobacco smoke*

- 4.43. Smoking is causally related to chronic bronchitis and can aggravate asthma, but whether smoking in itself causes allergic asthma remains highly controversial. More respiratory illnesses and symptoms occur in children, particularly infants, exposed to their parents’ tobacco smoke<sup>59</sup> and workers exposed to second hand tobacco smoke in the workplace.<sup>60</sup> However, a specific link between smoking and allergy development has not yet been demonstrated.

#### *The allergy burden*

- 4.44. During the course of our inquiry we have received a great deal of evidence regarding the detrimental impact that allergic disorders can have upon patients’ quality of life. In addition to the obvious health effects, allergic disorders can make social interactions difficult as simple everyday activities such as eating out or going to work can pose a major health risk. On a national scale, the treatment of allergy patients forms a significant part of the work of the National Health Service, and the number of allergy-related work absences represents a large but hitherto unquantified cost to the economy.

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<sup>56</sup> Sunyer et al., *The Lancet* 28, 1989, “Case-control study of serum immunoglobulin-E antibodies reactive with soybean in epidemic asthma,” pp 179–182.

<sup>57</sup> Marks et al., *Thorax* 56, 2001, “Thunderstorm outflows preceding epidemics of asthma during spring and summer,” pp 468–471.

<sup>58</sup> Gøtzsche et al., *Cochrane Review*, 2007, “House dust mite control measures for asthma.”

<sup>59</sup> Cook and Strachan, *Thorax* 54, 1999, “Summary of health effects of parental smoking on the respiratory health of children and implications for research,” pp 357–366.

<sup>60</sup> Janson et al., *The Lancet* 358, 2001, “Effect of passive smoking on respiratory symptoms, bronchial responsiveness, lung function, and total serum IgE in the European Community Respiratory Health Survey: a cross-sectional study,” pp 2103–2109.

The social and economic impacts will always be difficult to quantify fully, but it is clear that the burden of allergic disorders in the United Kingdom is substantial.

### *The patient burden*

#### *Quality of life*

- 4.45. Allergies are not a minor inconvenience. Allergy UK surveyed 6,000 allergy sufferers and found that over 62 per cent of them felt their allergy “significantly affected all aspects of their lives” (p 293). The health burden of allergy is obvious. Allergies can cause a broad spectrum of disease with symptoms ranging from mildly irritating to extremely debilitating and even fatal.
- 4.46. At one end of the spectrum, allergic disorders such as hayfever may produce relatively mild symptoms such as sneezing, itchy eyes and a congested nose. Although unpleasant these symptoms can usually be managed with the appropriate use of antihistamines and topical nasal corticosteroids.<sup>61</sup> Hayfever symptoms disrupt children’s sleep and often impair their performance at school. Furthermore, the Royal National Throat, Nose and Ear Hospital added that for some patients, rhinitis can also exacerbate other allergic conditions such as “asthma, sinusitis, otitis media with effusion [inflammation in the ear], pharyngitis [inflammation of the throat], sleep problems, and vocal dysfunction” (p 285).
- 4.47. The effects of more severe conditions can be extremely debilitating and intense. In severe eczema the inflamed skin and itches can be exacerbated by materials such as wool or nylon, and triggered by vaccinations or stressful situations. Patients suffering from severe asthma feel suffocatingly breathless and their extreme wheeziness is often worsened by factors such as exercise, exposure to fumes or viral infection; sometimes an asthma attack can even lead to death.
- 4.48. At the extreme end of the allergic spectrum is anaphylaxis, a severe hypersensitive reaction. Although about one person in 1,000 would have a serious allergic reaction such as anaphylaxis, Dr Pumphrey pointed out that it will prove fatal in “fewer than one in a million” (p 180). However, the Royal College of Anaesthetists explained that a lack of oxygen to the brain or heart during an anaphylactic reaction could leave the patient with “permanent disabilities” such as poor memory and spatial awareness, loss of balance and permanent cardiac damage (p 350). For people who are allergic to foods, insect venom or drugs, and for patients at highest risk of anaphylaxis, the constant fear of suffering an extreme reaction can make living a normal life virtually impossible.
- 4.49. For drug allergic patients, receiving medical treatment can be extremely risky. Dr Pumphrey reported that approximately 10 deaths per year in the United Kingdom were caused by “drug anaphylaxis.” Although the least severe type of reaction may involve a rash, this can signify the potential for a more serious reaction, such as anaphylaxis, on future exposure to the drug. Therefore future treatment might require the use of alternative medication which may be more expensive, less effective or less safe (p 188). Surgery

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<sup>61</sup> *op cit.* Royal College of Physicians, *Allergy: the unmet need*, 2003, pp 45–46.

holds particular hazards because, as the Royal College of Anaesthetists reported, general anaesthetics involve a range of drugs and synthetic intravenous fluids, administered alongside “antibiotics, radiological contrast agents and drugs which manipulate blood coagulation,” all of which may precipitate anaphylaxis (p 350). When a reaction has occurred, identifying the culprit drug can be a complicated and time-consuming task which is not always performed.

- 4.50. For patients with food allergies to certain foods, the Food Standards Agency (FSA) commented that the ubiquitous use of defensive warnings, such as “may contain nuts”, on food labels limits the range of products available, causing shopping to take on average “39 per cent longer” and cost “11 per cent more” for peanut allergic consumers (p 152). Allergens are not listed at all on menus in catering establishments so when eating out, food allergic patients must take extra care to question staff about the ingredients used and the food preparation methods. The difficulties this causes can often make social interactions difficult, especially in teenagers and young adults who may not want to draw attention to their condition.<sup>62</sup> In addition, the IFR commented that a lack of frequent testing for food allergic patients may result in patients living with mitigation strategies such as food avoidance “which are no longer necessary” (p 287).
- 4.51. Therefore the risks encountered by allergy patients not only pose a risk to their health, but also make it difficult to live a normal life and place a strain on the general wellbeing of sufferers. This is especially apparent in children, where special care has to be taken whilst engaging in everyday activities such as playing outside or attending parties. The extent to which allergies can impair children’s quality of life was highlighted by a study in 2003 which showed that children with peanut allergy had higher anxiety levels and had their quality of life impaired to a greater extent than children suffering from insulin-dependent diabetes mellitus.<sup>63</sup>

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<sup>62</sup> Food Standards Agency, *Qualitative Research into the Information Needs of Teenagers with Food Allergy and Intolerance*, 2005, p.14.

<sup>63</sup> Avery et al., *Pediatric Allergy and Immunology* 14, 2003, “Assessment of quality of life in children with peanut allergy,” pp 378–382.

## BOX 2

### Asthma and its impacts

It is estimated that around 5.7 million people in England suffer from asthma,<sup>64</sup> and asthma and allergy are so closely interlinked that the majority of asthma cases are caused by an allergic mechanism. Asthma UK reported that “90 per cent of people with asthma tell us that their symptoms are triggered by dust and 79 per cent say their symptoms are triggered by pollen” (p 289). Other non-allergenic triggers such as tobacco smoke or air pollution can also exacerbate asthma symptoms, so for some patients it is almost impossible to avoid situations which may aggravate their condition. Although some asthma patients may present with an isolated cough, others suffer from wheezy breathlessness which can make even the simplest of everyday tasks impossible, and in some cases, an “asthma attack” can lead to death. Furthermore, people with asthma often also suffer from other allergic disorders such as rhinitis, eczema or food allergies, which produce additional burdensome symptoms, and further restrictions in daily life.

The burden of asthma in the population should not be underestimated. Written evidence from Asthma UK included an account from one asthma sufferer, who reported that: “My quality of life is non-existent. I know this may sound extreme to a lot of people but I would be prepared to lose an arm and a leg if it meant my asthma would go away. I face daily restrictions in every aspect of my life ... I find it really difficult to do day-to-day activities on my own—I don’t have enough breath to push a trolley around the supermarket ... I’m not allowed on an aeroplane and it’s impossible for me to get travel insurance. Winter is also a problem for me—I can’t go outside because the cold air can set off my asthma” (p 291).

Although allergy is a major trigger of asthma attacks, most asthma hospital admissions and deaths are caused by infection or unknown causes, rather than allergy. The DH reported that there were 924 asthma deaths in England in 2004, with most of these occurring in “older people and may not be directly attributed to uncontrolled allergy.”<sup>65</sup> The costs of asthma to the nation are phenomenal, with Asthma UK estimating that “over 12.7 million working days are lost each year as a result of asthma, and that the total annual cost of asthma to the economy is £2.3 billion” (p 289). Despite much research, the exact causes of asthma are still unknown, so it is unlikely that this burden will be reduced any time in the near future.

#### *Allergy at school*

- 4.52. At school, children with allergies face a plethora of risks. When children enter the school environment they face a new range of situations and people whose activities can potentially put them at risk. There may be “casual contact” with allergens such as nut proteins, which are easily transferred between surfaces by little hands. Although any resulting reaction is usually mild to moderate, Ms Mandy East, National Co-ordinator of the Anaphylaxis Campaign, spoke of the high levels of anxiety this can create in children with poor understanding of their allergy, and explained that it “can lead to a different type of reaction like a panic attack” (Q 447). Although

<sup>64</sup> *op cit.* QRESEARCH report, p 32.

<sup>65</sup> *op cit.* DH A Review of services for allergy, p 17.



minimal, the possibility of anaphylaxis at school therefore not only causes a great deal of worry to children and parents, but also places a burden on the school, as the Department for Education and Skills (DfES) said that it is “a head teacher’s responsibility to ask themselves whether the cadre of teachers and support staff they have” is able to deal with such an emergency (Q 74).

- 4.53. Schoolchildren generally feel the need to conform, but an allergic condition can be stigmatising. For example Ms Sarah Day, from the Royal College of Nursing, spoke of the “image” concerns of children with severe eczema (Q 693), and Mrs Margaret Cox, Chief Executive of the National Eczema Society, noted that management of eczema required “frequent topical treatment” which may be difficult to fit into the school routine (Q 620). The Children’s Dermatology Life Quality Index, co-ordinated by the Department of Dermatology at the Wales College of Medicine, calculates the impact of dermatological diseases using questionnaires completed by children themselves. This has shown the devastating impact which severe eczema may have on many domains of a child’s life, causing their quality of life to be severely undermined. The questionnaires have shown that severe eczema can produce embarrassment, cause a lack of sleep and impair children’s performance at school.<sup>66</sup>
- 4.54. These children underperform academically for several reasons. They have high rates of absence, as shown by a survey in the late 1990s which showed that 38 per cent of children had missed school in the preceding year due to asthma alone (p 3), impaired concentration due to “poor sleeping patterns” (p 293), and those with hayfever may drop a whole grade in their summer exams compared to their winter mocks.<sup>67</sup> The burden of their conditions can therefore have a long-term impact upon their future educational opportunities and career.
- 4.55. Dr Paul Harrison, Director at the Institute for Environment and Health at Cranfield University, added that children with asthma or allergic rhinitis are “likely to opt out of sporting activities” so their fitness and wellbeing are also affected (Q 459). In extreme cases, food allergic children may even have to face bullying from their peers: Ms East told us that “children have had nuts put into their blazer pockets and into their lunch boxes to try to contaminate their food” (Q 446).

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<sup>66</sup> Fivenson et al., *Journal of Managed Care Pharmacy* 8, 2002, “The Effect of Atopic Dermatitis on Total Burden of Illness and Quality of Life on Adults and Children in a Large Managed Care Organization,” pp 333–342.

<sup>67</sup> Walker et al., *Clinical and Experimental Allergy* 36, 2006, “Hayfever is associated with a significant detrimental impact on exam performance in UK teenagers: case-control study,” p 1209.

*Allergy at work*

**TABLE 3**  
**Diseases commonly caused by workplace chemical or biological allergens<sup>68</sup>**

Disease	Common Cause	Workers commonly at risk
Respiratory conditions (Asthma, Rhinitis, Extrinsic allergic alveolitis)	A wide variety of chemicals	Spray painters Chemical process workers
	Flour dust	Bakers
	Animal waste products	Laboratory and Animal workers
Allergic contact dermatitis	Hair dye, solvents and perfumes	Hairdressers and beauticians
	Metals: Nickel Chromates and Cobalt	Die casters (who mould metal) Fashion industry workers Cement workers, Leather workers
	Rubber: Latex	Carpet fitters, Car mechanics Healthcare workers
	Resins: Epoxy Acrylic	Construction workers Printers, Dental personnel
	Cutting oils	Machine tool operators
	Formaldehyde: Glues, Fibreboards Cleaning products Solvents Embalming fluid	Construction workers Cleaners Dry cleaners Undertakers
	Plants	Florists and horticulturists
	Wood	Carpenters

4.56. Workplace allergens can trigger or exacerbate allergic diseases (Table 3) and the only way to reduce the symptoms of disease is through avoidance. However, even complete avoidance of the allergy aggravating factor may not necessarily result in complete remission of signs and symptoms, as the HSE reported that respiratory allergies may “persist once they have become established” (p 9). Where avoidance is not possible, patients may be advised to give up their job yet Professor Newman Taylor told us that a lack of retraining schemes meant that “between a third and a half of cases of occupational asthma remain unemployed three to five years later” (Q 280).

<sup>68</sup> Information from QQ 264–265 and *Rook’s Textbook of Dermatology, 7th Edition*, edited by Burns, Breathnach, Cox and Griffiths, Blackwell, 2004.

### *The national burden*

#### *National Health Service*

- 4.57. The DH estimated that in England approximately 3 million people each year consult their GP with conditions related to allergy, costing £211 to £311 million. In 2004/05 there were also 70,000 admissions to hospitals in England for asthma and over 3,000 patients were admitted to hospital with anaphylaxis. These admissions contribute to a total cost of allergy treatment in secondary care of around £56 to £83 million per annum.<sup>69</sup>
- 4.58. On top of this are the costs of prescriptions. In 2004, 72.6 million community prescriptions for allergy-related conditions were issued in England. This included 38.9 million prescriptions for asthma, 4.5 million for nasal allergies and 20.4 million prescriptions for eczema. This amounted to a cost of £0.9 billion, which represented 11 per cent of the total drugs budget, compared to 27 per cent spent on cardiovascular diseases and 8 per cent on gastro-intestinal disorders.<sup>70</sup> In addition, there are hidden costs, such as patients with allergies to penicillin being treated with expensive alternative antibiotics; if the drug allergy is wrongly diagnosed, such extra expense is incurred unnecessarily.

#### *Occupational allergic diseases*

- 4.59. The precise burden of occupational allergic disorders is not known, partly because it is impossible to quantify the true cost of absence from work or lowered productivity caused by an illness, and because the data on occupational allergic disease are poor (see Chapter 3).
- 4.60. What is known is that allergy-related occupational illnesses represent a significant economic burden. A survey of self-reported work-related illness estimated that in the year 2004/05, of all the people that had worked, 137,000 reported breathing or lung problems that were “caused or made worse by work,” and 29,000 reported that their work had caused or made their skin conditions worse. For that same year, 791,000 full-time equivalent working days were lost due to breathing or lung problems, out of a total 28.4 million days lost due to all occupational illnesses (pp 9–10). Even if patients remain at work, then the symptoms of their disorders are likely to reduce productivity causing a substantial economic burden. For example, new cases of occupational asthma alone in 2003 were estimated to cost society £71.7 – £100.1 million.<sup>71</sup> However, not all of these disorders have an allergic origin. Dr Orton told us that in fact the majority of dermatitis cases seen were actually “irritant contact dermatitis” rather than “allergic contact dermatitis” (Q267).
- 4.61. The HSE claims that the best available statistics indicate occupational allergic disease is now declining. According to voluntary reporting by physicians from 2003–2005, “around 570 new cases of occupational asthma” were reported per annum, compared to about 1,000 new cases annually in the mid 1990s. The incidence of occupational contact dermatitis had also

<sup>69</sup> *op cit.* DH *A review of services for allergy*, pp. 28, 31.

<sup>70</sup> *op cit.* DH *A review of services for allergy*, p.28.

<sup>71</sup> Health and Safety Executive, *The true cost of occupational asthma in Great Britain*, 2006, p.iii.

decreased from around “3,000–4,000 new cases per year during the late 1990s” to around 2,400 per year (p 9).

- 4.62. The Industrial Injuries Disablement Benefit (IIDB) provides compensation to those whose occupational allergy causes chronic symptoms and a minimum degree of disability after 90 days, irrespective of whether the individual is working or not (p 12 and Q 69). The Department for Work and Pensions (DWP) could not identify the exact level of benefit paid to allergy patients, but estimated that in March 2003, there were approximately 130 IIDB payments for extrinsic allergic alveolitis, 2,150 claims for allergic rhinitis, 4,230 for asthma and 3,880 for contact dermatitis (p 35).

## CHAPTER 5: ALLERGY AND OUR ENVIRONMENT

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### Introduction

- 5.1. As discussed in Chapter 4, allergic disorders in the United Kingdom have now reached epidemic proportions. The environment in which we live, work and learn contributes to both the development (inception) of allergic conditions and the exacerbation of symptoms in those with established allergic disease. This Chapter examines the environmental conditions and everyday situations which may influence allergic disease, the ways in which these factors can be managed, and how the general public is educated about allergy.

### The indoor environment

#### *The role of the indoor environment in allergic disease*

- 5.2. The extent to which the indoor environment impacts upon allergic diseases is uncertain. Asthma UK reported to us that poor housing could severely exacerbate asthma symptoms and that “damp conditions in particular allow common triggers for allergic asthma such as mould and housedust mites to thrive” (p 290). Professor Burney agreed that “there is quite good evidence that damp housing with mould causes problems, particularly for patients with asthma” (Q 130).
- 5.3. On the other hand, Professor Warner commented that “everybody lived in damp, cold housing one hundred years ago and there was much less allergy,” so poor housing conditions are not necessarily the cause of increasing sensitisation rates (Q 130). Dr Harrison noted, “the fact that somebody is sensitised to housedust mite does not mean, however, that they will show any clinical symptoms” (Q 467). As the development of an allergic condition is not a single, linear process, it is therefore difficult to establish a direct relationship between a particular level of exposure and the development of symptoms.
- 5.4. In general terms, the points were summed up by Professor Warner, who told us that “once you are allergic and have a problem there is no doubt that living in damp, cold housing makes your problems worse” (Q 130). Although the indoor environment may not itself trigger the development of allergy, some factors may exacerbate symptoms and add to the burden for those already suffering from allergic disorders. It is important to note, as Dr Harrison reminded us, that responses to environmental conditions, for instance the presence of moulds, can also be “sensitivities or intolerances” rather than purely allergic responses” (Q 472).
- 5.5. In addition to biological triggers, various chemicals within the air can also exacerbate the symptoms of asthma. Professor Burney explained that high levels of nitrogen oxides from gas cooking can have “an adverse effect on patients with asthma” (Q 130) and the Department for Communities and Local Government (DCLG) reported that “as there are probably hundreds (or thousands) of chemical compounds in indoor air, it is not easy to identify the main ones that adversely effect health” (p 14). Professor Warner suggested that “by having energy saving we are creating tight homes which are increasing the levels of nitrogen oxides and volatile organic compounds

which might be contributing to enhancing sensitisation in the first place. If we are going to have tighter housing for energy saving then we need proper ventilation systems with heat exchangers in order to achieve benefit for everybody” (Q 130).

*Regulation of the indoor environment*

- 5.6. Building Regulations aim to protect the health and safety of people in and around new buildings, but without reference to the occupants. In 2000 the legal requirement of Part F stated that “there shall be adequate means of ventilation provided for people in the building.” The accompanying technical guidance (revised in 2006) takes account of energy costs, recommending “between about 0.5 and one air changes per hour,” which the DCLG considered sufficient to control the levels of “moisture (to prevent mould growth), nitrogen dioxide, carbon monoxide, total volatile organic compounds and bio-effluents” (p 14).
- 5.7. The Housing Health and Safety Rating System covers existing housing and allows statutory enforcement of 29 health and safety hazards. Ms Anne Kirkham, from the DCLG, explained that relevant hazards included “damp and mould growth ... fuel-combustion products where the impact of nitrogen dioxide and sulphur dioxide is also referenced ... volatile organic compounds and the potential allergic responses, and ... domestic hygiene, pests and refuse” (Q 83). Thus where an asthmatic person lives in a damp dwelling, “the authority might require a landlord to take more comprehensive or urgent action than it would require in a case involving an able-bodied and less susceptible occupier” (p 15).
- 5.8. The DCLG contributed to research by Gaia Architects to develop guidance on affordable low-allergy housing and in 2003, 14 affordable low-allergy homes were developed for the Fairfield Housing Cooperative in Perth, Scotland. Fairfield Director, Mr Grant Ager, explained that these homes tested methods to minimise allergy triggers and, by lowering the moisture within the buildings, decreased housedust mite breeding rates. This was done by installing “various ventilation strategies ... mechanical heat recovery methods” and “breathing walls” and “breathing ceilings” to control the flow of air and level of water vapour (Q 489). The low allergy houses were also built to what Mr Ager called “non-toxic specifications,” with wooden windows instead of Upvc, and which avoided the use of formaldehyde, paints containing volatile organic compounds (VOCs), and gas for cooking or heating (QQ 489, 491).
- 5.9. Mr Ager commented that residents “with asthma felt better and their reliance on inhalers and other medication decreased,” but he also conceded that the sample was not big enough to give a conclusive answer (Q 492). Interestingly, during our visit to Germany, Professor Torsten Zuberbier, Head of the Department of Dermatology and Allergy, Universitätsmedizin Berlin, told us that the European Centre for Allergy Research Foundation granted “quality seals” to hotels with pet-free levels and “allergy-free” rooms, which often had wooden floors, dust mite protective bed covers and other features designed to reduce allergen exposure.<sup>72</sup>

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<sup>72</sup> Note of the visit to Germany, Appendix 6.

- 5.10. Professor Warner warned that low allergy housing was very unlikely to “prevent allergy” (Q 132), and Professor Burney commented that “trials of dust mite avoidance in the home have been unsuccessful in reducing asthma symptoms and, paradoxically, may even lead to an increase in allergic sensitisation in children” (p 39). We therefore conclude that there is insufficient evidence to justify the inclusion of low-allergy measures within the Building Regulations at the current time. However, the EAACI noted that interventional studies had often focused on single interventions, “such as provision of mite-proof bedding in adults” and called for “further controlled trials involving multiple interventions ... particularly in children” (p 67).
- 5.11. Chemical pollutants, such as VOCs, have been implicated as possible cofactors in allergy development. Dr Harrison wanted newer “low VOC emitting paints” to be used in the construction industry. He told us that some companies had started to label the emission levels of their products voluntarily and called for “the use of symbols and labels as well as possibly other regulations to encourage the manufacture and use of low emitting products” (Q 488).
- 5.12. To assess this, the research by Gaia Architects included “a feasibility study of introducing a scheme for labelling construction products according to ... VOCs emissions” (p 15). However there also appeared to be a lack of availability of low pollutant-emitting building materials, as Mr Ager reported that it was “hard to source materials in the building centre” for the 14 low-allergy houses, and that the materials used could also be quite expensive (Q 482).
- 5.13. Asthma UK postulated that “public health policy and housing policy should be well co-ordinated at all levels of Government, and more attention could be paid to the improvement of housing conditions with specific regard to allergy and asthma” (p 290). Mr John Bromley, Head of National Service Reviews at the DH, told us that the Department was involved in “discussions with the trade bodies, the Construction Confederation and the National Federation of Builders” and that it was being proactive in examining how different forms of construction impacted upon inhabitants’ health (Q 855). The Department of Trade and Industry was also co-ordinating a strategy for sustainable construction between Government departments and industry, and Mr Lewis suggested that there would be an “opportunity to influence what will come out of that” (Q 854, p 321).
- 5.14. **We recommend that the Department of Health should work with the Department for Communities and Local Government to support and encourage controlled trials involving multiple interventions, to examine the effect of ventilation, humidity and mite-reduction strategies on allergy development and control. As chemicals used in the construction industry may play a role in triggering symptoms in some allergic patients, further evaluation of their role is also required in order to inform procurement policies.**

### **The outdoor environment**

#### *Allergy and outdoor pollutants*

- 5.15. A number of substances are known to exacerbate respiratory allergic diseases—particularly asthma—including ozone, nitrogen dioxide, sulphur dioxide and particulate matter (see Table 4).

**TABLE 4**  
**Outdoor pollutants and their impact upon allergy**

Pollutant	Source	Known health risks
Diesel exhaust particles (DEPs)	Diesel engines	DEPs can act as non-specific airway irritants and generate oxidants which have a deleterious effect on cells lining the airways. DEPs can also trigger the production of cytokines, chemokines, immunoglobulins and other proteins involved in the allergic response, suggesting that they may also be linked to the inception of allergic disease. People who live in high traffic areas with a high concentration of DEPs have been shown to suffer from enhanced allergic reactions compared to people who live in rural areas, suggesting that there may be an interaction between air pollution and allergens in the air <sup>73</sup>
Particulate matter	Particulate matter is a complex mixture of acids, organic chemicals, metals and small particles of dust or soil. It can originate from natural sources such as dust storms and vegetation, or from industry and vehicle emissions of all types	Exposure to particulate matter over a long period of time might inhibit lung development. <sup>74</sup> Studies have demonstrated that children living in polluted areas have poorer lung function and are more at risk of developing asthma during adolescence <sup>75</sup>
Ozone (O <sub>3</sub> )	An oxidant pollutant generated at ground level by photochemical reactions involving ultraviolet radiation acting upon atmospheric mixtures of nitrogen dioxide and hydrocarbons from vehicle emissions	The inhalation of ozone at high concentrations has been linked to an increased risk of asthma development; ozone can increase airway inflammation and responsiveness and can also potentiate the airway response to inhaled allergens. <sup>76</sup> Children are at greatest risk during the summer, when ozone levels are highest and children spend a greater proportion of time outdoors

<sup>73</sup> Riedl and Diaz-Sanchez, *Journal of Allergy and Clinical Immunology* 115, 2005, "Biology of diesel exhaust effects on respiratory function," pp 221–228.

<sup>74</sup> Horak et al., *European Respiratory Journal* 19, 2002, "Particulate matter and lung function growth in children: a 3-yr follow-up study in Austrian schoolchildren," pp 838–845.

<sup>75</sup> Islam et al., *Thorax*, 2007, "The Relationship between Air Pollution, Lung Function and Asthma in Adolescents," published online <http://thorax.bmj.com/cgi/content/abstract/thx.2007.078964v1>.

<sup>76</sup> Bernstein et al., *Journal of Allergy and Clinical Immunology* 114, 2004, "Health effects of air pollution," pp 1116–1123.



Pollutant	Source	Known health risks
Nitrogen dioxide (NO <sub>2</sub> )	An oxidant pollutant, largely produced by vehicle exhaust, although it is also produced by power plants and other sources that burn fossil fuels	Not usually associated with notable changes in bronchial function in asthmatic patients, but one study suggested that exposure to nitrogen dioxide increased the prevalence of asthma and rhinitis <sup>77</sup>
Sulphur dioxide (SO <sub>2</sub> )	Largely produced by industry, following the combustion of coal and oil	In asthmatic patients sulphur dioxide can induce acute constriction of the bronchi at concentrations much lower than those required to cause constriction in healthy individuals. <sup>78</sup> There is also evidence to suggest that sulphur dioxide can induce the development of asthma <sup>79</sup>

5.16. During the course of our inquiry we did not explore the role of the outdoor environment in great detail; the role it plays in allergy development is still controversial. The DH reported that in 1995 its Committee on the Medical Effects of Air Pollutants (COMEAP) published a report on *Asthma and Outdoor Air Pollution*, which concluded “with regard to the initiation of asthma ... most of the available evidence did not support a causative role for outdoor air pollution. While it was accepted that exposure to air pollutants could produce a worsening of symptoms in those suffering from asthma, factors other than air pollution (diet and the role of infections, for instance) were more likely to have had more of an impact on the number of people suffering from asthma” (p 2).

5.17. However, since this report was produced a growing body of evidence has been published which suggests that urbanization, with its high levels of vehicle emissions, is linked to the rising frequency of respiratory allergic diseases observed in most industrialized countries (see Table 4). Professor Custovic told us that there is “an interesting body of evidence mounting on the potential role of outdoor air pollution ... for example the way potentially diesel exhaust particles actually affect pollen grains and pollen allergens making them more allergenic” (Q 478). On our visit to Germany, Professor Heidrun Behrendt, Head, Centre for Allergy and Environment, Technical University Munich, told us that two groups of chemicals, polycyclic aromatic hydrocarbons (PAHs) and VOCs, could act as mediators in the allergic mechanism. Both PAHs and VOCs contain a carbonaceous core to which other compounds, such as diesel exhaust particles, can bind and when this complex in turn interacts with pollen, it acts as a potent sensitiser in allergy development.<sup>80</sup>

<sup>77</sup> de Marco et al., *Clinical Experimental Allergy* 32, 2002, “The impact of climate and traffic-related NO<sub>2</sub> on the prevalence of asthma and allergic rhinitis in Italy,” pp 1405–1412.

<sup>78</sup> Sheppard et al., *American Review of Respiratory Disease* 122, 1980, “Lower threshold and greater bronchomotor responsiveness of asthmatic subjects to sulfur dioxide,” pp 873–878.

<sup>79</sup> Andersson et al., *European Respiratory Journal* 27, 2006, “Incidence of asthma among workers exposed to sulphur dioxide and other irritant gases,” pp 720–725.

<sup>80</sup> Note of the visit to Germany, Appendix 6.

- 5.18. Air pollutants may therefore effect both the development and exacerbation of allergic conditions. COMEAP's report, *Does Air Pollution Cause Asthma?* is due to be published in 2008 (p 2).

*Allergy and climate change*

- 5.19. An important and topical question is whether climate change is increasing the abundance of allergens in the air, such as pollen, which in turn may result in a greater incidence or severity of allergic diseases. There is some evidence that increased atmospheric levels of carbon dioxide fuel the growth of a species of poison ivy, a common cause of contact sensitivity in the United States.<sup>81</sup> In addition, over the last few years global warming has produced milder winters and earlier springs in the United Kingdom, which in turn have caused grass and tree pollen seasons to begin earlier.<sup>82</sup> Looking ahead, research has shown that when ragweed plants are grown under carbon dioxide levels predicted for the future, the plants produce significantly more pollen than when grown under today's conditions.<sup>83</sup>
- 5.20. Thus if levels of atmospheric carbon dioxide continue to rise, this may have serious consequences for allergy sufferers. With the current international interest in climate change, we therefore felt unable to ignore the consequences that climate change policies may have on allergy. Indeed, the impact of climate change and air pollution on all health is so significant that the Department for Environment, Food and Rural Affairs (Defra) has estimated that the "health effects associated with improved air quality typically account for 80 per cent of the total value of the ancillary effects of greenhouse gas mitigation policies."<sup>84</sup>
- 5.21. A report produced recently for Defra, *Air Quality and Climate Change: A UK perspective*, recommended that policies to tackle climate change and air pollution needed to be developed together. It noted that "the Government develops policies to safeguard human health and protect sensitive ecosystems by improving air quality. The Government also develops policies to reduce emissions of pollutants in order to limit climate change. These policies currently operate independently. There are, however, many linkages between the two types of pollution. The pollutants may have common emission sources and some pollutants affect both climate change and human health."<sup>85</sup>
- 5.22. As climate change and air pollution may significantly impact upon the development of allergic disease, we support the thrust of the recommendations in the report, *Air Quality and Climate Change: A UK perspective*. We recommend that when developing policies for industry, transport or housing, the Government should take account**

<sup>81</sup> Mohan et al., *Proceedings of the National Academy of Sciences of the United States of America* 103, 2006, "Biomass and toxicity responses of poison ivy (*Toxicodendron radicans*) to elevated atmospheric CO<sub>2</sub>," pp 9086–9089.

<sup>82</sup> Gilmour et al., *Environmental Health Perspectives* 114, 2006, "How Exposure to Environmental Tobacco Smoke, Outdoor Air Pollutants, and Increased Pollen Burdens Influences the Incidence of Asthma," pp 627–633.

<sup>83</sup> Rogers et al., *Environmental Health Perspectives* 114, 2006, "Interaction of the Onset of Spring and Elevated Atmospheric CO<sub>2</sub> on Ragweed (*Ambrosia artemisiifolia* L.) Pollen Production" pp 865–869.

<sup>84</sup> Department for Environment, Food and Rural Affairs, *Ancillary Effects of Green House Gas Mitigation Policies*, 2002, p 7.

<sup>85</sup> Air Quality Expert Group, *Air Quality and Climate Change: A UK Perspective, Summary*, 2007, Introduction.

## **of the interlinkages between air quality, climate change and human health.**

### **Allergy in the school environment**

- 5.23. In Chapter 4, we outlined the burden that allergic disorders can place upon children at school. The school exam season in the early summer months coincides with the period of high pollen counts, so the examination performance of hayfever sufferers can be severely impaired not only by their symptoms<sup>86</sup> but also, as Professor Custovic noted, by the effects of “sedating antihistamines” which may be taken. He concluded that hayfever could therefore “affect the long term prospects ... of quite a substantial proportion of our children” (Q 458), and the Royal College of Paediatrics and Child Health added that this could result in “reduced income” for these individuals (p 117).
- 5.24. Mr Chris Wells, Deputy Director for Special Educational Needs and Disability, DfES, told us that “the extent to which universities or schools make sure that they use well ventilated rooms, not right by a source of pollen ... is a local issue which I cannot regulate for” (Q 82). But other witnesses felt that this issue should be addressed centrally. Ms Joy Winks, Chair of the School Nurses Forum, Royal College of Nursing, argued that “in some areas a child will be allowed to sit an exam at a different time or consideration will be taken of the fact that they have taken medication and in another area that does not happen. There is no consistency and I think that is the major problem” (Q 695). We feel that school nurses should play a role in ensuring that children are not given sedative antihistamines as a first-line therapy for hayfever.
- 5.25. As Mr Wells noted, the structure of the school year is based upon centuries of history (Q 81). It would not be practical to suggest an alteration of the examination timetable purely to benefit hayfever sufferers, especially as there are also many other non-allergic conditions which can impair children’s examination performances. However, we note Mr Wells’s comment that “young people do have the right to particular support if they have a condition which is going to seriously affect their likely performance” (Q 82). In light of the large number of children who suffer from hayfever, and the significant impact this can have upon their performance at school, the DfES does not appear to be addressing this issue sufficiently.

### **KEY RECOMMENDATION**

- 5.26. **We recommend that the Department for Children, Schools and Families should review the clinical care that hayfever sufferers receive at school, and should reassess the way in which they are supported throughout the examination season. The Department for Children, Schools and Families should also ensure that the provisions made by different schools are fair and consistent.**
- 5.27. In Chapter 4, we also noted that concern has been raised regarding the risks that food allergic children face within the school environment. The Anaphylaxis Campaign has “never been of the opinion that you should ban

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<sup>86</sup> Walker et al., *Clinical and Experimental Allergy* 36, 2006, “Hayfever is associated with a significant detrimental impact on exam performance in UK teenagers: case-control study,” p 1209.

all nuts and all major [food] allergens in schools,” but has expressed particular concern about the Government’s recent “Transforming School Food” initiative which recommended that school vending machines should sell nuts and seeds. This contradicts the policy of many schools, especially primary and pre-schools, which “do not have nuts in school deliberately” and ask parents not to send nut, milk or egg products in with packed lunches. Secondary school children are more independent and have control of their own money so “a lot of these snack products will be provided through vending machines” where no advice is provided (Q 446, p 175).

- 5.28. We accept Mr Wells’s general observation that “you cannot ban everything that could give rise to a shock.” He commented that parents should “ensure the school understands that the child has ... [an] allergy,” and felt it was crucial that staff knew how to deal with that allergy appropriately (QQ 75–76). This made it all the more disappointing to receive evidence that allergies were poorly managed within the school environment. Mr Wells commented that “any nurse who administers an immunisation in a school setting will receive anaphylaxis update training on an annual basis” (Q 71). However, a questionnaire study of schools within the Severn area, conducted by the Anaphylaxis Campaign, showed that “44 per cent of the schools with an allergic pupil either did not have staff trained to administer medication or declined to respond to the questionnaire.” Another study, conducted in the Nottingham area, identified “gaps in training for both school nurses and school staff ... particularly for midday supervisors” (p 174).
- 5.29. Mr Lewis told us that “most school nurses are employed by Primary Care Trusts ... [who] have responsibility for their training,” but where a school employs the nurse directly, then the school “has a responsibility to secure adequate training” (Q 872). However, representatives from the School Nurses Forum of the Royal College of Nursing told us of funding problems in both the state and independent sector so “virtually across the nation at the moment school nurses are not being allowed to go on training ... places have been cut” (Q 703). In 2006 the Anaphylaxis Campaign piloted a training programme for school nurses and planned to extend this training nationally in 2007–08 subject to “funding becoming available” (p 174). But as Ms Winks noted, it is likely “there will not be a nurse on site in the majority of the mainstream schools” when an anaphylactic emergency occurs (Q 699), so teachers and other staff must also know how to deal with allergic children.
- 5.30. The Government have made some progress in this area and in 2005 the DH and DfES jointly issued a guidance document named *Managing Medicines in Schools and Early Years Settings*. This sets out a framework to support children with medical needs and explains the responsibilities at every level from governors and staff to parents and carers. It recommends that an “individual health care plan” should be drawn up in consultation with the parents, child, general practitioner and staff, which details the medication the child should have in school, when it should be administered and by whom.<sup>87</sup>
- 5.31. The individual care plans assume that teachers and other school staff can deal with children’s conditions and administer certain medications, but concern has been raised about the way in which this is assessed. Mr Wells felt it was the responsibility of the head teacher (Q 74) but Ms Winks told us that the head teacher “would not have the knowledge or the skill to be able to

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<sup>87</sup> DH and DfES, *Managing Medicines in Schools and Early Years Settings*, 2005.

say that people are adequately trained.” Head teachers therefore had to work “in partnership with somebody from the NHS” (Q 726), which might prove difficult when there is such a limited number of school nurses.

- 5.32. Finally, part of the problem in managing allergic disorders in schools stems from the fact that children themselves generally have a poor understanding of the conditions. An Australian programme used peer-group educators to teach children about asthma, using games, videos, worksheets or songs, and found it resulted in “an improvement in self reported quality of life in adolescents with asthma” and “a lower number of reported asthma attacks and school absenteeism.”<sup>88</sup>
- 5.33. **We support the use of individual care plans for children with medical needs, as described in the Government guidance *Managing Medicines in Schools and Early Years Settings*. However, we are concerned that many teachers and support staff within schools are not appropriately educated in how to deal with allergic emergencies. We recommend that the Department for Children, Schools and Families should audit the level of allergy training these staff receive, and should take urgent remedial action to improve this training where required.**
- 5.34. An example of where staff education is paramount is the administration of adrenaline autoinjectors (such as Epipens or Anapens). Adrenaline autoinjectors are a prescription-only medicine, specific to each child. Ms Winks was in agreement with the DfES which said that if a child’s healthcare plan “identifies that a child carries (or one is held at the school for) an Epipen or adrenaline shot treatment, then there is no reason why the teacher should not deliver it” (QQ 72, 714).
- 5.35. However, there has been debate regarding the number of autoinjectors prescribed to children. Dr Rosenthal suggested that adrenaline autoinjectors were overprescribed, saying “of countless prescriptions I have written over the last 12 years for such devices only one has ever been used” (p 253). Ms Winks, a school nurse in Sheffield for 15 years, added that although there were 70,000 school children in Sheffield, “I have never known one used” (QQ 702, 716–717). But Professor Hourihane disagreed, stating that all peanut allergic children should carry an autoinjector and that just to provide for peanut allergic children “we would need to increase the number of Epipens by a factor of more than six.” He stressed the need for these children to socialise normally “with the extra caution that comes with an appropriate adrenaline kit. We do not want them to ever have to use it but we want them to have it available if they ever have to use it” (Q 674).
- 5.36. Furthermore, the Anaphylaxis Campaign suggested that it would be useful for schools to keep a stock so that “the generic autoinjector, held by the school, would be available for any child who may need a second dose” (p 179). However, the DfES did not support this idea because teachers “would not have the judgment” to discern whether this treatment was required (Q 72). The Royal College of Nursing agreed that schools should not be given this responsibility (p 271). Nevertheless, Mr Lewis was prepared to review the situation and “make some decisions about what is appropriate” (Q 871).

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<sup>88</sup> Shah et al., *British Medical Journal* 322, 2001, “Effect of peer led programme for asthma education in adolescents: cluster randomised controlled trial,” (pp 583–587).

- 5.37. **We are concerned about the lack of clear guidance regarding the administration of autoinjectors to children with anaphylactic shock in the school environment, and recommend that the Government should review the case for schools holding one or two generic autoinjectors.**

### Allergy in the workplace

#### *The causes of occupational allergic diseases*

- 5.38. The HSE reported to us that “chemicals and biological agents used in or arising from work activities can cause the same allergic diseases, and by the same mechanisms, as those in the more general environment” (p 8). The most common agents are shown in Table 3.
- 5.39. According to the HSE, the most commonly reported respiratory condition is occupational asthma, although “rhinitis and extrinsic allergic alveolitis (EAA) are also important” (p 8). The BOHRF noted that surveillance schemes most commonly received reports of occupational asthma from “paint sprayers, bakers and pastry makers, nurses, chemical workers, animal handlers, welders, food processing workers and timber workers” (p 339). It appears that a significant proportion of occupational asthma cases will have an allergic basis as Professor Newman Taylor told us, “hypersensitivity induced (or allergic) asthma occurs considerably more frequently than irritant induced asthma” (p 92).
- 5.40. The HSE added that “by far the most common type of work-related skin allergy is allergic contact dermatitis” (p 8). Dr Orton told us that occupational dermatological conditions were most commonly seen in “healthcare workers and hairdressers” as well as workers exposed to “sensitisers in the plastics industry and the construction industry” (Q 264). However, when estimating the incidence of occupational allergic disorders amongst different occupations, it is important to consider the number of workers within each industry. Professor Agius pointed out that although clinicians tended to see many cases of dermatitis reported from healthcare workers, “they constitute a large proportion of the working population and if we took their denominator into account then the risk amongst, say, hairdressers and beauticians is about 10 times higher than the risk amongst healthcare workers” (Q 264).
- 5.41. The extent to which the occupational agent plays a role in the development of disease, differs for each disorder. Both the BOHRF and HSE made the point that “the risk of sensitisation and occupational asthma is increased by higher exposure” to the occupational agent, although the risk of occupational asthma is increased by the presence of “atopy (in the case of high molecular weight allergens); smoking (low molecular weight allergens); and a particular genotype.” In contrast, extrinsic allergic alveolitis is “most often due to a work exposure,” is not associated with atopy, is less readily associated with specific genotypes and its risk appears to be reduced with smoking. Less is known about the development of occupational skin disease, but it is thought that “an individual with atopic dermatitis may be more prone to skin allergy and skin irritation in later life” (pp 8–9, 339).

*Strategies to prevent occupational allergic diseases*

- 5.42. Although it is difficult to estimate the true number of people who suffer from occupational allergic disorders (see Chapter 3), the prevalence and accompanying burden of occupational allergic conditions has a significant impact upon individual workers and the economy as a whole. The most reliable estimates suggest that the incidence of occupational allergic conditions may be on the decline (para 4.61).
- 5.43. Unfortunately the general trend of a decline in incidence is not universal across all occupational allergic diseases. Professor Newman Taylor reported that cases of occupational asthma “attributable to isocyanates is now less and the increase in the number of cases caused by latex allergy has decreased since the widespread use of low protein non-powdered rubber gloves. However, a similar decline has not occurred in the number of cases attributed to flour in bakery workers” (p 92).
- 5.44. The HSE reported that under the Control of Substances Hazardous to Health 2002 (as amended) Regulations (COSHH), employers must prevent or control exposure to harmful substances, and “all employees exposed, or liable to be exposed, to a substance that may cause occupational asthma or severe dermatitis should be under suitable health surveillance” (p 13).
- 5.45. To enhance the effectiveness of the COSHH regulations, the HSE said it was providing industry with free “task-specific COSHH guidance sheets tailored to a wide range of businesses and employees” (p 13). However, Mr Miguel felt that the COSHH regulations were “procedurally fine” but “identifying the sensitiser” in complex allergy cases could be difficult, and the guidance was too “generic” so did not necessarily help employers (Q 275). New EU regulations—Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)—require manufacturers and importers of chemicals to provide safety information on substances and to manage their risks safely.<sup>89</sup> Mr Miguel felt that REACH might identify sensitisers in these materials if combined with existing COSHH legislation and “backed up further by UK legislation” (QQ 275, 277).
- 5.46. Dangerous chemicals are covered by the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002, which require the supplier to “identify the hazards of the chemical, give information about the hazards to their customers and package the chemical safely” but as there was room for improvement, the HSE was “working with suppliers to achieve this.” In 2005, specific legislation addressed skin allergens in the workplace, restricting the marketing and use of chromium (VI) in cement which “will have a very significant impact on the incidence of chromium-related skin allergy in workers exposed to cement” (p 13).
- 5.47. There is a limit to what can be achieved through regulation alone and past experience has shown that simple control measures can make a significant difference to the incidence of disease. For example, Professor Newman Taylor told us that latex allergy problems amongst healthcare workers had been caused by “the powder which the protein from the rubber was absorbing;” the use of gloves with no powder and a low protein content had essentially eliminated the problem. However such a simple solution was not always available for other occupational allergies. For instance, many animal

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<sup>89</sup> See [http://ec.europa.eu/environment/chemicals/reach/reach\\_intro.htm](http://ec.europa.eu/environment/chemicals/reach/reach_intro.htm).

handlers in laboratories develop allergy to proteins in animal urine, but neither these proteins or the animals can be encapsulated to prevent exposure. Instead, it is necessary to find ways to “prevent the urine deposited on the dust in the cage getting into the air and being inhaled” (Q 273).

- 5.48. In the words of Professor Newman Taylor, the prevention of occupational allergies is made harder by the fact that the structure of industry in the United Kingdom is changing “from manufacturing to service, with smaller workforces, smaller factories and more self-employed people.” Whereas big companies might employ “occupational health physicians and safety advisors” to implement safety advice, it is more difficult to ensure safe working practices within businesses such as the “local hairdresser” (Q 273). In fact, the BOHRF noted that “only one in eight of the UK workforce has access to comprehensive occupational health support” (p 341). The key is therefore to raise awareness of occupational allergic conditions and to review the incentives for employers to ensure that “it is in their interests to ensure safe working conditions” (Q 273).
- 5.49. A number of HSE strategies have been developed to tackle the prevalence of occupational allergies. Occupational asthma and allergic contact dermatitis are priorities within its “Disease Reduction Programme” which aims, from a 2004 baseline, to reduce the incidence of these diseases by 10 per cent by 2008 (p 11). Mr Miguel noted the importance of running campaigns “in combination with the workforce through trade unions and employers” and so commended the Disease Reduction Programme Board which has been established to bring together “trade unions, employers” and “medical people” (Q 273).
- 5.50. More specifically, Mr Steve Coldrick, Head of the Disease Reduction Programme at the HSE, told us about the first “National Hairdressers’ Day” in 2006, which had been organised to decrease dermatitis and change attitudes (Q 63). He told us that as part of the programme, “local authority environmental health officers ... [were] visiting about 20,000 hairdressers over the coming year” to demonstrate “the use of gloves and moisturising cream ... but later in the programme we will be turning to enforcement” (Q 64). But Professor Agius doubted “the extent to which education alone” would help and felt that efforts should be made to regulate “at the highest level ... what manufacturers produce and what employers expect by way of work practices” (Q 275).
- 5.51. Initiatives to tackle occupational respiratory conditions include the HSE’s establishment of an Asthma Project Board with “representatives from unions, industry, an asthma charity and health professionals.” This aims to share information and reduce the incidence of occupational asthma by 30 per cent by 2010 compared with the 2000 baseline (p 11). The HSE, in partnership with Asthma UK and others, has produced a 10-step workplace charter to reduce asthma in the workplace,<sup>90</sup> and has also supported BOHRF to produce guidelines on occupational asthma. BOHRF described this work as the “world’s first evidence based guidelines for occupational asthma hence the UK is seen as a world leader in this area along with Canada, France and Spain” (p 340).

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<sup>90</sup> Asthma UK, *Asthma at Work—Your Charter*, 2004.



- 5.52. The HSE has a planned “programme of evaluation” which will assess how its policies and advice have lowered the prevalence of occupational allergic conditions (p 11); although figures are not yet available, it is probably fair to assume that the work of the Health and Safety Executive has played a significant part.
- 5.53. **We welcome the educational work of the Health and Safety Executive to raise awareness and decrease the risk of occupational allergic disorders amongst employers and staff, and would like to see this work developed. Once allergy centres have been developed (Chapter 9), we recommend that the HSE should liaise with the occupational allergy specialist in each centre to inform its policies and develop strategies to prevent occupational allergic disorders.**

*Managing occupational allergic diseases*

- 5.54. The BOHRF point to strong evidence that “the symptoms and functional impairment of occupational asthma caused by various agents may persist for many years after avoidance of further exposure to the causative agent” (p 339). This was reinforced by the HSE, which noted that those with prolonged exposure and more severe disease before diagnosis were likely to have a “poorer prognosis.” In extrinsic allergic alveolitis, “irreversible fibrosis—scarring—of the lung” can develop, so even complete removal of the exposure will not lead to complete remission, although improvement may be seen over a number of years. Workers with skin allergy also need to avoid exposure to “control the progression of the disease and prevent the reoccurrence of symptoms” (p 9). However, Dr Orton added that “persistent post-occupational dermatitis” could sometimes occur where dermatitis persisted even after removal from the exposure (Q 280).
- 5.55. Diagnosis of occupational allergic conditions is often delayed due to a lack of education amongst general practitioners (Chapter 9), but once an occupational allergic condition is diagnosed, it is often necessary for the worker to give up their current occupation. As explained in paragraph 4.62, Industrial Injuries Disablement Benefit may be paid to workers, whether working or not, whose occupational allergic disorder causes chronic symptoms and a minimum degree of disability for over 90 days. However, this scheme provides benefits for all industrial illnesses in a uniform manner and may not necessarily be the best way to help people suffering from occupational allergic conditions.
- 5.56. Professor Newman Taylor noted that “if you can identify the disease sufficiently early there is the potential for it to resolve completely” (Q 280). However, it means that the worker will have to find alternative employment which does not involve exposure to that allergen and “there is evidence from a number of studies that those who leave their job because of occupational asthma can remain out of work for several years” (p 93).
- 5.57. There is therefore a real need to provide the means to support retraining schemes for these workers. In January 2007, the DWP published a consultation document to review the Industrial Injuries Disablement Benefit scheme.<sup>91</sup> The consultation period ended in April 2007, and Ministers have asked for further information on possible options before holding a review

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<sup>91</sup> See [www.dwp.gov.uk/consultations/2007/](http://www.dwp.gov.uk/consultations/2007/).

seminar, which is planned for October 2007. Professor Newman Taylor felt that “the introduction of a benefit which could support and enable re-training of individuals unable to continue in their current job ... to enable them to remain in or return to work should be an important function of a reformed scheme” (p 93). Mr Miguel agreed with this and suggested that a “Government-led training initiative for people with allergies” should be established which involved job centres and employers working together (Q 289).

- 5.58. We are concerned that employees who are forced to leave work due to an occupational allergic disease can remain unemployed for long periods of time. We recommend that job centres should review the way they work with employers, to improve the way in which they can assist these workers to enter retraining schemes and find alternative employment.**

## CHAPTER 6: PUBLIC ADVICE AND INFORMATION

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### Introduction

- 6.1. In Chapter 4, we discussed the burdens of allergic conditions which can touch upon virtually every aspect of daily life. People with a confirmed allergy have to make important decisions when buying food, eating out, purchasing cosmetics or managing their environment. Others face decisions such as what to eat during pregnancy to decrease the chance of an allergic disease developing in the child. This Chapter looks at the range of information available to the general public, examines who produces it, and assesses the role that Government and charities play in providing this.

### Labelling

#### *Food*

- 6.2. For food allergic consumers, the decision of whether to buy a product or not can be a matter of life or death; when food is prepacked, the consumer has to rely on the labelling to inform purchasing. Food labelling is an area of EU competence, so United Kingdom legislation implements the relevant EU directives, and the FSA “negotiate[s] on behalf of the UK to ensure that EU legislation in this area addresses the needs of UK consumers and industry” (p 149).
- 6.3. In 2004, the European directive 2003/89/EC was implemented in England through the Food Labelling (Amendment) (England) (No.2) Regulations 2004, requiring food manufacturers to list 12 specified allergenic foods and their derivatives on product labels, regardless of their level of use.<sup>92</sup> This list comprised cereals containing gluten, crustaceans, eggs, fish, peanuts, soybeans, milk, nuts, celery, mustard, sesame seeds and sulphur dioxides or sulphites (at levels above 10mg/kg or 10mg/l). The directives are constantly being updated: in March 2005 a directive was agreed which temporarily exempted certain ingredients derived from these foods on the basis that they were no longer allergenic, and in 2006 a further directive extended the list of foods to include molluscs and lupin. Enforcement of labelling legislation falls to local authorities. If an allergen is incorrectly labelled, then “the affected food may be withdrawn or recalled and information is provided to enforcement bodies, and is also published on the [Food Standards] Agency’s website” (pp 152, 158).
- 6.4. However, this statutory legislation only regulates the labelling of allergens that are deliberately added to foods, and does not regulate the labelling of allergens that may unintentionally contaminate foods during production. Therefore many manufacturers voluntarily provide advisory information such as “may contain allergen X” (most commonly nuts), “made in a factory that also handles allergen X” or “not suitable for” warnings. The Anaphylaxis Campaign noted that “there is little consistency across the industry in how warnings are presented on food packets” (p 172), and the FSA has found that “many consumers find the variety of phrases used for such labelling

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<sup>92</sup> Statutory Instrument 2004 No. 2824. Similar legislation was also passed to implement this directive in Wales (S.I. 2004 No. 3022 (W.261), Scotland (S.I. 2004 No. 472) and Northern Ireland (S.I. 2004 No. 469).

confusing, and are concerned that they are overused, and many therefore ignore such warnings” (p 158). For the allergic consumer, the everyday task of buying food can therefore present a minefield of potential risks, and may be very costly and time consuming (p 152).

- 6.5. Although labelling needs to improve, the root of the problem lies in the actual production of food. Ms Andrea Martinez-Inchausti, Assistant Director of Food Policy at the British Retail Consortium (BRC), commented that a “warning should be the last resort and that is the basis on which our members operate. We strongly believe that a warning should not be a substitute for controls or for good practice ... the most important part is to identify where cross-contamination occurs and once that is identified to set up control levels to try to minimise it.” A good example of this had been seen within the chocolate industry. Simply by changing the order in which products were produced, so that plain chocolate was made before milk chocolate, manufacturers had “significantly reduced the risk of cross-contamination of milk on the plain chocolate” (Q 405).
- 6.6. The FSA has recognised that labelling is confusing. Its comprehensive “allergy action plan” is backed up by its strategic plan for 2005–10, which includes a high level objective “to develop appropriate policies and standards to help ensure safety and choice for food allergic and food intolerant consumers” (p 169). In 2006 the Agency produced *Guidance on Allergen Management and Consumer Information*, in partnership with the Anaphylaxis Campaign, the BRC, the Food and Drink Federation and the Local Authorities Coordinators of Regulatory Services (LACORS). This advises food businesses about possible allergen contamination during the production of prepacked foods, and how to reduce or eliminate these risks, so that advisory warning labels reflect the risk of contamination. To reduce confusion on food product labels, the guidance also advises the use of only two simple phrases: “may contain X” or “not suitable for someone with X allergy.”<sup>93</sup>
- 6.7. The FSA has also provided a grant to the Anaphylaxis Campaign to develop the United Kingdom’s “first certification programme to enable food companies to ensure optimum allergen control” which invites the food industry to participate on a voluntary basis (p 172). Mrs Hazel Gowland, who works with the FSA and the Anaphylaxis Campaign to provide allergen training for businesses, highlighted the financial pressures on manufacturers who need to keep production “as cheap and simple as possible,” often running production lines “night and day.” By contrast, lowering the risks of contamination required “separation, segregation, protection [and] limits (i.e. changes of uniform, controls of air, lots of extra hand washing and so on),” so to minimise contamination, businesses therefore always had to make a “compromise” (Q 448). The British Society for Ecological Medicine suggested that “incentives” should be provided for manufacturers to eliminate peanut contamination (p 223).
- 6.8. The threshold at which a food allergen triggers a reaction varies from one person to another. However Mrs Sue Hattersley, Head of the Food Allergy Branch at the FSA, told us that “the science at the moment is not yet able to let us set thresholds for the allergens in food.” Although it is hard to determine a “safe” level for the majority of the public, Mrs Hattersley told us

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<sup>93</sup> Food Standards Agency, *Guidance on Allergen Management and Consumer Information*, 2006, pp 28–29.

that the FSA was working with a European consortium on this matter because “we know it is something that does need to be done” (Q 397).

- 6.9. Furthermore, the EU is currently undertaking a fundamental review of all food labelling to rationalise the current legislation. This might provide an opportunity to improve the labelling of allergens. As part of this process, Miss Gill Fine, Director of Consumer Choice and Dietary Health at the FSA, told us that the FSA would be “consulting with a wide range of groups” to ensure that the information provided for consumers was “clear and easy to understand” (Q 410).
- 6.10. **Vague defensive warnings on labels for consumers with food allergy can lead to dangerous confusion and an unnecessary restriction of choice. We recommend that the Food Standards Agency should ensure the needs of food allergic consumers are clearly recognised during the review of food labelling legislation being undertaken by the European Union.**
- 6.11. **As sensitivities to various allergens vary widely, we believe that setting standardised threshold levels for package labelling is potentially dangerous for consumers with allergies. Instead, we recommend that food labels should clearly specify the amount of each allergen listed within the European Union directive, if it is contained within the products, and we endorse the Food Standards Agency’s initiative to discourage vague defensive warnings.**

#### *Cosmetics and hypoallergenic products*

- 6.12. The incidence of allergy to hair dye has increased significantly in the last 10 years, and one clinic recently reported a “doubling in frequency over six years.” This allergy is often caused by para-phenylenediamine (PPD), a potent allergen, used in many permanent hair dyes. A recent review commented that “a patient with contact allergy to a hair dye often presents with dermatitis on the face or around the hair line. Severe reactions also occur; some patients have had such gross facial swelling that they have been treated initially for angioedema and some have been admitted to hospital.”<sup>94</sup>
- 6.13. The use of cosmetic chemicals such as PPD is controlled in the United Kingdom by the Cosmetic Products (Safety) Regulations 2004, as amended.<sup>95</sup> In 2003, the European Commission agreed a strategy to establish a list of hair dye substances to be allowed for use and in 2006, the European Commission’s Scientific Committee on Consumer Products published a memorandum concerning “the fact that many of currently used hair dye substances are skin sensitisers and ... this property may be of concern for the health of consumers.”<sup>96</sup> The Commission now plans to extend its assessment “to minimise possible risks of allergic reactions caused by hair dyes.”<sup>97</sup>

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<sup>94</sup> McFadden et al, *British Medical Journal* 334, 2007, “Allergy to hair dye,” p 220.

<sup>95</sup> Statutory Instrument 2004 No. 2152.

<sup>96</sup> European Commission Scientific Committee on Consumer Products, *Memorandum on hair dye substances and their skin sensitising properties*, 2006, p 5.

<sup>97</sup> See:

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/439&type=HTML&aged=0&language=EN&guiLanguage=en>.

- 6.14. There are a host of chemicals used in fragrances and other cosmetics. The consequences of increasing exposure to these allergens are unknown, and Professor Gawkrödger noted that “it is particularly worrying in children’s products where children are being exposed now to a lot of fragrances and we do not know what is going to happen in, say, 10 years time” (Q 603).
- 6.15. For consumers who are already allergic, it is difficult to decide which products are safe to use due to a lack of meaningful terminology used on packaging. In the words of Mrs Cox “the terms ‘hypoallergenic’ and ‘dermatologically tested’ for somebody who has an allergic skin disease are hugely misleading, and I can tell you from personal experience that you can put either on atopic skin and react massively” (Q 646). Professor Gawkrödger noted that “there is no regulation of the term ‘hypoallergenic’” and that when these products are examined, “I see a whole list of things which I know can cause allergy, so I am rather cynical about the label of ‘hypoallergenic’” (Q 645).
- 6.16. Cosmetic products are often tested on the skin of normal volunteers rather than the extensive animal testing that used to occur; hence the phrase “dermatologically tested.” By contrast, the allergenicity of a substance depends on an individual person’s response and their tendency to develop allergies. Mr Lewis pointed out that under the general Trade Descriptions Act 1968, “any description of a product by a manufacturer or a vendor must not be false or misleading, and this also applies to labelling.” However, he noted that enforcement of this with respect to cosmetics was likely to be difficult as “it is hard to believe that Local Authority Trading Standards Officers are marching around local retailers looking for this” (Q 844).
- 6.17. We contacted the Advertising Standards Authority (ASA) to ask how the advertisement of these products was regulated. The ASA administers three advertising standards codes, produced by two industry bodies, the Committee of Advertising Practice (CAP) and the Broadcast Committee of Advertising Practice (BCAP). The three standards codes are:
- The CAP British Code of Advertising, Sales Promotion and Direct Marketing (which relates to non-broadcast advertisements)
  - The BCAP TV Advertising Standards Code
  - The BCAP Radio Advertising Standards Code
- For non-broadcast advertising, the ASA enforces the Control of Misleading Advertisements Regulations 1988 (as amended), with the Office of Fair Trading acting “as a legal backstop.” For broadcast advertising, the ASA works with Ofcom, which acts as the legal backstop for regulating television and radio advertisements (p 325).
- 6.18. The Advertising Standards Authority reported that the codes “do not provide specific rules on allergy claims or ‘hypoallergenic’ and ‘dermatologically tested’” as “providing code rules on every conceivable advertising claim would render the Codes un-navigable and cumbersome.” However, the codes do include rules regarding the use of misleading advertising, and within the last five years the ASA has received complaints about allergy claims which have led to 24 published adjudications, “of which 19 were upheld fully or in part” (p 326).
- 6.19. As an example, in November 2006 the ASA published an adjudication regarding an advertisement for a silk-filled duvet, which claimed “because it

doesn't actually retain any moisture it means bed bugs can't actually live in here ... It's 100 per cent hypo-allergenic." BCAP staff had challenged whether the duvet could actually help asthma and eczema sufferers, and whether it was truly 100 per cent hypoallergenic. The ASA decided that there was no evidence to support these claims and that its hypoallergenic description was therefore misleading. As a result of the complaint being upheld, the ASA concluded that the advertisements "must not be shown again in their present form and the products should not be advertised without adequate substantiation for the claims made" (pp 333–335).

- 6.20. Other complaints had also been upheld, including complaints against air purifiers which claimed to clear the air of "pollutants, dust mites, cold and flu bugs, fungal spores, pet and animal dander, smoke, moulds" or which could "deactivate airborne mite allergens," as well against a washing machine which claimed to provide "allergy free washing" by minimising the residue of detergent left on clothes (pp 332, 335–336). The Advertising Standards Authority therefore plays an important role in regulating any allergenic claims made in advertising.
- 6.21. **The phrases "hypoallergenic" and "dermatologically tested" are almost meaningless, as they only demonstrate a low potential for the products to be a topical irritant. We recommend that such products should warn those with a tendency to allergy that they may still get a marked reaction to such products.**

#### **Eating out with a food allergy**

- 6.22. Most statutory food labelling legislation only applies to prepacked foods, so foods that are sold packaged for direct sale, or those sold loose, are exempt. The Anaphylaxis Campaign noted that "despite a growing awareness of food allergy, deaths are still occurring" and "eating out poses an even higher risk because of the complexities of food production in catering establishments, lack of knowledge among catering staff, food enforcement officers and allergic consumers alike, and the fact that allergic consumers do not have the benefit of an ingredient list to guide them" (pp 172–173). The IFR agreed with this, noting that with regard to industry "allergic consumers are at greatest risk from suffering an allergic reaction whilst eating in a restaurant" (p 288).
- 6.23. In an attempt to educate catering establishments about the dangers of allergen contamination, the FSA published advice for caterers on its website in 2004. The FSA also aims to produce guidance in autumn 2007 on allergen information for foods that are non-prepacked (p 158). But Dr Ian Leitch, a Chartered Environmental Health Practitioner, felt that allergen management should have a higher profile when caterers are trained, and noted that the lack of training was largely "due to the fact that enforcement officers themselves are on a very steep learning curve" (Q 422).
- 6.24. Mr Les Bailey, Food Policy Officer at LACORS, added that "local authority food enforcement officers, be they trading standards officers or environmental health officers, visit all 600,000 registered food businesses in the UK on a regular basis." They could therefore draw attention to the guidance and could identify the "situations where cross-contamination may occur" (Q 407).

- 6.25. However, a recent study of catering establishments in Northern Ireland showed that approximately one in five of the premises “provided meals which could possibly have triggered a fatal reaction in the purchaser,” that “most front of house staff did not check the allergen status of the meal with those doing the cooking” and that “most environmental health officers felt that they needed more training in the subject of food allergen control in commercial food premises.”<sup>98</sup> Dr Leitch warned that without adequate training everyone had “a false sense of security” (Q 407), and recommended a more practical approach to training enforcement officers “from a workshop perspective” to learn widely about the allergens and about “dealing with the customers as well” (Q 426).
- 6.26. In response, Mrs Hattersley said that the FSA had ensured that there was “an inclusion of food allergy in the food safety modules” of the national occupational standards for the hospitality sector (Q 423). She also described the FSA’s course on allergen management for enforcement officers, which had proved popular, so they were “rolling out more later on in the next financial year” (Q 430).
- 6.27. Many commercial organisations also provide training for environmental health officers and trading standards officers, including the Chartered Institute of Environmental Health (CIEH). The FSA noted that there was a “joint initiative between the Food Standards Agency Wales and CIEH Wales to raise awareness both of food allergy and intolerance issues with Welsh enforcement officers” (p 170). Mrs Hattersley added that once the courses are established, “what we want to do ... is to then talk to the general training providers, including perhaps the undergraduate syllabuses for environmental health officers so that we can start to introduce allergy at a very early stage of training. That is certainly something we want to look at in the coming year” (Q 432). The Anaphylaxis Campaign also felt this was important, reporting that “we believe that the long-term solution to addressing the problem of food allergy in the catering sector lies in compulsory training programmes in allergy for food enforcement officers” (p 173).

### KEY RECOMMENDATION

- 6.28. **It is imperative that environmental health officers, trading standards officers and catering workers are adequately and comprehensively trained in practical allergen management. We welcome the development of a training programme by the Food Standards Agency and recommend that the FSA should work with other training providers to produce consistent practical training courses of a high standard.**

### Educating food allergic consumers

- 6.29. Whatever measures are taken to minimise the risks of allergen contamination, ultimately some responsibility must lie with the allergic consumer. However, the social difficulties caused by having a food allergy can sometimes make sufferers reluctant to take the necessary precautions. This is especially apparent amongst teenagers. A recent report commissioned by the FSA concluded that food allergies in teenagers often made social

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<sup>98</sup> Leitch et al, *International Journal of Environmental Health Research* 15, 2005, “Food allergy: Gambling your life on a take-away meal,” pp 79–87.



interactions difficult and so “it is therefore not surprising that there was evidence that young people were more likely to assume or guess that a particular dish was OK, or take a chance, than were their parents.”<sup>99</sup> Other risk-taking behaviours reported by the FSA included “eating foods that carry ‘May Contain’ labelling, a reluctance to ask questions about the allergen content of foods, especially in restaurants, and not carrying their medication” (p 152).

- 6.30. The Anaphylaxis Campaign backed this up, and noted that almost all of the young people which attended their workshops “disregard ‘may contain’ warnings because they believe food companies are simply ‘covering their backs’ and that the hazard is not genuine” (p 172). The IFR also noted that teenagers “may not carry their adrenaline” and that young men “are at greater risk of not managing their food allergies adequately resulting in severe or even fatal reactions.” The IFR commented that “there is a real danger that consumers are being deluged with information but that this is not provided in a targeted and useful way” to the at-risk groups (p 288).
- 6.31. The FSA has made considerable efforts to raise awareness of allergies amongst the general population. It reported that it had a “consumer-facing website<sup>100</sup> that contains a section on food allergy and intolerance issues” which included information on food allergies, advice about buying products, and an “Ask an Expert” function. It had also produced a factsheet for food allergy sufferers which helped them “successfully avoid the foods to which they know they react,” and included information on understanding food labels and advice for when eating away from home” (p 153). Furthermore, Miss Fine said that the FSA was exploring new options to make consumers aware of mislabelling, including “an SMS texting initiative” for which allergic consumers could subscribe, to receive “immediate information” about labelling problems (Q 430).
- 6.32. The need to provide information regarding food allergies has been recognised internationally. The EU provided funding within its 5th and 6th Framework programmes to establish two research and information programmes, co-ordinated by the IFR. The EuroPrevall project aims to monitor the prevalence, basis and burden of food allergy across Europe, in addition to improving diagnostic methods, in order to improve patients’ quality of life.<sup>101</sup> The Informall project has been established to “promote the provision of visible, credible food allergy information sources to a wide variety of stakeholders, including general consumers, the agro-food industry ... allergic consumers, health professionals and regulators.”<sup>102</sup> It has also developed a searchable database<sup>103</sup> of allergenic foods which contains information such as the clinical symptoms of each allergy, the types of foods that allergens may be found in, and possible cross-reactions.
- 6.33. We commend the way in which the Food Standards Agency has collaborated with relevant stakeholders to address allergen contamination problems in both prepacked food, and food sold in catering establishments. The Agency

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<sup>99</sup> *op cit.* Food Standards Agency, *Qualitative Research into the Information Needs of Teenagers with Food Allergy and Intolerance*, 2005, p. 38.

<sup>100</sup> See [www.eatwell.gov.uk](http://www.eatwell.gov.uk).

<sup>101</sup> See <http://www.europrevall.org/>.

<sup>102</sup> See <http://www.informall.eu.com/default.htm>.

<sup>103</sup> See <http://foodallergens.ifr.ac.uk/>.

has made good progress in educating manufacturers, caterers, enforcement officers and allergic consumers about the dangers of allergen contamination in foods.

- 6.34. **Many teenagers and young adults with food allergies sometimes take dangerously high risks when buying food. We therefore recommend that the Department of Health, working with the Food Standards Agency, charities and others, should explore novel ways to educate young people about allergy and the prevention of anaphylaxis.**

### Managing the indoor environment

- 6.35. In Chapter 5 we discussed the role that the indoor environment may play in the development or exacerbation of allergic diseases, but Dr Harrison told us that “there is a limit to what can be achieved through the building regulations” (Q 482) as “the behaviour of the occupants has a large impact on the conditions inside a house” (Q 485). Mr Ager echoed this by saying that “you can have the cleanest house and controlled environment but when you walk in you pollute it immediately” (Q 485).
- 6.36. It is therefore important that the general public are given adequate advice about how to manage their indoor environment appropriately. For example, Dr Harrison added that housedust mites “like living in pillows and mattresses so there are very practical things that can be done to reduce exposure by eliminating or at least removing either the source or exposure to the source of allergens in those materials” (Q 468). Mr Ager added that very simple precautions such as “steam cleaning furniture, changing bedding, boiling bedding and the introduction of floors like linoleum and laminate flooring” might reduce the incidence of asthma attacks (Q 465).
- 6.37. It appears that the general public are not aware of the health hazards associated with mismanagement of the indoor environment, especially poor ventilation. Mr John Bryson, Chair of the Commission on Housing Renewal and Public Health, CIEH, told us that “in older housing quite often what you find is that there is double-glazing put in which seals out all the drafts,” so the dampness, the lack of ventilation and the increase in heat all provide the right growth conditions for housedust mites (Q 468). Dr Harrison agreed with this, noting that “even in more modern housing where ventilation is appropriately supplied people do not tend to like draughts and they will often stop up any ventilation bricks that they have in the home because they do not know that there is any dis-benefit of doing so” (Q 475).
- 6.38. In an attempt to improve information regarding the indoor environment, the DH has provided funding to the WHO to develop guidelines on indoor air quality (p 322). Furthermore, COMEAP, an advisory body which provides advice to Government bodies on matters concerning the health effects of air pollutants, has produced guidance on how to minimise indoor air pollutants which has been placed on the DH website.<sup>104</sup> Dr Harrison told us that these guidelines “line up very much with the WHO standards,”<sup>105</sup> but that “I do not think enough people have seen it” (Q 486).

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<sup>104</sup> Department of Health, Committee on the Medical Effects of Air Pollutants, *Guidance on the Effects on Health of Indoor Air Pollutants*, 2004.

<sup>105</sup> World Health Organization, *Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide, Summary of risk assessment*, 2005.

- 6.39. In 1991 the House of Commons Environment Committee recommended that “the Government clarify and simplify existing responsibilities for indoor air quality and review the operations of the Interdepartmental Liaison Group on indoor air quality.”<sup>106</sup> This Interdepartmental Liaison Group on indoor air quality had been established to consider a programme of commissioned work relating to indoor air, but Mr Lewis reported that its work ceased at “the end of the 1990s.” Since then, responsibility for indoor air quality has fallen to different departments. The DCLG is now responsible for Building Regulations, whilst the DH is responsible for “the health aspects of indoor air” and works with the Health Protection Agency (HPA) to “provide advice on the impact on health of indoor air pollution” (pp 321–322, Q 849).
- 6.40. At a WHO conference in 2004, the Children’s Environment and Health Action Plan for Europe was developed which aimed to address four key objectives relating to children’s health and the environment. One of these four key objectives was to “ensure clean outdoor and indoor air.” Ministers from the DH and Defra made a commitment to develop and implement a “Children’s Environment and Health Strategy for the UK,” and to co-ordinate this work the DH is chairing an Interdepartmental Steering Group. This steering group contains representatives from “other Government departments, Devolved Administrations, the Environment Agency, the Scottish Environment Protection Agency, the HPA, the Food Standards Agency and others” (p 322).
- 6.41. **We recommend that the education of children about indoor air quality and its role in allergy development, should be a priority for the Interdepartmental Steering Group producing the “Children’s Environment and Health Strategy.”**

### **The role of Government and charities**

- 6.42. Throughout Chapters 5 and 6 we have discussed a wide range of issues which can affect the development of allergic disease, explored the ways in which allergic disorders can be prevented or managed, and highlighted the problems which allergic patients can face in everyday life. What unites all of these topics is the fact that management of the various factors requires a combination of both regulation and education. It is also clear that a very wide range of bodies—Government departments, non-departmental public bodies, local authorities and charities—all have a role in disseminating information and advice. In the final part of this chapter we briefly outline the ways in which information about allergy is disseminated, and the advice that is available to the general public.

### *The role of Government*

- 6.43. The Council for Science and Technology report, *Health impacts—a strategy across Government*, advised that although the Government had made large investments to modernise the National Health Service, there was a risk that “the positive effects stemming from this investment could be blunted, and the demands on the health service further intensified, if other Government departments do not sufficiently take into account the health impacts—either negative or positive—of their policies.” It recommended that “a joint

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<sup>106</sup> Environment Committee, 6th Report (1990–91): *Indoor Pollution* (HC 61).

approach across Government involving Department of Health is needed.”<sup>107</sup> Allergy exemplifies this.

- 6.44. Mr Lewis explained that to “make a reality of the rhetoric around joined-up government ... at ministerial level, there is a Domestic Affairs Cabinet sub-committee on public health” underpinned by “a supportive structure at official level of programme boards, including the Health Improvement Board.” The department had also made a number of efforts to work with other departments on specific policies, such as the publication of the *Managing Medicines in Schools and Early Years Settings* guidance produced jointly with the DfES, and the development of Building Regulations with the DCLG. With regards to children, the “Every Child Matters strategy” also sought to bring all government departments together to “look holistically at the needs of children and families” (Q 825).
- 6.45. In light of the alarming increase in the prevalence of allergic diseases, it is tempting to search for interventional strategies that the Government could recommend to help halt the trend. However, when asked whether there was any advice that should be issued routinely to prevent children developing allergies, Professor Sheikh warned us that “I think we need to appreciate that we are at a very early stage in this story” (Q 147). Professor Warner added that “I would love to be able to say that there were measures right now that one could recommend but there is none other than saying, ‘Do not smoke in pregnancy’ ... ‘Sustain a good diet,’ and, ‘Breast feed if at all possible.’ I think beyond that at the moment we do not have enough evidence to make any other statements” (Q 97). Furthermore, Professor Custovic felt that “the day and age of simple public health advice where something is good for everybody is over. We are different individuals. What is very good for me may not necessarily work for you or may indeed really be bad for somebody else” (Q 498).
- 6.46. One area in which the DH has ventured to produce public advice is the dietary guidance issued for pregnant women and infants, and we now examine the consequences of this.

*The development of food allergies*

- 6.47. A key source of advice for pregnant women is the midwives who care for them. We invited the Royal College of Midwives to give evidence about early interventional strategies, but were disappointed that they were unable to field a representative to talk to us. Their written response noted that “breast feeding contains specific immunological properties” which may “to a certain extent protect children from certain diseases, especially asthma” so they therefore recommended “exclusive breastfeeding for the first six months without the introduction of supplements or solid foods” (p 384). Dr Hyer also noted that “in terms of primary prevention the best tool is to breast feed” (Q 659).
- 6.48. However, Professor Hourihane told us that “any allergen that a mother ingests—whether it is a food allergen or anything else—will be found in breast milk shortly afterwards” (Q 667). Therefore, Dr Hyer told us that “we know that if you have severe eczema you may benefit by going on to a hypoallergenic feed when weaned and not being fed cow’s milk formula, but

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<sup>107</sup> Council for Science and Technology, *Health Impacts—A strategy across Government*, 2006, pp 5, 7.

because of the diagnostic difficulties ... selecting which patient should take on which avoidance pattern is very complicated” (Q 659).

- 6.49. Dr Rosenthal commented that “the Cochrane database on this aspect of prevention or food avoidance in pregnancy or lactation has been revised more often than any other Cochrane database, and the conclusion remains entirely the same; that there is no evidence—definitely no evidence—in terms of food avoidance during pregnancy, and during lactation possibly” (Q 661). There is therefore very limited advice which the Government can recommend.
- 6.50. Of all food allergens, the most dramatic increase in prevalence has been seen for peanut allergy. In 2002, the Isle of Wight Birth Cohort Study reported that peanut sensitisation had “increased three-fold” in children born between 1994 and 1996, compared to those born in 1989.”<sup>108</sup> The risk factors for the development of peanut allergy are still uncertain. Previous research had suggested that exposure to peanut at an early, or even prenatal stage, could increase the risk of sensitisation. Therefore in *The Pregnancy Book*, issued freely to first time mothers, the DH recommends that pregnant women should avoid peanuts and foods containing peanut products “if you or your baby’s father or any previous children have a history of hayfever, asthma, eczema or other allergies.”<sup>109</sup> The DH publication, *Birth to Five*, also recommends that “breastfeeding mothers who are ‘atopic’, or those for whom the father or any sibling of the baby has an allergy, may wish to avoid eating peanuts or peanut products while breastfeeding,” and goes further to say that peanuts or peanut products “should not be given to babies from ‘atopic’ or ‘allergic’ families until they are at least three years old.”<sup>110</sup>
- 6.51. However, during a visit to the Evelina Children’s Hospital, Professor Gideon Lack, Head of Paediatric Allergy, told us that a number of recent epidemiological studies had suggested that early peanut consumption, in countries such as Israel, was associated with a low incidence of peanut allergy in the population. This had led many academics to believe that repeated exposure of a child’s immune system to peanut allergen at an early age might result in tolerance. If this was in fact the case, then Professor Lack noted that DH advice which recommended the avoidance of peanut, might actually be contributing to the increase in peanut allergy prevalence.<sup>111</sup> Currently, there is still no conclusive evidence to prove or disprove this theory, and as Dr Hyer told us, “we do not really know the answer” (Q 659).
- 6.52. To investigate these findings further, the Immune Tolerance Network has granted Professor Lack funding to carry out the Learning Early About Peanut allergy (LEAP) study. This interventional study aims to enrol 480 infants who suffer from egg allergy, eczema, or both, aged between four and 11 months old. Half of the infants will be prescribed a diet which contains peanut regularly, whilst the other half will be told to avoid peanut products. All of the participants will be asked to provide occasional blood samples, and will receive allergy testing, dietary counselling and physical examinations until the age of five. It is hoped that analysis of the proportion of children in

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<sup>108</sup> Grundy et al, *Journal of Allergy and Clinical Immunology* 110, 2002, “Rising prevalence of allergy to peanut in children: Data from 2 sequential cohorts,” pp 784–789.

<sup>109</sup> Department of Health, *The Pregnancy Book*, 2007, p.12.

<sup>110</sup> Department of Health, *Birth to Five*, 2007, p. 69.

<sup>111</sup> Note of the visit to the Evelina Children’s Hospital, Appendix 5.

each group which develops peanut allergy, will help to determine whether avoidance or consumption reduces the risk of developing the allergy.<sup>112</sup>

- 6.53. The DH told us that its advice was based upon the conclusions of the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT), which themselves were based on the “best available evidence when it reported in 1998.” The Department recognised that “the then available evidence on development of peanut allergy during pregnancy and weaning was not conclusive but, noting the uncertainty and the potential for risk of life-threatening anaphylaxis, our advice on peanut allergy is precautionary” (p 26). Professor Warner, who was involved in the decision to recommend peanut avoidance, added that “although it was made in good faith at the time, based on evidence available, it was indirect evidence rather than direct evidence. Perhaps we have to be very cautious about any recommendations we make until we have got good evidence from controlled intervention rather than just observational studies” (Q 147).
- 6.54. The effect of Government advice on the prevalence of peanut allergy has recently been analysed by two research studies supported by the FSA. The results of one of these studies, published in April 2007, showed that Government advice concerning peanut consumption was often “misunderstood by mothers” and that those who communicated the advice had “not fully explained who it is targeted at.” The report concluded that “the target population did not necessarily take up this advice” and that furthermore, some women who did not have a family history of atopy, at which the advice was not aimed, were avoiding peanuts. However, in summary it appeared that “maternal consumption of peanut during pregnancy was not associated with peanut sensitisation in the infant.”<sup>113</sup>
- 6.55. In the second paper on peanut avoidance, it was noted that “no other government has issued such advice” and that “it has been a concern that the advice could possibly have adversely affected (increased) the prevalence of peanut allergy in the UK rather than decreasing the prevalence, as was the intention.” However the paper also concluded that “we have not yet ascertained any positive or negative effect on the prevalence of peanut sensitisation or peanut allergy of the COT advice.”<sup>114</sup>
- 6.56. When questioned about the adequacy of DH advice, Mr Lewis said that “if the advice is wrong or damaging or counterproductive, we ought to change it as quickly as possible” (Q 860). Following this, we were informed that the FSA “has already begun the process of identifying and systematically reviewing the evidence, and a paper will be taken to the COT as soon as this review is complete. The COT will then consider this evidence at an open committee meeting and will issue a statement. After that, the Government will reconsider its advice in the light of the views of the COT. Given the need to evaluate fully and carefully all the relevant scientific evidence, this process is likely to take six to 12 months” (p 322).

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<sup>112</sup> Note of the visit to the Evelina Children’s Hospital, Appendix 5, and see [www.leapstudy.co.uk](http://www.leapstudy.co.uk).

<sup>113</sup> Dean et al., *Journal of Human Nutrition and Dietetics* 20, 2007, “Government advice on peanut avoidance during pregnancy—is it followed correctly and what is the impact on sensitization?,” pp 95–99.

<sup>114</sup> Hourihane et al., *Journal of Allergy and Clinical Immunology* 119, 2007, “The impact of government advice to pregnant mothers regarding peanut avoidance on the prevalence of peanut allergy in United Kingdom children at school entry,” pp 1197-1202.

**KEY RECOMMENDATION:**

- 6.57. **It is imperative that work is carried out to investigate whether peanut consumption or avoidance in early life significantly affects a child's risk of developing peanut allergy. We therefore support the work of the Learning Early About Peanut allergy (LEAP) study. We are very concerned that Department of Health dietary advice regarding peanut consumption for pregnant women and infants is based upon evidence that was reported nine years ago. Recent evidence suggests that this advice has not succeeded in reducing the prevalence of peanut allergy and may indeed be counterproductive. We recommend that this advice should be withdrawn immediately, pending a comprehensive review by the Food Standards Agency and the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment.**

*The role of charities*

- 6.58. A number of charities provide support for patients with allergic disorders. Allergy UK is the operational name of the British Allergy Foundation, a charity which provides “information, advice and support to people with all types of allergy/intolerances and their carers” (p 291). Other charities, such as the Anaphylaxis Campaign, may focus on a particular subgroup of allergy sufferers or, in the case of Asthma UK and the National Eczema Society, may deal with conditions that can have both allergic and non-allergic causes.
- 6.59. Through the production of leaflets and guidance, or the use of workshops, helplines, support groups and websites, charities can provide an extra level of support for patients in addition to that received from their medical practitioner. There is a clear need for these services, as Allergy UK reported that 19,554 people used their telephone helpline service from March 2005 to April 2006 (p 291), and Asthma UK told us that it received “between 7,000 and 10,000 queries a year” (Q 779). Ms Lindsey McManus, Deputy Information Manager at Allergy UK, explained that patients phoned their helpline for a range of reasons. This might include queries about symptoms they were suffering or the basic question “could I have an allergy?” as well as questions about treatment such as “where is my nearest allergy clinic?” and “what type of test might I expect when I go to the hospital?” (Q 778).
- 6.60. Charities also provide practical information about how to manage allergic conditions. For example, Ms McManus told us that Allergy UK can offer “very practical advice such as bedding and cleaning. We can also give advice on different types of tests and alternative testing, should they ask us” (Q 778). Ms Donna Covey, who spoke to us as Chief Executive of Asthma UK, explained that the burden of allergic disease is not only caused by the symptoms, but also by the way in which it “impacts on your daily life.” Asthma UK therefore ran “Kick Asthma holidays” which educated children about how to cope with asthma and other allergies. Children attending these courses often suffered from other allergies in addition to asthma, so at the start of the holidays children were encouraged to share information about all their allergies to get them out into the open. Ms Covey explained that this “normalises it and an understanding of allergy is a really important part of that work” (Q 780).
- 6.61. Following concerns that healthcare workers are not adequately educated about allergies, in some cases charities may also help to train medical

professionals. The Anaphylaxis Campaign has developed a training programme for school nurses (p 174) and Allergy UK reported that it “provides education and training to healthcare professionals via masterclasses and an increasingly popular on-line e-learning European Diploma in Allergy accredited by the University of Greenwich” (p 292).

- 6.62. Furthermore, charities play an important role carrying out research for, and working with, Government departments and industry. As an example, following research undertaken by the Anaphylaxis Campaign, which demonstrated the difficulties that food allergic consumers faced when buying prepacked foods, the Anaphylaxis Campaign worked in collaboration with the FSA, the BRC, the Food and Drink Federation and LACORS to produce labelling guidance for food businesses.<sup>115</sup> With regard to occupational allergies, Asthma UK has worked in collaboration with the HSE, manufacturers and other organisations to produce a workplace charter to reduce the impact of asthma in the workplace.<sup>116</sup>
- 6.63. Considering the important role that allergy charities play, it was disappointing to hear that they had faced difficulties in receiving Government funding for their work. Ms Covey told us that Asthma UK provides “a number of what are really NHS plus services” but that its applications for funding often get turned down on the grounds that they overlap with NHS services. For example, previous applications for its helpline had been turned down “on the grounds that it overlaps with NHS Direct,” but Ms Covey argued that it provided an additional service and that “NHS Direct nurses quite rightly often refer people with asthma to our nurses who can have a detailed chat about their asthma.” Similarly, applications to fund health promotion materials had been refused “on the grounds that asthma self-management promotion is the job of the NHS and yet we know large parts of the health service do that really badly and when they do it well it is because they are using our materials” (Q 783).
- 6.64. **Allergy charities play an important role in providing public advice, but must continue to work together and with clinical services to avoid duplication of work, and ensure that consistent, evidence-based policies and public advice are provided.**

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<sup>115</sup> *op cit.* Food Standards Agency, *Guidance on Allergen Management and Consumer Information*, 2006.

<sup>116</sup> *op cit.* Asthma UK, *Asthma at Work—Your Charter*, 2004.



## CHAPTER 7: RESEARCH

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### Introduction

- 7.1. Allergy research in the United Kingdom is relatively strong. Research Councils UK told us that “research into the underlying mechanisms of allergy and allergic disease is restricted to a few centres, but most of these groups are world-leaders in their field” (p 367). Funding and support for research comes from a variety of sources including Governmental departments, research councils, charities and the pharmaceutical and biotechnical industry. However, most research has focused on cellular and molecular mechanisms of allergy or on clinical trials of treatments. This had led to a comparative neglect of research into the development of the immune system and the role which early allergen exposure plays in allergy development. The focus of allergy research therefore needs to shift towards investigating these early events and developing individualised treatments, whilst also continuing to research aspects of daily living, such as food labelling, air quality and occupational triggers.

### Funding

- 7.2. It is difficult to ascertain the exact level of funding allocated for research into allergy, since the field crosses several academic disciplines and health categories, including immunology, respiratory diseases and dermatology. As Professor Lee told us, the proportion spent on allergy cannot be specifically identified; in particular, research into “allergy and asthma tends to be mixed up” (Q 237). However, the following paragraphs summarise the main funding sources.
- 7.3. The Government supports medical and clinical research mainly through the Medical Research Council (MRC), which currently invests £5.14 million per annum on research and training into allergy, although other research councils also support research of relevance to health. For example the Biotechnology and Biological Sciences Research Council (BBSRC) spends £1.6 million per annum on allergy and also invests in allergy research through the IFR (pp 4, 367).
- 7.4. Some NHS clinical centres are undertaking important projects, supported by the DH. These include research into allergy and obstructive lung disease (at both Guy’s and St Thomas’ NHS Foundation Trust and the King’s Consortium); the management of severe respiratory disease: atopy, allergy and asthma (at the Royal Brompton and Harefield Hospital NHS Trust); allergy and inflammation (at Southampton University Hospitals NHS Trust); and obstructive and parenchymal lung disease (at South Manchester University Hospitals NHS Trust) (p 4).
- 7.5. Government research into broader issues relating to allergy includes primary research, systematic reviews and “a £1 million initiative on the impact of air pollution on health” (pp 4–5). The HSE and BOHRF jointly fund research into “prognostic factors for people diagnosed with work-related contact dermatitis,” and the DCLG has funded University College London to investigate the effect of ventilation on housedust mite and mould growth, to inform building regulations (pp 9, 15).

- 7.6. The FSA runs a “food allergy and intolerance research programme” (designated T07) to investigate the pathogenesis, prevalence and predisposing factors for food allergies and intolerances. It has also carried out valuable research into the role of pre- and post- natal exposure to allergens, and threshold sensitivity levels for food labelling (p 151). The IFR, sponsored by the BBSRC, investigates the science of food and human health, to provide information for “consumers, policy makers, the food industry and academia” (p 285).
- 7.7. Pharmaceutical companies must work with others to investigate the basic science of allergy, but Mr Dave Allen, Senior Vice President in GlaxoSmithKline (GSK) Head of Respiratory Drug Discovery, pointed out that applying this knowledge to develop drugs was “something that we think we are quite good at, so obviously we will try and do that ourselves” (Q 229). Statistics produced by the Patent Office revealed that approximately “six per cent of patents on allergy” were concerned with genetic diagnostics “and a similar number with immunoassays,” but the majority of allergy patents related to new organic pharmaceuticals. In terms of allergy patents filed by companies worldwide in the last 10 years, UK-based companies GSK and Pfizer ranked first and third respectively, so “UK private sector companies make a significant contribution to the patent landscape on allergy” (pp 357–358, 362).
- 7.8. Charitable funding sustains research into occupational allergic disorders as Professor Agius told us that funding for occupational health research was “dire across the board.” Professor Newman Taylor commented that as a result of this, it was not only difficult to conduct research, but that “it also provides problems in terms of retaining people in the field and attracting people to come into the field.” He added that “the majority of the funding that goes into research on occupational allergic respiratory disease now comes from charitable sources,” such as the Colt Foundation, and “specialist charities, such as the British Lung Foundation and Asthma UK” (Q 309).
- 7.9. In total, Asthma UK sponsors “approximately £3 million of research into asthma every year,” and is currently supporting “18 research projects specifically relating to allergy, which together represent a financial commitment of £2,470,758” (p 289). However, Professor Sheikh pointed out that there is no “major allergy charity” to support research in the way that Cancer Research UK sponsors cancer research (Q 143).
- 7.10. There is also an imbalance of funding for research into allergic conditions. Asthma tends to receive the majority of research funding, whereas Professor Gawkrödger noted that “there is insufficient research on the subject of eczema and atopic dermatitis” (Q 641). For the five years from 2001/02 to 2006/07, the MRC spent £15.7 million on asthma research (much of which has the “potential for wider applicability to allergy”), £13 million on general research (including research into the allergic reaction, signalling pathways and some aspects of nutrition and allergy) and £2.1 million on other allergic diseases (including eczema, dermatitis and allergy to antibiotics) (p 91).
- 7.11. In 2004 the MRC identified respiratory research as “a strategically important priority” and it therefore partnered charities to increase its funding from 6 awards (£0.5 million per annum) to 15 awards (£2.0 million per annum) (p 367). Despite this increase the UK Clinical Research Collaboration in 2006 concluded that funding for respiratory disease was low when the

“comparative burden of disease” was considered;<sup>117</sup> the proportion spent on allergy-related disease is not known.

- 7.12. European finance also influences the United Kingdom. The EU’s 6th Framework Programme for research (2002–2006) included €14.4 million for the Global Allergy and Asthma European Network (GA<sup>2</sup>LEN) and €14.1 million for the EuroPrevall project. Proposals for the 7th Framework Programme (2007–2013) also include “research relating to allergy and allergic diseases” (p 5).

### Research strategies in the United Kingdom

- 7.13. At the beginning of our inquiry, we released a Call for Evidence which asked, amongst other questions, “why does the United Kingdom in particular have such high prevalence of allergy?” The evidence we have received suggests that the prevalence of allergy in the United Kingdom is on a par with many other Westernised countries, but is far higher than most developing countries. The EAACI reported that “if one allows for international differences in general levels of prosperity, then it is not so clear that the UK has substantially higher levels of allergy compared to other European or developed countries” (p 67).
- 7.14. The real differences in prevalence could be seen in countries that were undergoing transition, such as in Africa. As Professor Custovic noted, “numerous studies have demonstrated unequivocally that the prevalence of allergic diseases is markedly higher amongst affluent populations which have adopted westernised lifestyle compared to populations living in the same areas but not adopting westernised lifestyle” (Q 461). As discussed in Chapter 4, it seems likely that multiple environmental factors have contributed to the increase in allergy prevalence seen within the United Kingdom and many other parts of the Westernised world in the last 50 years.
- 7.15. Although high quality research in the United Kingdom has significantly advanced our understanding of the molecular mechanisms of allergy, we were therefore concerned at the relative paucity of research into these environmental factors. Dr Susan Leech, Allergy Representative from the Royal College of Paediatrics and Child Health, noted that “the areas of uncertainty are around causes of allergies, particularly early life events and allergen exposure” (Q 357). A lack of research into the development of the immune system and the establishment of allergy, means that the scientific community is still unable to answer fundamental questions such as whether peanut avoidance during pregnancy protects a child from peanut allergy (see paras 6.47-6.57).
- 7.16. To answer these types of questions, broader studies are required which do not necessarily produce simple conclusions, and which might therefore deter some clinicians and academics. Dr William Egner, representing the Royal College of Pathologists, commented that “you are only as good as your last research grant and the outcome of that. In a competitive research environment, it is a brave person who goes into a messy area with no clear outcome” (Q 358). Professor Burney added that it was a “dilemma” for research funders to choose between good, basic science that will “find the exact answer” and “a more speculative bit of work that is going to advance

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<sup>117</sup> UK Clinical Research Collaboration, *UK Health Research Analysis*, 2006, p 26.

general knowledge but is not going to give you the same kind of precise answer” (Q 165).

- 7.17. Professor Sheikh told us that “in terms of primary prevention, we need long-term follow-up; we need 15–20 year studies” (Q 143). These long-term investigative studies are expensive, and therefore Dr Diana Dunstan, Director of Research Management at the MRC, told us that they were usually funded “in partnership” (Q 223). Collaboration between academia, clinicians, research councils, charities and pharmaceutical companies is therefore essential. We visited a striking example of effective collaboration at the MRC-Asthma UK Centre in Allergic Mechanisms of Asthma (a collaboration between the MRC, Asthma UK, King’s College London, Imperial College London, and the NHS). The Centre combined their research strengths into one cohesive strategy, with its research priorities informed by national consultations on asthma research. The Centre also provided research training through 10 PhD studentships and supported NHS trainee allergists in partner hospital trusts, as well as fostering translational research.<sup>118</sup>
- 7.18. We also heard that pharmaceutical companies engage in collaborations with research councils and academic centres. Mr Allen told us that GSK had “set up a number of long-term academic collaborations with a number of the Centres of Excellence supported by the MRC” (Q 225), and Professor John Westwick, Global Head of Respiratory Diseases at Novartis Institute for Biomedical Research, added that “most pharmaceutical companies that are in respiratory medicine have long-term arrangements with leading academic and clinical centres” (Q 226). Professor Lee noted that collaborative projects to run large cohort studies were essential, but added that most collaborations tended to be within the “asthma” field, and were lacking for other allergic disorders (QQ 221–222).
- 7.19. Professor Lee also highlighted the fact that “the vast majority of funding” focuses on the basic mechanisms of allergy and that “we need to do more now to translate those findings into the patient” (Q 241). Several of our witnesses added that future research needed to focus on the individual, rather than the majority. Mr Allen pointed out that “we need to understand the clinical phenotypes within each of the diseases as well as between the diseases. We can only do that by good translational medicine work, by long-term clinical studies, but also by phenotyping these patients very carefully so that we can start to understand their disease long before we can start to attempt to cure it or even modify it” (Q 249). On our visits to Germany and Denmark, we saw the benefit of clinical services being closely linked to research.<sup>119</sup>
- 7.20. Mr Allen told us that GSK already take “with the patient’s consent, blood samples from every single patient who is involved in a GSK research and development organised clinical trial,” with the objective of genotyping patients to “look at how that genotype has reacted to the treatment and the outcome, both from a safety and efficacy point of view.” Professor Westwick reported a similar story from Novartis, which identifies “the phenotype and the genotype” of patients (Q 249). Professor Lee commented that “to be able to have all the blood samples genotyped and be able to link that to treatment

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<sup>118</sup> Note of the visit to the Evelina Children’s Hospital, Appendix 5.

<sup>119</sup> Notes of the visits to Germany and Denmark, Appendices 6 and 8.

responsiveness is very, very powerful” to assess the efficacy of treatments in various groups of patients (Q 250).

- 7.21. But epidemiological research in academia was hindered because access to patient data from general practitioners was denied. Professor Burney explained that academics had to approach general practices to invite collaboration, which was expensive and time-consuming, and some practices refused to collaborate. Therefore samples were often “unrepresentative” and studies of a clustered design led to “loss of power, or the need for larger more costly studies.” In addition, the general practice itself must select and contact the patients for consent, which required a lot of time and energy; academics could not assist with this because they “cannot have access to the names and addresses until the patients have replied to say that they are willing to participate.” Furthermore, academics received no information on the patients that did not respond. Professor Burney commented that these types of restrictions in epidemiological research contributed to “a large scale repeat of the legal nonsense that held up anonymous testing for HIV and any chance of understanding the spread of AIDS in the UK for some years” (p 60).
- 7.22. In 2006, the DH published its *Best Research for Best Health* strategy. In the opinion of Professor Sally Davies, Director General of Research and Development, this provided “a lot of funding opportunities” for allergy or other diseases where clinical research was needed (Q 31) and Mr Lewis was confident that the strategy would ensure “stability in terms of research funding” (Q 829). The National Institute for Health Research, established as part of this strategy, had been allocated £4.75m over five years specifically to look at allergy (QQ 828–829). Following the suggestion that a central disease registry could be established to co-ordinate information on patients’ genotypes and phenotypes, Mr Lewis replied that “investment in disease research registries is not a good use of central research and development provision. Such registries are expensive to develop, and funding their long-term maintenance can create difficulties in a system that has to be responsive to changing demands and priorities” (p 320). However, Professor Lee argued that “if that database was available it would be extremely useful” (Q 259).
- 7.23. Sir David Cooksey’s *Review of UK health research funding* recommended that “greater priority should be given to supporting medicines and therapies that tackle unmet health needs in the UK” and suggested the creation of a new Office for Strategic Coordination of Health Research (OSCHR) to “set the strategic direction for research into particular disease areas.” The review also recommended that “future increases in funding should be weighted towards translational and applied research until a more balanced portfolio is achieved” and that a Translational Medicine Funding Board should “take the lead in developing a translational research strategy which aims to increase translation into health and economic benefit.”<sup>120</sup>
- 7.24. In light of this review, Dr Dunstan commented that allergy “may well fall into the categories of unmet need that we shall have to direct more attention to,” but Professor Lee added that there will be “difficulty in capturing” information about unmet need due to the structure of the health service (Q 240). An interim oversight group for OSCHR was established in January, and Mr Lewis hoped that a new OSCHR would result in “a higher priority

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<sup>120</sup> Sir David Cooksey, *A review of UK health research funding*, 2006, pp 5, 41, 85.

being given to allergies,” but could not provide “a tangible commitment on how much additional resource this may trigger” (Q 827).

- 7.25. Throughout this report we have drawn attention to a number of areas which require further research, from maternal and foetal nutrition to environmental factors such as air quality or infection, and the way in which these interact with genetic polymorphisms to contribute to allergy development (paras 4.37, 4.30, 5.16). Important unanswered questions remain regarding possible preventative strategies such as the use of probiotics and beneficial weaning practices, how to improve the indoor environment, why and how the “allergic march” occurs with age, and what allergy triggers exist in the outdoor environment (paras 4.32, 6.47-6.57, 5.2-5.14, 2.14-2.18, 5.15-5.18). Most important of all, there is now a need to focus on the broad, fundamental questions about how the early immune system evolves and how allergies develop, to investigate appropriate preventative strategies, and to research novel treatments to manage allergy symptoms in every patient.

### KEY RECOMMENDATION

- 7.26. **Although high quality research into cellular and molecular mechanisms of allergy is advancing, the factors contributing to allergy development and the “allergy epidemic,” are poorly understood. It is imperative that further research should focus on the environmental factors, such as early allergen exposure, which may contribute to the inception, prevention or exacerbation, of allergic disorders. Long-term cohort studies are a vital part of this research, and interventional studies are key to verifying the role which these factors may play. We look to the development of the Office for Strategic Coordination of Health Research to improve the co-ordination and funding for these types of projects.**

### KEY RECOMMENDATION

- 7.27. **We are concerned that the knowledge gained from cellular and molecular research is not being translated into clinical practice. We therefore regard allergy research directly related to health care to be an area of unmet need that requires greater priority. The Translational Medicine Funding Board must ensure that allergy research is applied to develop novel individualised treatments. The cost of a central disease registry may be too high to warrant investment. Therefore, a comprehensive patient database within each allergy centre (see para 9.40) will be key to epidemiological and other studies, and is best maintained by ownership at a local level.**

## CHAPTER 8: DIFFERENT PATTERNS OF MANAGEMENT

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### Introduction

- 8.1. A variety of interventions are potentially available to patients with allergic disease. Adrenaline autoinjectors can be supplied on prescription in case an anaphylactic emergency occurs, immunotherapy can offer a long-term modification of the immune response, and novel treatments such as anti-IgE therapy may be used for patients who fail to respond to more conventional treatments. However, people who think they have an allergy consult widely. They often seek help and information from pharmacists, complementary practitioners, over the telephone from NHS Direct or via the internet. In this Chapter we explore some proven and unproven therapies directed at allergy, and the ways in which these are provided.

### Immunotherapy

- 8.2. Treatment with drugs such as antihistamines or steroids can be used to manage the symptoms of allergic disease but do not modify the underlying disease process. In contrast, immunotherapy (sometimes called specific immunotherapy, desensitisation or “allergy vaccine”) involves the administration of increasing doses of allergen, which over time desensitises the allergic patient by altering their immune system. As Professor Stephen Durham, President of the British Society for Allergy and Clinical Immunology (BSACI) told us, this could provide a useful long-term solution to the management of allergy for both “patients with severe hayfever which does not respond to conventional treatment,” and “patients with venom anaphylaxis from stinging insects, wasps and bees” where the treatment could be life-saving (Q 193). Immunotherapy can be administered either via injection (subcutaneous immunotherapy) or via oral tablets (sublingual immunotherapy). At ALK-Abelló in Denmark we heard that immunotherapy, although not a cure for allergy irrespective of the allergen load, rendered the patient tolerant enough of an allergen in order to safely undertake or resume everyday tasks in normal life.<sup>121</sup>
- 8.3. In both Denmark and Germany we learnt that immunotherapy was a standard and effective way of managing allergies in many countries, and patients told us how it had allowed them to lead much more normal lives. But witnesses forcefully told us that immunotherapy was not used to its full potential in the United Kingdom. The reason for this was partly historical; when early types of immunotherapy were administered by general practitioners, a number of patients had suffered anaphylactic shock. Professor Anthony Frew, President of the EAACI, told us that “between 1952 and 1986 there were about 27” associated fatalities (Q 195) and the EAACI felt that the limited use of immunotherapy in the United Kingdom “reflects concerns about safety” (p 68). However, there was general consensus that this treatment was safe to use if administered by specialists in the tertiary care environment where, in Professor Durham’s words, “in the unlikely event of a severe reaction occurring, that can be recognised and promptly treated” (Q 200). The EAACI added that “elsewhere in Europe

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<sup>121</sup> Note of the visit to Denmark, Appendix 8.

and North America, desensitisation is commonly used in patients presenting with rhinitis and asthma” (p 68).

- 8.4. Professor Frew commented, amongst others, that the Medicines and Healthcare products Regulatory Agency (MHRA) had “been much more strict in terms of the regulation than other parts of Europe” and this was inappropriately stringent (Q 195). Representatives from ALK-Abelló told us that although their subcutaneous immunotherapy products had received product licences within several European countries, the company had virtually given up seeking these product licenses in the United Kingdom because the MHRA was seen as intransigent over the approval of this treatment.<sup>122</sup>
- 8.5. Mr Richard Gutowski, Head of Compliance and European Business for Medical Devices at the MHRA, explained that in 1994 the Committee on Safety of Medicines (CSM) had “recommended that these treatments should be restricted to those patients who have not responded to anti-allergy drugs” (Q 764). The MHRA added that there was no fixed view on any product class as “scientific evidence is the most important determinant of the regulatory decision(s)” (p 284). Although some subcutaneous immunotherapy products are unlicensed in the United Kingdom, they may be legally prescribed on a named-patient only basis within the NHS.<sup>123</sup>
- 8.6. Currently, two subcutaneous products hold MHRA product licences: “Pollinex” (for the treatment of grass or tree pollen allergies), and “Pharmalgen” (for the treatment of bee or wasp venom allergies). “Grazax,” an immunotherapy product for the treatment of grass pollen, has also been granted a product licence (p 283). It is a prophylactic treatment for hayfever sufferers which is easily administered as sublingual tablets, and avoids the side-effects of sedative antihistamines which only modify the symptoms and can seriously impair children’s school and exam performance.
- 8.7. Immunotherapy treatment is expensive, but by reducing the need for other types of medication, might prove cost-effective in the long-term.<sup>124</sup> Furthermore, the Royal National Throat Nose and Ear Hospital highlighted the fact that sublingual immunotherapy treatment in rhinitis patients might prevent the development of asthma, and reported that “there is an urgent need for large well-controlled studies to validate this, to examine the doses of allergen needed and to look at pharmaco-economic implications since this form of immunotherapy is safer and more convenient” to use than desensitisation injections (p 285).
- 8.8. We were therefore disappointed to hear that the National Institute for Health and Clinical Excellence (NICE) had no plans to appraise immunotherapy products. Mr Andrew Dillon, Chief Executive of NICE, explained that with the “limited capacity” of NICE, this was a low priority and Grazax had been deemed “not suitable for appraisal” (QQ 766, 776). After hearing our concerns about immunotherapy appraisal, Mr Lewis reported that his Department had “passed the Sub-Committee’s views to the NICE topic selection team” for consideration in the topic selection process (p 323).

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<sup>122</sup> Note of the visit to Denmark, Appendix 8.

<sup>123</sup> Note of the visit to Denmark, Appendix 8.

<sup>124</sup> Note of the visit to Allergy Therapeutics, Appendix 7.



## KEY RECOMMENDATION

- 8.9. **Immunotherapy is a valuable resource in the prophylactic treatment of patients with life-threatening allergies, or whose allergic disease does not respond to other medication. Although initially expensive, immunotherapy can prevent a symptomatic allergic response for many years, and may prevent the development of additional allergic conditions, so its wider use could potentially result in significant long-term savings for the NHS. We recommend that NICE should conduct a full cost-benefit analysis of the potential health, social and economic value of immunotherapy treatment.**

### Adrenaline autoinjectors

- 8.10. Adrenaline autoinjectors, such as Epipens and Anapens, provide a quick dose of adrenaline that can be life-saving for people suffering an anaphylactic shock to food or insect stings, but there is wide variation in when these injectors are prescribed. Dr Pumphrey reported that over half of those who die from an allergic reaction “did not have any previous serious reaction” (p 180). Dr Rosenthal said there is “very little laid down” in terms of guidelines for the prescription of autoinjectors and Dr Hyer told us simply that “we do not know yet exactly who should carry them” so “there is no fixed protocol a GP can follow” (Q 674).
- 8.11. Mr Lewis told us that “in the year to 30 September 2006, almost 165,000 prescriptions were dispensed in the community in England for Epipens, at a cost of about £8.2 million” (Q 869). But several witnesses expressed concern that these autoinjectors were not being used effectively. Dr Pumphrey reported that “of the last 48 fatal reactions to foods,” 19 of these patients had adrenaline pens yet the rate of food allergy deaths was rising. Failure of pens was sometimes because “the patient was too fat for the pen to give the necessary intramuscular injection” or poor training of patients, including pens having past their expiry date, pens being used too late in the reaction, or pens not being carried at the time of the reaction (p 180).
- 8.12. However Dr Pumphrey also told us that “others used the pen correctly, were thin, had the correct dose and still died. One 16-year-old girl took the risk of eating a chocolate labelled ‘may contain nuts’ because she had her pen with her. She used the pen immediately she saw nuts in the chocolate but nevertheless died from her reaction. Clearly pens cannot be relied upon to save someone with a food allergy reaction and patients must continue to take great care to avoid their trigger food even when they have a pen” (p 180).
- 8.13. The prescription of adrenaline autoinjectors requires specialist allergy knowledge which is currently lacking amongst many general practitioners, and needs to be coupled with patient training. The establishment of allergy centres and the general upskilling of practitioners in allergy should improve the quality of training provided to patients regarding the administration of their treatments.

### Anti-IgE therapy

- 8.14. Novel therapies for the treatment of allergy are constantly being researched and recently an anti-IgE therapy has been developed to treat severe allergic asthma. Anti-IgE therapy omalizumab (Xolair), is an antibody which binds to and removes IgE from the circulation, thus inhibiting the allergic reaction.

Mr Dillon reported that NICE were assessing this “for treating severe, persistent, allergic asthma” (Q 773).

- 8.15. The DH reported that anti-IgE therapy was “presently licensed in the UK only for severe asthma, but could potentially be used in the management of other severe IgE (immunoglobulin E) mediated allergic problems” (p 5). However, academics felt that the cost would limit its use and Professor Peter Barnes, from the National Heart and Lung Institute at Imperial College London, commented that “it costs something like £10,000 a year to treat some patients with higher levels of IgE, so it could only really be considered for very severe asthma patients.” But he emphasised that it was an extremely valuable treatment for patients whose symptoms “have not been controlled by conventional therapy” (Q 182). The costs are unlikely to fall in the near future as Professor Frew noted that “it is the combination of the frequency of administration, the production costs and associated hospital costs that make the treatment an expensive option” (Q 185).

### **NHS Direct**

- 8.16. Ms Helen Young, Executive Clinical Director and Chief Nurse at NHS Direct, estimated that its telephone helpline received over 600,000 calls per month in total, and its website received over 1 million hits per month. Ms Young told us that all their calls were recorded and a selection were “peer reviewed by a supervisor and usually another clinician.” There were four different algorithms that could be launched in relation to allergy queries, but the true number of allergy-related calls could not be deduced because people might also report symptoms such as “wheezes, rashes [or] nasal congestion” which may or may not be allergy-related. She estimated that around one per cent of allergy calls would be dealt with as an urgent 999 call, 50 per cent would be referred to “a GP practice or some form of out of hours care,” and the rest would be advised to “self care.” NHS Direct staff might advise “that a particular group of drugs might be helpful in alleviating symptoms” but Ms Young acknowledged that many symptoms should be seen by a clinician face to face, so added that staff would advise callers to “go to the pharmacy, speak to the pharmacist and be advised on what is the best product” (Q 755–756, 771).

### **The role of pharmacists**

- 8.17. The Royal Pharmaceutical Society of Great Britain (RPSGB) reported that there is a “vast and potentially bewildering” choice of treatments available for allergy sufferers, so pharmacists often help them to “recognise symptoms, identify allergy triggers and select appropriate products” (p 374). As Ms Covey pointed out, pharmacists provide a useful service for patients with lifelong conditions who “do not want to go back to a GP every five minutes” (Q 793).
- 8.18. Although agreeing that pharmacists provided a valuable resource for allergy sufferers, Dr Scadding warned that pharmacies “should not be used to diagnose allergy” (Q 795). But Allergy UK felt “the majority of allergy could be successfully diagnosed and managed in primary care” providing the professionals, including pharmacists, were “given the correct training” (p 303).

- 8.19. Pharmacists are not licensed to prescribe treatments such as adrenaline autoinjectors but they offer advice on a range of other drugs. The RPSGB reported that at undergraduate level, pharmacists received training in “the pathological and immunological basis of allergy” and education regarding treatment. At postgraduate level, the Centre for Pharmacy Postgraduate Education in England did not run specific courses on allergy, but was building one with Allergy UK. Furthermore, the RPSGB commented that the Pharmacists and Pharmacy Technicians Order 2007<sup>125</sup> would “update, strengthen and clarify the RPSGB’s powers to protect, promote and maintain the health and safety of the public” (p 375).
- 8.20. **Pharmacists are often consulted by the general public about allergic conditions, and thus lift a significant burden from general practitioners. It is therefore essential that the advice offered regarding allergy is accurate, and should be given by trained pharmacists rather than unqualified assistants. We recommend that as part of the implementation of the Pharmacists and Pharmacy Technicians Order 2007, adequate allergy education should be provided for all pharmacists, to ensure that they provide high quality advice to allergy sufferers.**

### Complementary medicine

- 8.21. Many patients turn to complementary medicine to diagnose and treat their allergy which may reflect their dissatisfaction when unable to access adequate treatment from the NHS. Allergy UK reported that “the inability to obtain proper diagnosis is driving an increasing number of people into undertaking alternative testing” (p 293), and Professor Chris Corrigan, Professor of Asthma, Allergy and Respiratory Science at King’s College London, added that “one will seek help from anywhere if one is desperate enough” (Q 534).
- 8.22. But Professor Edzard Ernst, Director of Complementary Medicine at the Peninsula Medical School, Exeter, felt that complementary therapies were “used in addition, as a complement” to conventional medicine. Furthermore, Ms Kate Chatfield from the Research Ethics Committee at the Society of Homeopaths, added that parents most often turned to homeopathy to treat their child because “they do not want to use conventional treatment or, if they have used conventional treatment, they are worried about the side effects” (Q 534).
- 8.23. The ways in which complementary therapists diagnose allergic conditions are considerably different from those used by conventional practitioners. We were therefore disappointed at the lack of response from complementary practitioners to our Call for Evidence. Ms Chatfield explained that “in homeopathy we have a very different definition of diagnosis. It is not diagnosing a specific allergy according to a specific allergen. A homeopathic diagnosis for us literally means finding the right remedy for the person, so it is not a conventional diagnosis in that sense” (Q 506).
- 8.24. Other complementary practitioners may offer various diagnostic techniques for allergies which have faced much scepticism from practitioners of conventional medicine. Vega testing is the observation of electrical measurements over acupuncture points when a substance relevant to the

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<sup>125</sup> Statutory Instrument 2007 No. 289.

- patient is placed in series in the circuit. Applied kinesiology assesses changes in patients' stress resistance upon hand contact with suspected allergens. The Royal College of Paediatrics and Child Health was concerned that "kinesiology, vega testing and hair analysis as forms of allergy testing have no scientific rationale and are not valid diagnostic procedures" (p 120), and in Professor Corrigan's opinion, "there is no scientific evidence or mechanistic base to suggest that these tests could be remotely effective" (Q 511).
- 8.25. Concern has also been raised regarding the causes of allergy which may be diagnosed and treated. The EAACI reported that some complementary therapists "are offering to look for allergy as an explanation for symptoms that we do not think are allergic. So for example, someone might offer to test for an allergic basis for fatigue, headache, weight gain etc" (p 70).
- 8.26. Specific criticism has been meted out against the diagnosis of "multiple chemical sensitivity" (MCS) issued by some "environmental allergists." Dr Damien Downing, President of the British Society for Ecological Medicine, described MCS as "another form of allergy that is getting worse and more common." He added that although the causes of this condition were complex, he believed that in the future it would be proven that MCS was caused by "environmental pollution and chemicals having a disrupting effect on the immune system and making all allergies worse." Mr Don Harrison, Principal of the British Institute for Allergy and Environmental Therapy, added that other factors which contributed to MCS development included "factories; traffic; flight paths; laboratory work; farming in particular, with the spraying of pesticides and ... dipping of sheep; excessive inoculations in time of war ... and perhaps surgical anaesthetics" (Q 545).
- 8.27. To diagnose and treat MCS, Dr Jean Monro, Medical Director of Breakspear Hospital, used the provocation/neutralisation test, which she described as "a form of low-dose immunotherapy" (Q 561). However, Professor Simon Wessely, a psychiatrist from King's College London, reported that "the phenomenon of multiple chemical sensitivity cannot be explained by allergy and/or immunological mechanisms ... there is convincing experimental evidence that this can be explained by psychological conditioning." He continued to explain that some of these people might be suffering from depression or anxiety, but an inaccurate diagnosis meant they may "receive treatments that do little good and in some cases considerable harm" (p 227).
- 8.28. Following diagnosis, complementary practitioners may offer a range of therapies to treat allergic conditions. Although herbalism and homeopathy had been embraced by some conventional practitioners, there was widespread scepticism regarding the use of other complementary therapies. One example was enzyme-potentiated desensitisation, which the Faculty of Homeopathy described as "a therapeutic technique in which low dose allergens ... are injected intradermally to desensitise patients with atopic diseases" (p 347). Professor Jonathan Brostoff, Professor Emeritus of Allergy and Environmental Health at King's College London, claimed that the side effects were minimal and that "anecdotally many patients respond well to it" (Q 529). But Professor Ernst told us that "there are virtually dozens of complementary therapies that have been submitted to clinical trials ... for no treatment modality is there good evidence that it is clinically effective in asthma, atopic eczema or hayfever" (Q 507).

- 8.29. Nevertheless it is clear that anecdotally, patients often report a benefit after seeking treatment from complementary practitioners. Because anxiety plays a role in the symptoms of asthma, Professor Corrigan suggested that many of these techniques may improve the wellbeing of allergy patients, not by treating the underlying cause of disease, but by teaching patients breathing techniques which presumably “help them to calm down and breathe more naturally” (Q 508).
- 8.30. There were concerns expressed to us about the indirect consequences from complementary practices used in isolation from more conventional medicine. Professor Corrigan was worried that, in his view, homeopathic consultations may be dangerous because “they may delay accurate, valid and pressing diagnosis” (Q 523) and the National Allergy Strategy Group forcefully made the point that “many patients get the wrong diagnosis. This sometimes leads to medical harm; or financial problems for the patient” (p 131).
- 8.31. It is unknown whether the positive effects reported by patients following complementary therapy are due to the actual techniques or a placebo effect. Professor Ernst claimed that “research funding is the most difficult thing in my life to obtain ... it has become even more impossible over the last few years because regulation of clinical trials is now such that it is very expensive ... Public funds are by and large not available ... Industry funds are non-existent so we are reliant on charitable funds which are very scarce indeed” (Q 526). This argument was rejected by Professor Wessely though, who argued that “I do not think it is that difficult to get money for research, if you have well-designed studies with good hypotheses and good outcome measures,” and felt that there had been more than enough research on some areas, such as provocation tests and electrical hypersensitivity (QQ 550, 552).
- 8.32. It was also felt that research studies might ask the wrong questions when analysing complementary therapies. Professor Ernst noted that “we have, if anything, too many quality of life measurements rather than too few these days ... in complementary medicine, it has largely been adopted so I do not know of any reasonably good trial that totally neglects the patient’s view in that sense.” But this was countered by Ms Chatfield who commented that although quality of life assessments had improved over the last few years, “with the kind of holistic treatment that we are measuring in homeopathy, we still do not have an outcome measure that successfully can measure the effect on every level. By their very nature, randomised control trials are trying to measure very specifically. Homeopathy is going to affect the whole person. It is very difficult to measure an outcome for a whole person” (Q 541).
- 8.33. **We recommend that robust research into the use of complementary diagnostic tests and treatments for allergy should examine the holistic needs of the patient, assessing not only the clinical improvement of allergy symptoms, but also analysing the impact of these methods upon patient wellbeing. Such trials should have clear hypotheses, validated outcome measures, risk-benefit and cost-effectiveness comparisons made with conventional treatments. Allergy centres (para 9.40) will allow the collection of information about any indirect consequences of misdiagnoses or delayed treatment.**

### Self-diagnosis

- 8.34. During the course of our inquiry witnesses have also voiced concern regarding allergy self-testing kits available over the counter in pharmacies or via the internet. Most of these kits test for food allergies or intolerances, and require the individual to send a blood sample to the manufacturers for analysis. The results of the test are then returned to the patient along with advice about the types of food they should avoid.
- 8.35. In particular, criticism has arisen of tests which analyse the level of IgG antibodies to foods in the blood. Antibodies of the IgG class have a general protective role in the immune response to infectious agents, and healthy individuals make a harmless IgG response to virtually all external agents, including foods.<sup>126</sup> Also, a subclass of IgG antibodies (termed IgG4) plays a protective role in atopic allergy. Dr Gill Hart, Technical Director of Yorktest Laboratories, a company which manufactures such tests, told us that the presence of either IgE or IgG antibodies does not necessarily prove whether a food allergy exists, but claimed that IgG could be used “as a marker that a reaction has occurred” (Q 742). However, there is limited evidence to support this claim.
- 8.36. Furthermore, the EAACI even discredited the use of well validated tests based on IgE antibodies if they are used on a self-testing basis. This was because the tests “cannot be interpreted without a detailed clinical history taken by an allergy-trained individual, thus over the counter and postal testing is open to misinterpretation unless expert opinion is available” (p 70). There was therefore concern that incorrect diagnoses could lead to unnecessary food avoidance in individuals who used these tests.
- 8.37. Aware of the responsibility that therefore lies with the providers of such tests, Dr Hart told us that Yorktest always gave individuals the option of sending results to their general practitioner, but noted that “in most cases they choose not to have their results sent back to their GP” (Q 734). Dr Hart admitted that the mechanisms used in the tests were “unclear and as a company we have tried to support and collaborate with groups to find out more about these mechanisms” but “we have struggled working with others to get grants to do this sort of work” (Q 742).
- 8.38. Given the lack of evidence for these services we were concerned to learn that Allergy UK recommended the Yorktest service for food intolerance. The charity acknowledged that a patient’s best option would be to consult a dietician, but noted that “being able to obtain a referral to a dietician who understands food intolerance is extremely difficult on the NHS” (p 303). Allergy UK had commissioned a survey of Yorktest consumers, independently audited by the University of York, which in Dr Hart’s words showed that of the “people who rigorously adhere to our diet, three out of four of those people are showing some benefit to their chronic conditions” (Q 744).
- 8.39. The charity added that in addition to clinical trials and anecdotal studies, “we also assured ourselves of the service level to their clients by Yorktest,” and stressed that this was the only test which it endorsed. Allergy UK continued: “in addition to the test, Yorktest clients have the opportunity

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<sup>126</sup> Barnes et al., *International Archives of Allergy and Immunology* 87, 1988, “Human serum antibodies reactive with dietary proteins. IgG subclass distribution,” pp 184–188.

(usually taken up) for two consultations with a nutritionist/dietician. They receive an excellent guide to their condition and the advice is very clear that they should not continue on an exclusion diet beyond the stated period of time” (p 303). However, Dr Scadding argued that “I do not think there is any point in spending money on IgG antibody tests ... the IgG antibody tests are liable to leave patients on diets that are inadequate and patients often like to think they are improving and they carry on in the teeth of very little improvement and may end up malnourished” (Q 802).

- 8.40. **We are concerned both that the results of allergy self testing kits available to the public are being interpreted without the advice of appropriately trained healthcare personnel, and that the IgG food antibody test is being used to diagnose food intolerance in the absence of stringent scientific evidence. We recommend further research into the relevance of IgG antibodies in food intolerance, and with the establishment of more allergy centres, the necessary controlled clinical trials should be conducted. We urge general practitioners, pharmacists and charities not to endorse the use of these products until conclusive proof of their efficacy has been established.**

#### Regulation of complementary medicine and self-testing kits

- 8.41. Many witnesses were outraged at the lack of regulation for some complementary practitioners and allergy diagnostic self-testing services. According to Allergy UK, “currently there is nothing to guide the consumer on whether the test, clinic or service has been clinically proven in any way” (p 293). The Royal College of Pathologists emphasised that “regulation of non-NHS clinics and over-the-counter treatments for allergy is not adequate—extensive evidence that it leads to direct harm to individuals is lacking, but there is clearly a legitimate concern that ineffective or misleading advice may be harmful, costly and may divert patients from effective evidence-based interventions” (p 126).
- 8.42. The DH reported that “private and voluntary healthcare providers are subject to regulation by the Healthcare Commission if they provide services set out in current legislation. Those services do not include over the counter allergy tests. However, providers registered with the Commission might offer allergy tests as part of a wider range of services” (p 7). Mr Lewis told us that the DH was developing legislation to regulate practitioners of acupuncture, herbal medicine and traditional Chinese medicine. It had also “funded the Prince of Wales’ Foundation for Integrated Health to set up a voluntary register of unregulated professions” and was establishing “a UK working party to consider the criteria to be used to decide whether a profession should or should not be statutorily regulated.” But the Department had no immediate plans to extend statutory regulation of complementary practitioners further (Q 892).
- 8.43. Various steps had already been taken by some societies of complementary practitioners towards voluntary self-regulation. The Society of Homeopaths noted that its members were “subject to a rigorous Code of Ethics” and that it was also “a key player in the Council of Organisations Registering Homeopaths ... working to establish a single register for the profession” which would allow patients and healthcare workers “to be sure of the professional standards, competency and accountability of the homeopaths they employ” (pp 202, 204). The British Institute for Allergy and

Environmental Therapy also reported that the “300 holistic allergy therapists” that it represented were “obliged to accept the strictest standards of practice and Code of Conduct.” Admission to the Institute was via its own Diploma course, and the Institute believed that “all complementary therapists should be members of a well-regulated professional association for their own therapy” (pp 224, 226).

- 8.44. However, Professor Ernst was concerned that regulation was “seen as a substitute for evidence,” and that regulation of complementary therapies would cause further research into their efficacy to cease. This was agreed with by Professor Corrigan, who added that “regulation does not mean the treatment is effective. At best, it may protect some patients from being poisoned and it may protect some patients from charlatans. Once you do license them, they are under less obligation than to show that what they do is of any benefit, which is counterproductive” (Q 531).
- 8.45. With regard to allergy self-testing kits available for public use, the *in vitro* diagnostic devices (IVDs) are regulated by the Medical Devices Regulations 2002. Manufacturers of IVDs in the United Kingdom must register with the MHRA, and the self-test element of the IVD must be assessed by a third party certification organisation, or “notified body,” designated by an EU member state (p 7). Mr Gutowski emphasised that the legislation does “not regulate in any way the service provider or the treatment regime” (Q 751). However, Dr Hart noted that “there is confusion within different competent authorities within Europe, my understanding is, of how the regulations are interpreted and even within the notified bodies within the UK,” and added that it was very important for these services to be regulated in the future (QQ 741, 752).
- 8.46. Despite the concerns raised, as yet there is no conclusive evidence to show that the tests and treatments offered by complementary practitioners, or the self-testing kits sold to the general public, cause any direct harm. These consultations, tests and therapies may indeed reduce patient anxiety and improve their general sense of wellbeing, even though their underlying allergy may not necessarily be diagnosed or treated. However, we are concerned that individuals who use such tests or seek such treatments without consulting a more conventional practitioner may suffer indirect consequences to their health and may spend large sums of money unnecessarily.
- 8.47. In 1999–2000 this Committee conducted a detailed inquiry into complementary and alternative medicine,<sup>127</sup> and some of the recommendations regarding the regulation of certain techniques are still being implemented. We therefore do not make further recommendations at this point but support ongoing scientific evaluation.

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<sup>127</sup> Science and Technology Committee, 6th Report (1999-2000): *Complementary and Alternative Medicine* (HL 123).



## CHAPTER 9: ALLERGY SERVICES

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### Introduction

- 9.1. The World Allergy Organization Specialty and Training Council recently reported the “remarkable paradox that in the UK, a country which has an outstanding record in allergy research, there is a remarkably poor clinical service for allergy sufferers.”<sup>128</sup> In 2004 the House of Commons Select Committee on Health reported on the provision of allergy services in the United Kingdom. It found that “serious problems exist in the current provision of allergy services. Those working in primary care lack the training, expertise and incentives to deliver services ... Many of the deficiencies in primary care are matched by weaknesses in secondary and tertiary care.” The Committee recommended that the GP curriculum should include allergy training, and that specialist allergy clinics should be developed across the country, as centres of good practice for training primary care staff.<sup>129</sup>
- 9.2. Following this report the DH carried out *A review of services for allergy* to analyse the need for allergy services and to assess whether these needs were being met. The review admitted “it is evident that the NHS needs substantially more capacity in services for allergy generally, including clinical specialists.” One of the recommendations of the review was that the responsibility for allergy service delivery should be placed into the hands of local commissioners. However, concern has been expressed that Primary Care Trusts (PCTs) do not have the resources to enable this local commissioning, especially as the review also conceded that there was a lack of baseline data on the profile of services for allergy.<sup>130</sup>
- 9.3. Our witnesses felt that the review did not address the underlying need to improve the training of medical practitioners in allergy (QQ 362–364). We heard that clinicians with a specialised knowledge of allergy are confined to a few specialist centres unevenly distributed around the country, and received a great deal of evidence reporting a general lack of allergy knowledge amongst healthcare professionals. We now address NHS services for patients with allergy.

### Diagnosis

- 9.4. An accurate diagnosis is key to treating an allergic condition adequately, and much depends on taking an accurate patient history with details of a patient’s symptoms, home and occupational environment, temporal and geographic features, relevant family history and any physical signs. Diagnostic tests are often based on skin tests, blood tests and challenge tests. But the results of tests are meaningless in isolation; they have to be interpreted in the context of the patient history, a difficult task which requires a solid training in allergy.<sup>131</sup> The Royal College of Physicians’ guidance, *Allergy: the unmet need*,

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<sup>128</sup> Warner et al., *Allergy and Clinical Immunology International – Journal of the World Allergy Organization* 18, 2006, “Allergy Practice Worldwide: A Report by the World Allergy Organization Specialty and Training Council,” pp 4–10.

<sup>129</sup> *op cit.* Health Committee, 6th Report (2003–04): *The Provision of Allergy Services* (HC 696–1), pp 3, 22–23, 32.

<sup>130</sup> *op cit.* DH *A review of services for allergy*, pp 51, 63.

<sup>131</sup> Note of the seminar, Appendix 4.

notes that “identification of potential allergic triggers” in asthma leads to “improved management and decreased morbidity” and “cost savings.”<sup>132</sup>

- 9.5. When an allergy is confirmed, the risk it poses can often only be assessed using challenge tests. These tests involve administration of increasing doses of an allergen, to determine the threshold dose which induces a reaction. At the Department of Dermatology and Allergy Centre at Odense University Hospital, we learnt that these tests were invaluable in helping children with food allergies and their families to manage their allergy. For example, skin prick tests and IgE antibody tests might show that peanut caused a reaction, but the challenge tests could indicate the threshold levels at which this allergen could be tolerated, and could make the difference between rigorously having to avoid peanuts, or being able to eat foods with peanut traces or peanut oils. Such challenge tests also assess cross-reactions between foods, enabling the patient to feel more confident about what they can eat.<sup>133</sup>
- 9.6. For many patients an accurate diagnosis will exclude allergy as the cause of their symptoms, at cost saving to the patient and to the NHS. This is especially important in cases of gastrointestinal disorders, where inappropriate food avoidance can impair nutrition<sup>134</sup> and be socially isolating (para 6.29), or suspected drug allergies when alternative medication may prove a lot more expensive and possibly less effective (p 188).
- 9.7. Allergies can also frequently be outgrown. During a visit to Addenbrooke’s Hospital, we heard that if regular IgE antibody tests and skin prick tests suggested that a child with food allergy had outgrown the allergy, then food challenge tests to confirm this could remove a significant burden from the child and their family.<sup>135</sup>
- 9.8. Early diagnosis and avoidance of an allergen is important in the treatment of occupational allergy. However, the BOHRF pointed out that “since many cases of occupational asthma first report to primary care, there is a need for better training in occupational medicine for GPs” (p 341). The HSE is therefore funding research to develop better training in primary care “for practice nurses on the symptoms and causes of occupational asthma, to empower them to give advice and guidance to patients as well as to reduce the time it takes to diagnose cases of occupational asthma” (p 13). The HSE also regularly convenes a Group of Occupational Respiratory Disease Specialists, which has developed “a standard of care document for the diagnosis of occupational asthma” (p 10). Professor Newman Taylor noted that this document had “the potential to improve standards of care” but doubted the “extent to which it will increase awareness” (Q 294). When asked whether a similar document for occupational skin allergies would also be useful, Dr Orton said that it would certainly be “desirable” (Q 296).

### KEY RECOMMENDATION

- 9.9. **It is vital that the Health and Safety Executive works with the Department of Health to ensure that medical practitioners are adequately educated in the diagnosis and treatment of occupational**

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<sup>132</sup> *op cit.* Royal College of Physicians, *Allergy: the unmet need*, 2003, p 41.

<sup>133</sup> Note of the visit to Denmark, Appendix 8.

<sup>134</sup> Note of the seminar, Appendix 4.

<sup>135</sup> Note of the visit to Addenbrooke’s Hospital, Appendix 9.

**allergic disorders. We support the work of the Group of Occupational Respiratory Disease Specialists convened by the HSE, which has developed a standard of care document for the diagnosis of occupational asthma, and recommend that the Health and Safety Executive should work with stakeholders to produce a similar document for occupational allergic skin disease.**

### Primary care

- 9.10. For most people with allergy-related symptoms, their first point of contact with the National Health Service will be a consultation with their general practitioner or pharmacist. Professor Andrew Wardlaw, Director of the Institute for Lung Health at Glenfield Hospital, pointed out that a lot of allergy “can be effectively treated in primary care or in the community, but the problem is that the knowledge of allergy in primary care is very poor” (Q 174). Many general practitioners and healthcare workers in the primary care sector are not sufficiently trained in allergy to be able to provide an accurate diagnosis, and some do not know when and to whom to refer allergy cases.
- 9.11. Dr Levy told us that delays in referrals from GPs to specialists in allergy “ranged from three to six months” and sometimes “much longer” (Q 332). According to Asthma UK, “it still takes the average person seven trips to a doctor before they get to a diagnosis of asthma” and “only 30 per cent of people with asthma are referred for any sort of allergy test by their GP. Most people do not even know whether their asthma is allergic or non-allergic, which then means that even starting a conversation about how you self-manage, how you avoid the triggers, becomes almost impossible” (Q 781).
- 9.12. When a GP does recognise the need to refer a patient, identifying the correct specialist for referral poses another difficulty. Allergy UK reported that “there is a lack of recognition, due to minimal training, within primary care that allergy is a multi-organ disease and GPs will refer a suspected allergic person often to two organ based specialists rather than one referral to an allergy specialist” (p 292), and added that “often patients get referred on to the wrong person so it might be a gastroenterologist or a respiratory physician when they really need an allergist” (Q 786).
- 9.13. In its *Review of services for allergy*, the DH included an estimate, produced by the BSACI, that “approximately 50 per cent of allergy referrals to secondary care are seen by consultant allergists, 40 per cent by clinical immunologists and 10 per cent by organ-based specialists with an interest in allergy.”<sup>136</sup> However, this must be seen in context as many patients never receive any referral at all. Dr Nasser commented that “I would say that only a very small proportion of patients get referred. There are increasing pressures in primary care not to refer patients into secondary care and these are pressures that have come on in the past six to 12 months because of cost, and because of the great debt that PCTs find themselves in” (Q 622).
- 9.14. The House of Commons Health Committee report recommended that in order to develop skills in primary care, “an infrastructure of specialist allergy services” was required.”<sup>137</sup> However, the DH did not believe that increasing the number of specialist services would be “a cost-effective way of using

<sup>136</sup> *op cit.* DH *A Review of services for allergy*, p 46.

<sup>137</sup> *op cit.* Health Committee, 6th Report (2003–04): *The Provision of Allergy Services* (HC 696–I), p 54.

limited resources,” arguing instead that “if primary health care teams, which include General Practitioners, practice nurses and community dieticians as well, were working well then actually the need for specialist services would be far less” (Q 17). Although the DH’s *Review of services for allergy* conceded that clinicians in primary care “may have limited knowledge or awareness of allergy,” may “overlook multi-system atopy” and “lack guidelines for therapy or referral,”<sup>138</sup> the Department has not developed effective ways to address these issues.

- 9.15. The review also pledged to “consider the options for commissioning the development of NICE guidelines for allergy, and work with the Royal Colleges on guidance for referral and care pathways.”<sup>139</sup> Despite this no guidelines have yet been developed and Mr Dillon explained that “if we can start them all in 2007 they would all be published at some point before the end of 2009” (Q 759). Mr Alan Bell, Project Lead of the DH *A Review of allergy services*, explained that “Ministers, including Mr Lewis, are at the moment awaiting a large submission from officials in the Department making recommendations for the next wave of clinical guidelines products to be referred to NICE” (Q 885).
- 9.16. To complement the NICE guidelines the Review pledged to develop “Care pathways for children with allergic symptoms,” and Mr Lewis told us that the Department had “asked the Royal College of Paediatrics and Child Health to scope work” to do this, and that it had also “commissioned Skills for Health to develop National Occupational Standards for the UK for allergy” (Q 884). In addition, Dr Scadding told us that the BSACI had been collaborating with the Primary Care Allergy Network to produce “very detailed, evidence based guidelines” which would instruct general practitioners how, in an eight minute consultation, to identify “whether a problem is likely to be allergic and, if so, where the best secondary treatment should be sought” (Q 788).
- 9.17. However, there is a limit to the efficacy of guidelines. Mr Dillon pointed out that “local NHS organisations start from different positions for individual services” so the speed at which each will be able to meet NICE guidelines will vary (Q 761). Professor Hourihane also pointed out that “if you went into any GP’s surgery the list of guidelines on their desk is taller than their computer. It is an impossible position to be put in” (Q 665).

### Secondary and tertiary care

- 9.18. If the symptoms of allergy are severe, or several allergic disorders occur together, then the patient may have to be referred to a specialist for further investigation. Consultant allergists are able to treat the whole spectrum of allergic disorders including respiratory, dermatological and gastrointestinal allergies. However the National Allergy Strategy Group told us that “there are only 26.5 whole time equivalent consultants in allergy” in the United Kingdom (p 127), so many allergy patients are treated by organ-based specialists.
- 9.19. When asked about the DH’s *Review of services for allergy*, Professor Durham noted that “they fully acknowledge that there is a problem, that there is a

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<sup>138</sup> *op cit.* DH *A Review of services for allergy*, p 59.

<sup>139</sup> *op cit.* DH *A Review of services for allergy*, p 67.

modern epidemic, that there is a lack of training and that there is a lack of resources, but [they] provided no solutions.” Although the review had admitted that more trainees in allergy were needed “the only limp suggestion was that we contact the regional deaneries to see how this would come about with no central funding. We have gone through this consultative process, certainly within the North West Tees Deanery, and there is no money to encourage more trainees ... I think it is a very inadequate response to a major problem that has already gone through four years of consultation” (Q 186).

- 9.20. The main thrust of the DH review was that “the responsibility for ensuring that patients’ needs are met lies with local commissioners.”<sup>140</sup> However, on a visit to the Allergy Clinic at Addenbrooke’s Hospital, we were told that it was a struggle to convince local commissioners to invest in allergy training and services because allergy was not yet recognised as an important subject.<sup>141</sup> We fail to see how PCTs and Strategic Health Authorities can commission allergy services effectively as the review stated that “the absence of baseline data on the profile of services for allergy and the cost makes it difficult to develop a strategic national view of how and where services could be developed.”<sup>142</sup> Professor Wardlaw commented that the review “recognised, I think, that there was a major problem and that the NHS had not kept up with that problem in terms of service provision, but they came up with no real solutions to that problem and did tend to pass the buck in my view to the PCTs for whom it is not a priority and who will not pick up that buck. At the moment we feel that the Department of Health does not have adequate policies to address the allergy epidemic” (Q 186).
- 9.21. As part of the review, the DH took evidence from the BSACI, which stated that there were approximately 94 allergy clinics in England, although only six of these were led by full-time specialist allergists. Other clinics were led by part-time allergists, respiratory physicians, dermatologists, clinical immunologists or paediatricians with an interest in allergy.<sup>143</sup> The appropriateness of using these specialists to treat allergic conditions was a matter of debate amongst our witnesses. Dr Pamela Ewan, Co-Chair of the National Allergy Strategy Group, told us that due to a lack of allergy training for these specialists, “they mostly treat these diseases symptomatically without considering allergy” even though for some patients an accurate diagnosis of their allergy is vital. For example “asthma or eczema can be adequately treated with medicines without considering allergy” but “in many children, eczema will be driven by food allergy. If you can identify the food and avoid it, the eczema can disappear” (Q 326).
- 9.22. However, other witnesses highlighted the importance of organ-based specialists in the treatment of patients with severe conditions. For example, Professor Barnes felt it was appropriate that “people with severe asthma get managed by chest physicians because it is important to have people who understand other lung diseases that can present with symptoms like asthma” and that “the same would apply to people with severe eczema which has to be distinguished from other skin diseases.” In these cases the organ-based specialist needed to take the lead in treating the patient but “the allergist has

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<sup>140</sup> *op cit.* DH *A review of services for allergy*, p 63.

<sup>141</sup> Note of the visit to Addenbrooke’s Hospital, Appendix 9.

<sup>142</sup> *op cit.* DH *A review of services for allergy*, p 51.

<sup>143</sup> *op cit.* DH *A review of services for allergy*, pp 46–47.

a very important role as a specialist adviser” (Q 205). Dr Ewan acknowledged that “we would not be arguing all these diseases should be seen by an allergist,” but that in a significant proportion of cases, consultation with an allergist could provide an added benefit as “you sort out food allergy, drug allergy, asthma, eczema, rhinitis in a single consultation, so not only do you give the allergy diagnosis and management but you also save sequential referrals and therefore you reduce the burden on these other specialities, all of whom have their own waiting list problems” (Q 326).

### *The treatment of children*

- 9.23. Children with allergic conditions often require a specialist paediatric allergist to manage the complexities of their conditions. Dr Leech told us that “a general paediatrician who sees a patient with allergies will usually manage the patient in a very superficial way” whereas in an allergy consultation the patient’s history and often multiple problems are explored in depth. “It is a qualitative difference rather than a quantitative difference. That is not always appreciated by a lot of paediatricians who see patients with allergies” (Q 326).
- 9.24. For children with chronic conditions, the transition from paediatric to adult care requires particular support. Professor Hourihane told us that for allergy, “there has not been the evolution of paediatric allergy clinics on a broad enough scale to say that there is a logical and well-defined structure of transitional services.” He added that there was a “real risk that the children who have been carefully supervised with food allergies will then become the adolescents who leave all their kit at home and go to restaurants at risk.” Dr Hyer echoed this, reporting that “when I finish with my patients at 15 I do not have anywhere to send them. I know who my paediatric allergy colleagues are, but I do not really have access to strong adult allergy services” (Q 683).

### *The treatment of drug and occupational allergies*

- 9.25. For cases of rarer allergies such as drug allergies, Dr Pumphrey reported that patients “are unlikely to get ideal advice from any but the best informed of specialist clinics. I recently undertook a survey of the majority of UK clinics offering this type of testing. The variety of approaches and heterogeneity of findings suggests the need for further research into the most effective approaches and guidance for such clinics to raise the standard of all to that of the best” (p 189). During our visit to Addenbrooke’s Hospital we heard that drug allergic patients who were not referred to specialist allergy clinics were often given little information about their condition, and were therefore confused about how to protect themselves in the future.<sup>144</sup> The Royal College of Anaesthetists noted that “because of the complexities of modern anaesthesia it is necessary for patients to be seen by an anaesthetist with a special interest in anaphylaxis at the same time as seeing an immunologist or allergist.” Four bi-specialty clinics exist within the United Kingdom, along with “approximately six additional uni-specialty clinics in which patients are seen only by an immunologist or allergist” (p 351).
- 9.26. Rarer cases of occupational allergic disorders also warrant consultation with occupational health specialists. An audit of hospital care for occupational

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<sup>144</sup> Note of the visit to Addenbrooke’s Hospital, Appendix 9.

lung disease, jointly undertaken for the HSE and British Thoracic Society, showed that “it was usual for patients to be diagnosed in-house, as opposed to being referred to a specialist occupational respiratory centre, but that respiratory departments often lacked the necessary resources to arrive at a definitive diagnosis” (p 10). Therefore Professor Newman Taylor felt that there was “a need for a relatively small number of sub-specialists” to manage occupational asthma, as not all chest physicians had the necessary skills or experience. He added that “there are six or seven specialists within the UK who have this as a particular interest” but many are now reaching retirement age (Q 285).

- 9.27. Similarly, Dr Orton stressed the importance of “sub-specialists with a particular interest” in occupational dermatitis, but many of these specialists were also nearing retirement (Q 285). Professor Newman Taylor was concerned that financial constraints threatened services for occupational dermatitis and asthma, adding that “unless there is either Department of Health or, a specialist commissioning process where there are funds made available for it, which is the way it probably can best be done, I can see this as something which no individual hospitals might see as their responsibility” (Q 287).

### **The need for further education and training**

#### *Primary care*

- 9.28. We are concerned that whilst Government policy intends to devolve allergy care even further to GPs, the underlying problem of training those in primary care has not been tackled. Dr Nasser told us that for GPs at undergraduate level “there is hardly any teaching on allergy and there is certainly no structured teaching.” He went on to say that when it comes to postgraduate training “there are so few allergy specialists in the country, there is no one to undertake teaching” (Q 621). Professor Marshall admitted that there were areas of weakness in allergy training, such as acquiring “an awareness of allergy as a potential diagnosis” and “understanding some of the second line issues around diagnostic procedures and treatment procedures” (Q 14). With regard to postgraduate courses, he added that “particularly one in Southampton and one in Warwick ... have been around for some years and are very highly regarded” (Q 15). However, Dr Ewan commented that postgraduate courses for those in primary care were often “theoretical” and lacked “the clinical experience” (Q 330).
- 9.29. Concerned about the lack of training, the BSACI has organised “regional training days in allergy for general practitioners and nurses” aiming, as Professor Durham commented, to “increase awareness of allergy, to inform general practitioners” and “to encourage them to develop a specialist interest” (Q 175).
- 9.30. However, there appears to be a lack of incentives to encourage general practitioners to undergo further training in allergy, and Dr Levy pointed out that although asthma was included as a quality indicator in the Quality and Outcomes Framework, “allergy does not feature at all” (Q 337); he explained that “those of us who made proposals for the last Quality and Outcomes Framework did recommend that allergy was included. It was not accepted, unfortunately” (Q 339).

9.31. Although the Government has encouraged the development of General Practitioners with a Special Interest (GPwSI) in various areas of medicine,<sup>145</sup> Dr Levy told us that he had been the only GPwSI in allergy in the whole country, and that “despite demonstrating benefit for the patients and savings, allergy is not one of the primary care trust priorities and the clinic closed down” (Q 337). He added that this left “GPs cobbling together different courses and educational facilities” and that clinical attachments were difficult to find (Q 320). Dr Egner told us that posts for GPwSI in allergy were “entirely dependent on local initiatives” and there was no formal programme to develop GPwSI. Although many practitioners would not receive a qualification in allergy, “they will and have already gained specialist expertise which no doubt will be of use to the service in the future” (Q 338).

### *Secondary and tertiary care*

9.32. With regard to specialist allergists, Dr Ewan told us that “the first problem is that we need more trainee posts and we need more funding for them. There is no way the primary care trusts would be prepared to fund these at the moment” (Q 363).

9.33. But training specialist allergists is only part of the story. Dr Ewan also pointed out that in the training curricula for other medical specialties, allergy plays “a very minor part” so doctors can complete their specialty training “with virtually little or no exposure to allergy” (Q 320). Echoing this, Professor Durham reported that for the BSACI “it is a major priority for us to empower secondary care specialists in individual specialties—dermatologists, respiratory physicians, immunologists—in how to manage allergy effectively” (Q 203). It is therefore clear that collaboration between these different specialties is vital, and improving their training in allergy is imperative.

9.34. Mr Lewis told us that the National Institute for Health Research Integrated Academic Training Pathway had established 17 academic training programmes “relevant to allergy,” during which 33 Academic Clinical Fellowships (ACFs) and 16 Clinical Lectureships (CLs) would be supported through partnerships between universities, local NHS Trusts, including PCTs and Postgraduate Deaneries. However, these programmes included immunology, dermatology, respiratory medicine and other specialties, so only six ACFs and two CLs were awarded solely in allergy. It was unclear how these academic programmes would assist in developing the clinical services, and Mr Lewis added that “although the scheme provides funding for posts, it is up to the local institution how it uses the funding to create posts and who is appointed to them ... It is up to the hosting partnership to integrate this new funding with existing posts” (p 323).

### *The role of the Allergy Centre*

9.35. Despite the clear need for further training in allergy, the evidence we received demonstrated that organ-based specialists were a valuable resource that should be harnessed when developing an effective allergy service. Whilst visiting the Department of Dermatology and Allergy at the Universitätsmedizin Berlin, we learnt that allergy was practiced as a sub-

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<sup>145</sup> Department of Health, *Implementing care closer to home: Convenient quality care for patients, Part 3: The accreditation of GPs and Pharmacists with Special Interests*, 2007.



specialty in Germany, mainly by dermatologists, but also by ENT physicians, pneumologists and immunologists. Professor Zuberbier felt that it was therefore important to encourage communication between all specialists with a particular interest in allergy.<sup>146</sup> During a visit to the Evelina Children's Hospital in London, we were also told that in order to diagnose and treat allergic children effectively, the hospital arranged weekly multi-disciplinary meetings to discuss cases, involving nurses, consultants and dieticians. Cross-referral was enhanced by joint clinics; for example, joint allergy and gastroenterology clinics were held every two weeks.<sup>147</sup>

- 9.36. In Denmark, we visited the Department of Dermatology and Allergy Centre at Odense University Hospital, a specialist centre for the treatment of patients with severe or complex allergy. Because complex allergy cases could involve many organs, specialists in dermatology, paediatrics, internal medicine, occupational medicine, clinical chemistry and clinical immunology all worked together at the centre to ensure that patients received the best possible treatment. The aim of the clinic, which had proved successful with patients and clinicians, was to investigate and diagnose cases of suspected allergy, produce a management plan and, where possible, refer patients back to their general practitioner or district hospital for treatment.<sup>148</sup>
- 9.37. Allergy centres also provide an educational resource. During our visit to the Allergy Clinic at Addenbrooke's Hospital, we learnt that the clinic organised short training courses in allergy for local GPs, but that many effective educational opportunities occurred in everyday work. This included telephone consultations with GPs, which avoided unnecessary referrals, and consultants' letters which established a jointly managed care plan.<sup>149</sup> Similarly, the Department of Dermatology and Allergy Centre in Denmark educated the local GP and specialist workforce, by making its standard operating procedures available, offering advice on allergy testing and providing guidance on appropriate referral pathways.<sup>150</sup> Currently, this education of healthcare workers in the United Kingdom is generally inhibited by the lack of specialists trained in allergy.
- 9.38. The Allergy Clinic at Addenbrooke's Hospital also played an important role in educating patients about their allergies. For example, children with nut allergies were provided with a comprehensive management plan which included guidance on avoidance, a treatment plan, and training in how to administer emergency medication. Model letters had also been constructed for schools to educate teachers and other staff about how to manage the allergic condition.<sup>151</sup> The Allergy Centre at Odense University Hospital similarly worked with patient organisations and other departments to organise patient education programmes in asthma, eczema and food allergy to educate patients in how to cope with allergy in everyday life.<sup>152</sup>
- 9.39. The House of Commons Health Committee recommended that "a minimum of one specialist allergy centre should be established in areas equivalent to

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<sup>146</sup> Note of the visit to Germany, Appendix 6.

<sup>147</sup> Note of the visit to the Evelina Children's Hospital, Appendix 5.

<sup>148</sup> Note of the visit to Denmark, Appendix 8.

<sup>149</sup> Note of the visit to Addenbrooke's Hospital, Appendix 9.

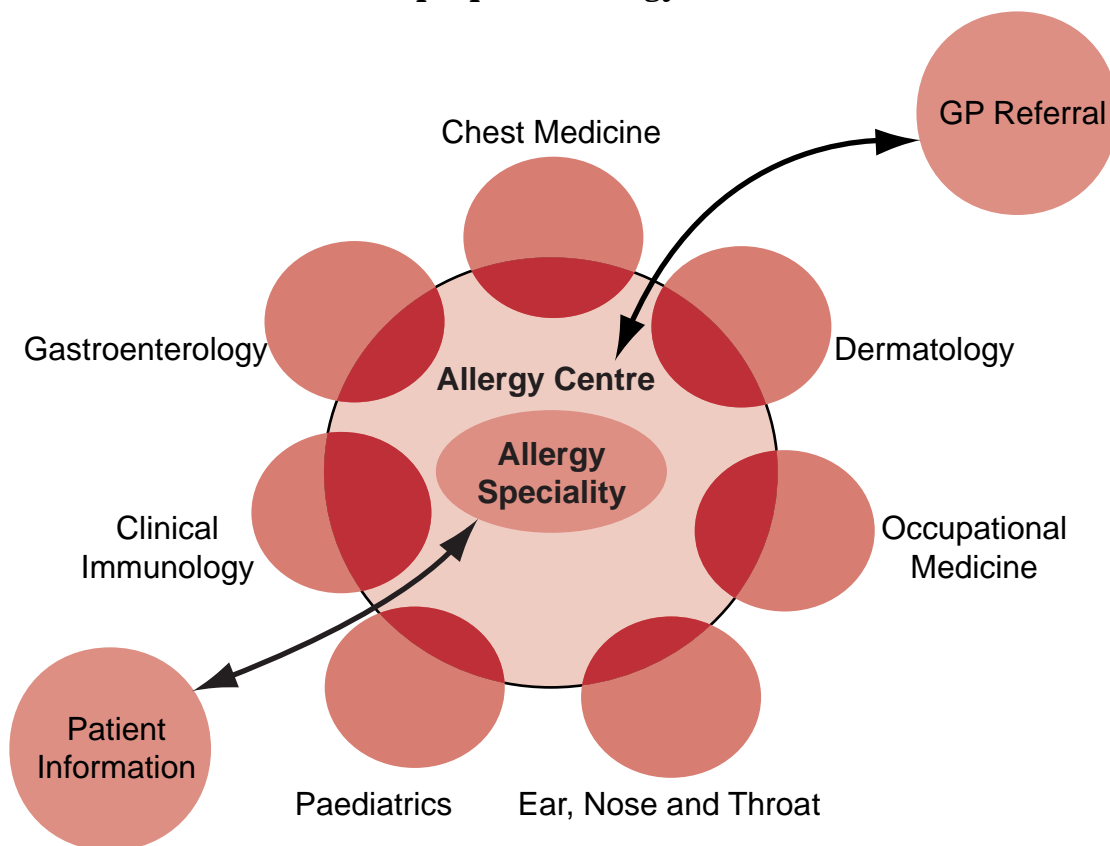
<sup>150</sup> Note of the visit to Denmark, Appendix 8.

<sup>151</sup> Note of the visit to Addenbrooke's Hospital, Appendix 9.

<sup>152</sup> Note of the visit to Denmark, Appendix 8.

each of the former NHS regions, serving populations of five to seven million, to offer at least some local expertise for allergy sufferers ... each centre should have as a minimum two adult allergy consultants, two paediatric allergy consultants supported by paediatric nurse specialists, two full-time nurse specialists, one half-time adult paediatrician and one half-time paediatric dietician.”<sup>153</sup> We support the development of specialist allergy centres but, in light of the evidence we received, we feel that these centres should not only comprise allergy specialists, but also chest physicians, dermatologists, ENT physicians, clinical immunologists, gastroenterologists, occupational allergists, paediatricians and others working together (see Figure 3).

**FIGURE 3**  
**The proposed Allergy Centre**



The circumambient areas reflect the contribution of each speciality to allergy management. The allergy centre is an important educational resource for primary and secondary care services, as well as local charities, schools and businesses

### KEY RECOMMENDATION

- 9.40. **We recommend that at least one allergy centre, led by a full time allergy specialist, should be established in each Strategic Health Authority. These centres would act as clusters of expertise of those with an interest in allergy, and should each contain a chest physician, dermatologist, ENT specialist, clinical immunologist, gastroenterologist, occupational health practitioner and**

<sup>153</sup> *op cit.* Health Committee, 6th Report (2003–04): *The Provision of Allergy Services* (HC 696–I), p 32.

paediatrician. Specialist nurses and dieticians trained in allergy would also be core team members.

#### **KEY RECOMMENDATION**

- 9.41. Each allergy centre should provide the diagnostic facilities necessary to investigate complex allergies, and should ensure that those who perform these tests have received accredited allergy training. Parallel clinics could avoid the need for multiple referrals and separate visits to hospital for those with multi-system allergic disease. Regular multi-disciplinary team meetings will ensure knowledge is shared and complex cases are discussed. This places the needs of the patient first, allowing rapid accurate diagnosis that informs comprehensive patient management plans. The inclusion of paediatric allergists within allergy centres will ensure that children with allergic conditions are treated appropriately and will enable a smooth transition from paediatric to adult allergy care.

#### **KEY RECOMMENDATION**

- 9.42. Once a diagnosis is obtained and a treatment plan developed at the allergy centre, the patient's disease can often be managed back in primary or general secondary care. However, patients with severe or complex allergic conditions may need long-term follow-up from specialists in the allergy centre. Allergen immunotherapy by injection (see para 8.2), should always be carried out by specialists within the allergy centre because of the risk of anaphylaxis.

#### **KEY RECOMMENDATION**

- 9.43. New allergy centres should enhance and build on existing pockets of excellence to bring together existing clinics and specialists, and to develop and expand upon the services already offered. Where specialist allergist posts already exist, these allergists will be key to the new allergy centres and should take the administrative lead with the appropriate time commitment. In other areas, new allergist posts should be established.

#### **KEY RECOMMENDATION**

- 9.44. Allergy centres should be distributed nationwide, but it is not necessary for every allergy centre to provide every service; some should become national reference centres for less common allergies, such as anaesthetic allergy. Therefore patients may need to travel a relatively long distance to a national reference centre for their condition, for accurate diagnosis and management planning. The patient should then be referred back to their local service and primary care practitioners for ongoing management.

#### **KEY RECOMMENDATION**

- 9.45. Collaboration between clinicians in primary, secondary and tertiary care is key to improving the diagnosis and management of people with allergic conditions. Once established, the allergy centre in each region should encourage and co-ordinate the training of local GPs

and other healthcare workers in allergy. In a “hub and spokes” model, the allergy centre, or “hub,” would act as a central point of expertise with outreach clinical services, education and training provided to doctors and nurses in primary and secondary care, the “spokes.” In this way, knowledge regarding the diagnosis and management of allergic conditions would be disseminated throughout the region. In regions where there are GPwSI in allergy, they should also play a role in the “hub” of the allergy centre.

#### **KEY RECOMMENDATION**

- 9.46. **The allergy centre should act as a lead in providing public information and advice. Specialists at the centre should work in collaboration with allergy charities, schools and local businesses to provide education and training courses for allergy patients, their families, school staff and employers, in how to prevent and treat allergic conditions. Feedback between patient groups and allergy centres would enable the allergy centres to assess whether they were providing the necessary services, and would ensure that the advice offered by patient groups was accurate and updated in the light of rapidly changing scientific evidence.**

#### **KEY RECOMMENDATION**

- 9.47. **The development of NICE clinical guidelines for the diagnosis and management of allergic conditions is no substitute for improving the training of those in primary care. We recommend that the Royal Colleges should work together to ensure that the training undergraduate medical students receive enables them to recognise the role of allergy in disease processes and to refer patients appropriately. It is imperative that general practitioners develop their allergy knowledge through continuing professional development and as part of their membership of the Royal College of General Practitioners.**

#### **KEY RECOMMENDATION**

- 9.48. **The Royal Colleges, the postgraduate Deans, the Postgraduate Medical Education and Training Board and the British Society for Allergy and Clinical Immunology, should also work together to develop generic quality-assured clinical postgraduate courses in allergy, for doctors in both primary and secondary care and for nurses and others, particularly those wishing to become an accredited specialist in allergy.**
- 9.49. The DH admitted that allergy services were unequally distributed across the United Kingdom with a “relative paucity in the north and the south west.”<sup>154</sup> Mr Lewis pointed out that the DH no longer operates a “command and control” policy from central Government. Instead it issues guidance to PCTs to draw attention to possibilities but it “cannot force or impose that at a local level.” Therefore, he suggested that it would be useful to seek a lead Strategic Health Authority which could “engage with perhaps one or more than one

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<sup>154</sup> *op cit.* DH *A review of services for allergy*, p 47.

PCT within their region,” developing robust allergy services so that others could “learn from those services” (Q 877).

- 9.50. Dr Hyer commented that from his own audit, in “50 per cent of my new referrals to my allergy services, I can tell them they do not have an allergy and send them away. That is a significant saving bearing in mind that 10 per cent of all GP prescriptions in this country are based on some kind of atopic or allergic role ... I also believe if you make the right diagnosis you can help prevent hospital admissions and complications” (Q 689). Professor Corrigan was also of the opinion that “the cost effectiveness of an effective allergy service in this country would be overwhelmingly positive” (Q 539). However, Dr Ewan told us that the DH does “not record properly what goes on with allergy in the NHS” and that it has not even begun to properly assess the cost-effectiveness of allergy services. Dr Egner added that specialists needed to be brought together and “we need to standardise care before we can look at the different models that are out there, before we can compare them and know what is cost-effective” (Q 352).

#### **KEY RECOMMENDATION**

- 9.51. **We recommend that the Department of Health should establish a lead Strategic Health Authority, preferably not in the South of England, which would work with its Primary Care Trusts to develop the first allergy centre. A full cost analysis should be integral to this to assess the efficacy of diagnosing and managing allergy using the “hub and spokes” model. Improved education of clinicians in allergy, with an accurate diagnosis recorded on the Systemised Nomenclature of Medicine (SNOMED) system, should assist a thorough cost analysis to be carried out. The lessons learnt from the pilot allergy centre should then be used to inform the development of further allergy centres in other regions.**

#### **KEY RECOMMENDATION**

- 9.52. **Once established, allergy centres in different regions should have a contractual obligation to share the resources they develop, such as standard operating procedures, clinical guidelines and patient information. The lead Strategic Health Authority should ensure that there are national reference centres for rarer allergic conditions such as some occupational disorders or adverse drug reactions.**

#### **KEY RECOMMENDATION**

- 9.53. **The lead allergist in each allergy centre should be responsible for maintaining a patient database to support clinical research within their region. The Office for Strategic Coordination of Health Research and the Translational Medicine Funding Board should work with the lead Strategic Health Authority to support clinical research in the allergy centres and co-ordinate national research projects. The establishment of allergy centres would provide the clinical environment to undertake future clinical evaluations of immunotherapy and complementary therapies.**

## CHAPTER 10: SUMMARY OF RECOMMENDATIONS

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### KEY RECOMMENDATIONS

#### *Allergy centres*

- 10.1. We recommend that at least one allergy centre, led by a full time allergy specialist, should be established in each Strategic Health Authority. These centres would act as clusters of expertise of those with an interest in allergy, and should each contain a chest physician, dermatologist, ENT specialist, clinical immunologist, gastroenterologist, occupational health practitioner and paediatrician. Specialist nurses and dieticians trained in allergy would also be core team members. (9.40)
- 10.2. Each allergy centre should provide the diagnostic facilities necessary to investigate complex allergies, and should ensure that those who perform these tests have received accredited allergy training. Parallel clinics could avoid the need for multiple referrals and separate visits to hospital for those with multi-system allergic disease. Regular multi-disciplinary team meetings will ensure knowledge is shared and complex cases are discussed. This places the needs of the patient first, allowing rapid accurate diagnosis that informs comprehensive patient management plans. The inclusion of paediatric allergists within allergy centres will ensure that children with allergic conditions are treated appropriately and will enable a smooth transition from paediatric to adult allergy care. (9.41)
- 10.3. Once a diagnosis is obtained and a treatment plan developed at the allergy centre, the patient's disease can often be managed back in primary or general secondary care. However, patients with severe or complex allergic conditions may need long-term follow-up from specialists in the allergy centre. Allergen immunotherapy by injection should always be carried out by specialists within the allergy centre because of the risk of anaphylaxis. (9.42)
- 10.4. New allergy centres should enhance and build on existing pockets of excellence to bring together existing clinics and specialists, and to develop and expand upon the services already offered. Where specialist allergist posts already exist, these allergists will be key to the new allergy centres and should take the administrative lead with the appropriate time commitment. In other areas, new allergist posts should be established. (9.43)
- 10.5. Allergy centres should be distributed nationwide, but it is not necessary for every allergy centre to provide every service; some should become national reference centres for less common allergies, such as anaesthetic allergy. Therefore patients may need to travel a relatively long distance to a national reference centre for their condition, for accurate diagnosis and management planning. The patient should then be referred back to their local service and primary care practitioners for ongoing management. (9.44)
- 10.6. Collaboration between clinicians in primary, secondary and tertiary care is key to improving the diagnosis and management of people with allergic conditions. Once established, the allergy centre in each region should encourage and co-ordinate the training of local GPs and other healthcare workers in allergy. In a "hub and spokes" model, the allergy centre, or "hub," would act as a central point of expertise with outreach clinical services, education and training provided to doctors and nurses in primary

and secondary care, the “spokes.” In this way, knowledge regarding the diagnosis and management of allergic conditions would be disseminated throughout the region. In regions where there are GPwSI in allergy, they should also play a role in the “hub” of the allergy centre. (9.45)

- 10.7. The allergy centre should act as a lead in providing public information and advice. Specialists at the centre should work in collaboration with allergy charities, schools and local businesses to provide education and training courses for allergy patients, their families, school staff and employers, in how to prevent and treat allergic conditions. Feedback between patient groups and allergy centres would enable the allergy centres to assess whether they were providing the necessary services, and would ensure that the advice offered by patient groups was accurate and updated in the light of rapidly changing scientific evidence. (9.46)
- 10.8. We recommend that the Department of Health should establish a lead Strategic Health Authority, preferably not in the South of England, which would work with its Primary Care Trusts to develop the first allergy centre. A full cost analysis should be integral to this to assess the efficacy of diagnosing and managing allergy using the “hub and spokes” model. Improved education of clinicians in allergy, with an accurate diagnosis recorded on the Systemised Nomenclature of Medicine (SNOMED) system, should assist a thorough cost analysis to be carried out. The lessons learnt from the pilot allergy centre should then be used to inform the development of further allergy centres in other regions. (9.51)
- 10.9. Once established, allergy centres in different regions should have a contractual obligation to share the resources they develop, such as standard operating procedures, clinical guidelines and patient information. The lead Strategic Health Authority should ensure that there are national reference centres for rarer allergic conditions such as some occupational disorders or adverse drug reactions. (9.52)
- 10.10. The lead allergist in each allergy centre should be responsible for maintaining a patient database to support clinical research within their region. The Office for Strategic Coordination of Health Research and the Translational Medicine Funding Board should work with the lead Strategic Health Authority to support clinical research in the allergy centres and co-ordinate national research projects. The establishment of allergy centres would provide the clinical environment to undertake future clinical evaluations of immunotherapy and complementary therapies. (9.53)

#### *Professional education*

- 10.11. It is vital that the Health and Safety Executive works with the Department of Health to ensure that medical practitioners are adequately educated in the diagnosis and treatment of occupational allergic disorders. We support the work of the Group of Occupational Respiratory Disease Specialists convened by the HSE, which has developed a standard of care document for the diagnosis of occupational asthma, and recommend that the Health and Safety Executive should work with stakeholders to produce a similar document for occupational allergic skin disease. (9.9)
- 10.12. The development of NICE clinical guidelines for the diagnosis and management of allergic conditions is no substitute for improving the training of those in primary care. We recommend that the Royal Colleges should

work together to ensure that the training undergraduate medical students receive enables them to recognise the role of allergy in disease processes and to refer patients appropriately. It is imperative that general practitioners develop their allergy knowledge through continuing professional development and as part of their membership of the Royal College of General Practitioners. (9.47)

- 10.13. The Royal Colleges, the postgraduate Deans, the Postgraduate Medical Education and Training Board and the British Society for Allergy and Clinical Immunology, should also work together to develop generic quality-assured clinical postgraduate courses in allergy, for doctors in both primary and secondary care and for nurses and others, particularly those wishing to become an accredited specialist in allergy. (9.48)

#### *Research and product development*

- 10.14. Although high quality research into cellular and molecular mechanisms of allergy is advancing, the factors contributing to allergy development and the “allergy epidemic,” are poorly understood. It is imperative that further research should focus on the environmental factors, such as early allergen exposure, which may contribute to the inception, prevention or exacerbation, of allergic disorders. Long-term cohort studies are a vital part of this research, and interventional studies are key to verifying the role which these factors may play. We look to the development of the Office for Strategic Coordination of Health Research to improve the co-ordination and funding for these types of projects. (7.26)

- 10.15. We are concerned that the knowledge gained from cellular and molecular research is not being translated into clinical practice. We therefore regard allergy research directly related to health care to be an area of unmet need that requires greater priority. The Translational Medicine Funding Board must ensure that allergy research is applied to develop novel individualised treatments. The cost of a central disease registry may be too high to warrant investment. Therefore, a comprehensive patient database within each allergy centre will be key to epidemiological and other studies, and is best maintained by ownership at a local level. (7.27)

- 10.16. Immunotherapy is a valuable resource in the prophylactic treatment of patients with life-threatening allergies, or whose allergic disease does not respond to other medication. Although initially expensive, immunotherapy can prevent a symptomatic allergic response for many years, and may prevent the development of additional allergic conditions, so its wider use could potentially result in significant long-term savings for the NHS. We recommend that NICE should conduct a full cost-benefit analysis of the potential health, social and economic value of immunotherapy treatment. (8.9)

#### *Food*

- 10.17. It is imperative that environmental health officers, trading standards officers and catering workers are adequately and comprehensively trained in practical allergen management. We welcome the development of a training programme by the Food Standards Agency and recommend that the FSA should work with other training providers to produce consistent practical training courses of a high standard. (6.28)



10.18. It is imperative that work is carried out to investigate whether peanut consumption or avoidance in early life significantly affects a child's risk of developing peanut allergy. We therefore support the work of the Learning Early About Peanut allergy (LEAP) study. We are very concerned that Department of Health dietary advice regarding peanut consumption for pregnant women and infants is based upon evidence that was reported nine years ago. Recent evidence suggests that this advice has not succeeded in reducing the prevalence of peanut allergy and may indeed be counterproductive. We recommend that this advice should be withdrawn immediately, pending a comprehensive review by the Food Standards Agency and the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment. (6.57)

### *Schoolchildren*

10.19. We recommend that the Department for Children, Schools and Families should review the clinical care that hayfever sufferers receive at school, and should reassess the way in which they are supported throughout the examination season. The Department for Children, Schools and Families should also ensure that the provisions made by different schools are fair and consistent. (5.26)

## **FURTHER RECOMMENDATIONS**

### *Monitoring allergy*

10.20. We recommend that the Department of Health should ensure the Systemized Nomenclature of Medicine (SNOMED) system is supported by appropriate training, to ensure its efficacy as a simple consistent classification system to record allergic disease, monitor its prevalence and inform the commissioning of allergy services. (3.8)

10.21. We welcome the involvement of the Health and Safety Executive in EU working groups to standardise the collection of data on occupational illness. The use of common standards in the diagnosis of occupational allergic conditions would allow international comparisons of disease incidence, and enable the evaluation of disease reduction strategies. We recommend that the Health and Safety Executive should fund The Health and Occupation Reporting network with the full economic cost of its surveillance programmes, and we urge the Government to ensure support for this work in the future. (3.16)

10.22. Information from children on sensitisation and symptoms is especially important and must be followed up to assess the progression of allergic diseases in order to predict workload. We recommend that future epidemiological studies measure not only the incidence of allergic symptoms, but also record the prevalence of confirmed allergic sensitisation. (4.22)

### *The air we breathe*

10.23. We recommend that the Department of Health should work with the Department for Communities and Local Government to support and encourage controlled trials involving multiple interventions, to examine the effect of ventilation, humidity and mite-reduction strategies on allergy development and control. As chemicals used in the construction industry

may play a role in triggering symptoms in some allergic patients, further evaluation of their role is also required in order to inform procurement policies. (5.14)

- 10.24. As climate change and air pollution may significantly impact upon the development of allergic disease, we support the thrust of the recommendations in the report, *Air Quality and Climate Change: A UK perspective*. We recommend that when developing policies for industry, transport or housing, the Government should take account of the interlinkages between air quality, climate change and human health. (5.22)

#### *Schoolchildren*

- 10.25. We support the use of individual care plans for children with medical needs, as described in the Government guidance *Managing Medicines in Schools and Early Years Settings*. However, we are concerned that many teachers and support staff within schools are not appropriately educated in how to deal with allergic emergencies. We recommend that the Department for Children, Schools and Families should audit the level of allergy training these staff receive, and should take urgent remedial action to improve this training where required. (5.33)
- 10.26. We are concerned about the lack of clear guidance regarding the administration of autoinjectors to children with anaphylactic shock in the school environment, and recommend that the Government should review the case for schools holding one or two generic autoinjectors. (5.37)

#### *Workforce*

- 10.27. We welcome the educational work of the Health and Safety Executive to raise awareness and decrease the risk of occupational allergic disorders amongst employers and staff, and would like to see this work developed. Once allergy centres have been developed we recommend that the HSE should liaise with the occupational allergy specialist in each centre to inform its policies and develop strategies to prevent occupational allergic disorders. (5.53)
- 10.28. We are concerned that employees who are forced to leave work due to an occupational allergic disease can remain unemployed for long periods of time. We recommend that job centres should review the way they work with employers, to improve the way in which they can assist these workers to enter retraining schemes and find alternative employment. (5.58)

#### *Information for consumers*

- 10.29. Vague defensive warnings on labels for consumers with food allergy can lead to dangerous confusion and an unnecessary restriction of choice. We recommend that the Food Standards Agency should ensure the needs of food allergic consumers are clearly recognised during the review of food labelling legislation being undertaken by the European Union. (6.10)
- 10.30. As sensitivities to various allergens vary widely, we believe that setting standardised threshold levels for package labelling is potentially dangerous for consumers with allergies. Instead, we recommend that food labels should clearly specify the amount of each allergen listed within the European Union directive, if it is contained within the products, and we endorse the Food Standards Agency's initiative to discourage vague defensive warnings. (6.11)

10.31. The phrases “hypoallergenic” and “dermatologically tested” are almost meaningless, as they only demonstrate a low potential for the products to be a topical irritant. We recommend that such products should warn those with a tendency to allergy that they may still get a marked reaction to such products. (6.21)

*Advice for allergy sufferers*

10.32. Many teenagers and young adults with food allergies sometimes take dangerously high risks when buying food. We therefore recommend that the Department of Health, working with the Food Standards Agency, charities and others, should explore novel ways to educate young people about allergy and the prevention of anaphylaxis. (6.34)

10.33. We recommend that the education of children about indoor air quality and its role in allergy development, should be a priority for the Interdepartmental Steering Group producing the “Children’s Environment and Health Strategy.” (6.41)

10.34. Allergy charities play an important role in providing public advice, but must continue to work together and with clinical services to avoid duplication of work, and ensure that consistent, evidence-based policies and public advice are provided. (6.64)

10.35. Pharmacists are often consulted by the general public about allergic conditions, and thus lift a significant burden from general practitioners. It is therefore essential that the advice offered regarding allergy is accurate, and should be given by trained pharmacists rather than unqualified assistants. We recommend that as part of the implementation of the Pharmacists and Pharmacy Technicians Order 2007, adequate allergy education should be provided for all pharmacists, to ensure that they provide high quality advice to allergy sufferers. (8.20)

*Evaluation of complementary techniques*

10.36. We recommend that robust research into the use of complementary diagnostic tests and treatments for allergy should examine the holistic needs of the patient, assessing not only the clinical improvement of allergy symptoms, but also analysing the impact of these methods upon patient wellbeing. Such trials should have clear hypotheses, validated outcome measures, risk-benefit and cost-effectiveness comparisons made with conventional treatments. Allergy centres will allow the collection of information about any indirect consequences of misdiagnoses or delayed treatment. (8.33)

10.37. We are concerned both that the results of allergy self testing kits available to the public are being interpreted without the advice of appropriately trained healthcare personnel, and that the IgG food antibody test is being used to diagnose food intolerance in the absence of stringent scientific evidence. We recommend further research into the relevance of IgG antibodies in food intolerance, and with the establishment of more allergy centres, the necessary controlled clinical trials should be conducted. We urge general practitioners, pharmacists and charities not to endorse the use of these products until conclusive proof of their efficacy has been established. (8.40)

## APPENDIX 1: MEMBERS AND DECLARATIONS OF INTEREST

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### Members:

- Lord Broers
- Lord Colwyn
- Baroness Finlay of Llandaff (Chairman)
- Lord Haskel
- Lord May of Oxford
- Baroness Perry of Southwark
- Baroness Platt of Writtle
- † Lord Rea
- Earl of Selborne
- † Viscount Simon
- † Lord Soulsby of Swaffham Prior
- Lord Taverne
  
- † Co-opted Members

### Specialist Adviser:

Professor Anthony Barrington Kay, Professor Emeritus and Senior Research Investigator, National Heart and Lung Institute, Imperial College and Honorary Consultant Physician, Royal Brompton Hospital, London

### Declared Interests:

- Lord Broers  
*None*
- Lord Colwyn  
*President, All-Party Group for Complementary and Integrated Healthcare*
- Baroness Finlay of Llandaff  
*Honorary Professor, Palliative Medicine, Cardiff University*
- Lord Haskel  
*None*
- Lord May of Oxford  
*Advisory Board Member, East Hill Venture Capital, which has a general interest in the life sciences*
- Baroness Perry of Southwark  
*None*
- Baroness Platt of Writtle  
*None*
- Lord Rea  
*Chairman, The All Party Food and Health Forum*
- Earl of Selborne  
*None*
- Viscount Simon  
*None*
- Lord Soulsby of Swaffham Prior  
*President, Royal Institute of Public Health*  
*President, Parliamentary and Scientific Committee*  
*Chairman, Companion Animal Welfare Council*
- Lord Taverne  
*Chairman, Sense About Science*

A full list of Members' interests can be found in the Register of Lords Interests:  
<http://www.publications.parliament.uk/pa/ld/ldreg.htm>

Professor Anthony Barrington Kay, Specialist Adviser  
*Co-Founder, Consultant and Shareholder, Circassia Ltd (an allergy vaccine company)*

**APPENDIX 2: WITNESSES**

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The following witnesses gave evidence; those marked with \* gave oral evidence:

Advertising Standards Authority

\* Mr Grant Ager

\* Professor Raymond Agius

\* Mr Dave Allen

Allergy UK:

\* Ms Lindsey McManus

Anaphylaxis Campaign:

\* Ms Mandy East

Asthma UK:

\* Ms Donna Covey

\* Mr Les Bailey

\* Professor Peter Barnes

British Association of Dermatologists:

\* Professor David Gawkrödger

British Institute for Allergy & Environmental Therapy:

\* Mr Don Harrison

British Occupational Health Research Foundation

British Society for Allergy & Clinical Immunology:

\* Professor Stephen Durham

British Society for Ecological Medicine:

\* Dr Damien Downing

British Thoracic Society

\* Professor Jonathon Brostoff

\* Professor Peter Burney

Chartered Institute of Environmental Health:

\* Mr John Bryson

Dr A T Clark

Coeliac UK

\* Professor Chris Corrigan

\* Mrs Margaret Cox

\* Professor Adnan Custovic

Department for Communities and Local Government:

\* Ms Anne Kirkham

## Department for Education and Skills:

\* Mr Chris Wells

## Department of Health:

\* Mr Alan Bell

\* Mr John Bromley

\* Professor Sally Davies

\* Mr Ivan Lewis MP

\* Professor Martin Marshall

\* Dr Keith Ridge

## Department for Work and Pensions:

\* Dr Peter Wright

\* Dr Graham Devereux

\* Mr Andrew Dillon

\* Professor Edzard Ernst

## European Academy of Allergology and Clinical Immunology:

\* Professor Anthony Frew

## Faculty of Homeopathy

## Food Standards Agency:

\* Miss Gill Fine

\* Mrs Sue Hattersley

\* Mrs Hazel Gowland

\* Dr Clive Grattan

\* Professor John Harper

\* Dr Paul Harrison

## Health and Safety Executive:

\* Mr Steve Coldrick

\* Mr Patrick McDonald

\* Professor Jonathan Hourihane

\* Dr Warren Hyer

## Institute of Food Research:

\* Dr Clare Mills

\* Professor Gideon Lack

## Latex Allergy Support Group

\* Professor Tak Lee

\* Dr Ian Leitch

\* Ms Andrea Martinez-Inchausti

## Medical Research Council:

\* Dr Diana Dunstan

## Medicines and Healthcare products Regulatory Agency:

\* Mr Richard Gutowski

\* Mr Rob Miguel

\* Dr Jean Monro

\* Dr Shuaib Nasser

## National Allergy Strategy Group:

\* Dr Pamela Ewan

\* Professor Anthony Newman Taylor

\* Dr David Orton

## The Patent Office

\* Dr Richard Pumphrey

## Research Councils UK

\* Dr Mark Rosenthal

## Royal College of Anaesthetists

## Royal College of General Practitioners:

\* Dr Mark Levy

## Royal College of Midwives

## Royal College of Nursing:

\* Ms Sarah Day

\* Ms Joy Winks

## Royal College of Paediatrics and Child Health:

\* Dr Susan Leech

## Royal College of Pathologists:

\* Dr William Egner

## Royal College of Physicians

## Royal National Throat Nose and Ear Hospital:

\* Dr Glenis Scadding

## Royal Pharmaceutical Society of Great Britain

\* Professor Aziz Sheikh

## Society of Homeopaths:

\* Ms Kate Chatfield

\* Professor Andrew Wardlaw

\* Professor John Warner

## Wellcome Trust

\* Professor Simon Wessely



- ★ Professor John Westwick  
Yorktest Laboratories Ltd:
- ★ Dr Gill Hart
- ★ Ms Helen Young

### APPENDIX 3: CALL FOR EVIDENCE

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The House of Lords Select Committee on Science and Technology has appointed a Sub-Committee, chaired by Baroness Finlay of Llandaff, to investigate allergy and allergic diseases. The inquiry will address all types of allergy and cover a full range of policy issues. However, the inquiry will not focus primarily on allergy service provision, which was the subject of recent reports by the House of Commons Health Committee and the Department of Health.<sup>155</sup>

The Committee invites evidence on all aspects of allergy, and in particular on the following questions:

#### *Defining the problem*

- What is allergy? What is the difference between allergy and intolerance?
- What is and what is not known about the origins and progression of allergic disease?
- Why is the incidence of allergy and allergic diseases rising? Why does the UK in particular have such high prevalence of allergy?
- What gaps exist in establishing the overall disease burden for all types of allergy and what are the barriers to filling these gaps?
- In addition to the impact on the health service, what is the overall socio-economic impact of allergic diseases (for example, absence from work and schools)?

#### *Treatment and management*

- What is the effect of current treatments on the natural history of allergic disease?
- What is the evidence-base for pharmacological and non-pharmacological management strategies?
- Is the level of UK research into allergy and allergic disease adequate?
- What are the most promising areas of research into preventing or treating allergy?

#### *Government policies*

- How effective have existing Government policy and advice been in addressing the rise in allergies?
- How is current knowledge about the causes and management of allergic disease shared within Government? For example,
  - Do housing policy and regulations governing the indoor environment pay enough attention to allergy?
  - How effectively are food policy and food labelling regulations responding to the rise in food allergies?

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<sup>155</sup> *op cit.* Health Committee, 6th Report (2003–04): *The Provision of Allergy Services* (HC 696–1) and *op cit.* DH *A review of services for allergy.*

*Patient and consumer issues*

- What impact do allergies have on the quality of life of those experiencing allergic disease and their families?
- What can be done to better educate the public and to improve the quality of information that is available to patients and undiagnosed sufferers?
- Are current regulatory arrangements, for example, those governing private clinics offering diagnostic and therapeutic services and the sale of over the counter allergy tests, satisfactory?

## APPENDIX 4: SEMINAR HELD AT THE ROYAL SOCIETY OF MEDICINE

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### 1 November 2006

A seminar was organised at the Royal Society of Medicine to give the Committee an opportunity to discuss issues connected to the inquiry with a number of academic and clinical experts, along with representatives from charities and the Department of Health.

Members of the Sub-Committee present were: Lord Broers, Lord Colwyn, Baroness Finlay of Llandaff (Chairman), Baroness Perry of Southwark, Baroness Platt of Writtle, Lord Soulsby of Swaffham Prior, Lord Taverne. In attendance were: Miss Sarah Jones (Clerk), Professor A. B. Kay (Specialist Adviser) and Dr Cathleen Schulte (Committee Specialist).

The participants were: Professor Stephen Holgate (University of Southampton), Professor Peter Burney (Imperial College London), Professor Adnan Custovic (University of Manchester), Professor John Warner (Imperial College London), Dr Pamela Ewan (Co-Chair, National Allergy Strategy Group), Dr Glenis Scadding (Royal National Throat, Nose and Ear Hospital), Dr Clare Mills (Institute of Food Research), Professor Aziz Sheikh (University of Edinburgh), Professor William Cookson (Imperial College London), Professor Anthony Frew (President, EAACI), Professor Tak Lee (Director, MRC-Asthma UK Centre in Allergic Mechanisms of Asthma), Professor Gideon Lack (Guy's and St Thomas' Hospital), Ms Lindsey McManus (Allergy UK), Ms Mandy East (Anaphylaxis Campaign) and Mr Alan Bell (Department of Health).

The Committee was welcomed to the Royal Society of Medicine by Baroness Finlay of Llandaff, President of the Royal Society of Medicine and Chairman of the Sub-Committee. The following presentations were heard:

#### *What is allergy and intolerance? (Professor Kay)*

Professor Kay began by introducing the concept of allergy. Since Clemens von Pirquet's original proposal of the word "allergy", the term had been corrupted and often used synonymously but incorrectly with hypersensitivity. The word "allergy" needed redefining but as there was no universally agreed definition there was still confusion.

An allergy was an exaggerated immunological response to a foreign substance which was either inhaled, swallowed, injected, or came into contact with the skin or eye. Therefore allergy was a mechanism, not a disease. In contrast, other disorders such as food intolerances and irritable bowel syndrome were not allergies because they did not involve an alteration to the immune system. The term "multiple chemical hypersensitivity" (MCS) was a misnomer as patients were not sensitised to chemicals in an immunological sense. The term MCS was used largely by lay people and doctors practising complementary medicine to describe a condition which conventional practitioners labelled "idiopathic environmental intolerance."

There were different classifications of allergy. Atopic (IgE-mediated) allergy was the domain of allergy specialists, whereas non-atopic (IgG or T cell-mediated) allergy, which caused conditions such as extrinsic allergic alveolitis and contact dermatitis, was usually managed by the appropriate organ specialists.

*The mechanisms of allergy and allergic disease (Professor Holgate)*

Professor Holgate discussed the mechanisms of allergic diseases, pointing out that they were often associated with an inflammatory response. For example, when a person suffered from bronchial asthma, the inflamed airways resulted in constriction, and this was often associated with remodelling or repair processes which amplified the symptoms of asthma.

Allergic symptoms were not solely due to a persistence of the allergen, but were also dependent on the genetic composition of the person and a range of environmental factors. For example, the faeces of the housedust mite contained a major allergen but the number of mites which lived in a house was dependent on the age of the house, ventilation, dampness and furnishing.

Professor Holgate explained the role of the IgE antibody in the allergic response, which involved the release of inflammatory mediators from mast cells. The T lymphocyte (T cell) was also important in determining allergic phenotypes in genetically susceptible people. There were still a number of questions to be answered, such as the role that regulatory T cells played in modifying allergic responses in early life, and why allergies were often less severe in later life. Certain types of immunotherapy could reduce allergic symptoms and it was important to find the role that T cells played in this response. The way in which the allergic and inflammatory responses in the airways interacted with structural elements to cause an increase in airway smooth muscle, and other signs of remodelling, was unknown.

*Epidemiology and rising trends in allergy and asthma (Professor Burney)*

Professor Burney began by describing the general increase in the prevalence of allergic disease in recent years. There had been a general increase in male asthma admissions over the last four decades, but there was a birth cohort effect, and the majority of this increase had been seen in 0–14 year olds. The trends were slightly different for women, amongst whom there was a higher prevalence of asthma at child-bearing age.

It was important to take age and gender into consideration when studying the prevalence of allergies. In general the prevalence of allergy was on the increase, but there was some ambiguity as to whether it was increasing in all age groups. The conclusion was that the incidence of atopic disease in childhood had probably stopped increasing, but older age groups were more likely to suffer from an epidemic of sensitisation in the decades to come. Entirely new food allergies were also appearing, such as allergy to kiwi fruit, but increases in allergy prevalence did not seem to correlate with increases in obesity. Professor Burney noted that policies in all areas should take account of these recent trends.

*Environment and lifestyle (Professor Custovic)*

Professor Custovic noted that asthma was a heritable condition, but the results of genetic studies relating to allergy prevalence were inconsistent. The fact that asthma had increased in prevalence over the last five decades was not due to a change in the genetic gene pool, but to environmental factors.

However, there was still uncertainty regarding the role that the environment played. Conflicting studies examining environmental factors such as cat ownership or breastfeeding, had shown to protect against, increase the risk, or even make no difference to the likelihood of developing allergic diseases.

It was not urban life *per se* that increased the risk of allergy, but affluent life. Some studies had demonstrated that an increased exposure to endotoxins reduced the risk of developing allergies, but exposure levels produced different results in different parts of the world. Professor Custovic believed that this was due to the genotype of the populations studied. Polymorphisms in “risk alleles” meant that endotoxin exposure was protective in some populations but not in others. However, a single genetic polymorphism could increase, decrease or have no effect on the risk of developing an allergic disease, as the environment played a vital role in establishing allergy. This implied that no single drug would be effective at treating allergy in everybody, so tailor-made treatments and prevention measures needed to be developed for each patient or population.

#### *Early life origins of allergy (Professor Warner)*

Professor Warner highlighted the need for a new approach to tackle allergies considering their increase in prevalence, impact on quality of life and the lack of any cure. Even in the second trimester of pregnancy, there were factors which could start to influence the risk of a child developing an allergy, such as the nutritional state of the mother. In the past it was thought that avoiding specific allergens during pregnancy reduced the chance of a child developing those particular allergies. But recent evidence had disagreed with this, and had shown that exposure to some allergens in appropriate contexts actually helped to protect children. In addition, it was thought that the genotype of a mother affected the chance of her child developing an allergy, as did environmental considerations such as whether the mother smoked or what medication she took during pregnancy.

#### *Prevention of allergic diseases (Professor Sheikh)*

Professor Sheikh noted that there were four different levels of allergy prevention: primary, secondary, tertiary and primordial. Primary prevention described interventions which aimed to reduce the incidence of disease, whilst secondary preventative interventions aimed to reduce the prevalence of disease by shortening its duration. Tertiary preventative measures aimed to reduce the impact of long-term conditions, and primordial prevention described actions that inhibited the emergence and establishment of environmental or behavioural conditions which increased the risk of disease. Immunotherapy was a valuable tertiary preventative measure, but due to the risk of hypersensitivity reactions, was no longer used regularly in the United Kingdom.

Primary preventative strategies focussed on well individuals who were yet to develop the condition, and needed to be developed using a robust evidence base. However, high quality clinical data regarding allergy prevention was limited. Professor Sheikh noted that to establish a good evidence base, future clinical studies were needed with robust methodological approaches and long-term follow-ups. Future research would need to consider genetic and environmental interactions, test multi-faceted interventions and also consider the health services involved. Data collection was hampered by the fact that investigators had difficulty accessing the range of data needed to assess the overall impact of any interventions. Innovative data linkage techniques and a change in the regulatory framework were needed to overcome these barriers.

### *Genetics of asthma and atopy (Professor Cookson)*

Professor Cookson explained that allergic diseases were caused by both genetic and environmental factors, but it was the genetic research that had contributed to the majority of our understanding about allergic mechanisms. The study of allergic disorders was complicated by the fact that various genetic polymorphisms could predispose individuals to allergies, and allergic disorders could exhibit many different phenotypes.

A number of genome screens had been carried out to identify possible genes that may be important in the development of conditions such as asthma and atopic dermatitis. It had been found that the development of allergic conditions might be secondary to epithelial damage. It was possible that a normal bacterial flora helped the epithelial barriers to develop, and that when this barrier was deficient it predisposed the person to conditions such as asthma and atopic dermatitis.

The results of the ISAAC studies suggested that different genes were involved in allergy development in different parts of the world, and that the genetic risk was substantial. They also indicated that the genetic risk was multiplicative as combinations of certain genes could greatly increase the risk of a person developing an allergy. Since the human genome had been sequenced, there were very powerful genomic tools that could be used to measure expression levels across the whole genome, which provided a valuable insight into the function of cells and tissues. However, this technology was very expensive and it would take a long to evaluate the data produced.

### *Management of allergic diseases (Professor Frew)*

Professor Frew emphasised that allergy prevention should be attempted where possible, but when this failed to halt an allergic disorder there were four areas of allergy management:

**Diagnosis:** it was vital that doctors correctly identified whether a patient actually had an allergic disorder and what triggered the attacks or episodes.

**Allergen avoidance:** once an allergic disorder had developed, the chances of further attacks could be minimised by avoiding the allergen or other environmental conditions which aggravated the condition. However, the question of whether the avoidance of factors such as housedust mite resulted in substantial clinical improvement, whether these approaches were cost-effective, and who should pay for such measures, was controversial.

**Appropriate use of drugs:** a number of drugs, such as antihistamines and corticosteroids, were used to relieve the symptoms of allergic diseases and prevent their progression. However, many allergy sufferers were not prescribed appropriate treatments because they chose to self-care rather than visit their GP. Of those who did visit their GP, a substantial proportion did not achieve full control of their disease and were not referred to specialists. It was important to empower patients who suffered from conditions such as asthma. This could be achieved by providing sufficient education and medication to allow patients to treat themselves, and by carrying out regular reviews of their management plan.

**Specific immunotherapy:** this involved the administration of increasing doses of allergen extract to desensitise allergy sufferers. Specific immunotherapy was particularly useful in patients at risk of anaphylactic shock following wasp or bee stings, for whom the effects of desensitisation treatment could last around 10 years. Specific immunotherapy was also useful for patients who suffered from

allergic rhinitis whose symptoms could not be controlled using standard drug therapy, and for cases where allergen avoidance was difficult to achieve, such as patients who suffered from cat allergy. However, immunotherapy was still relatively expensive and there had been concerns regarding its safety.

*Research funding: present and future (Professor Lee)*

Professor Lee drew attention to the recent analysis of health research funding, produced by the UK Clinical Research Collaboration, which had shown that the amount of funding for research into different health categories was not proportionate to their disability adjusted life years. Research into allergic diseases crossed several health categories, and research into areas such as immunology and asthma was only partly allergy-related, so it was difficult to identify allergy funding *per se*.

Funding for allergy came from a variety of sources including the BBSRC, MRC, Wellcome Trust, Asthma UK and the Department of Health, but was insufficient for the level of research required. Compared to other countries, the United Kingdom was not distributing funding for allergy research in a sufficiently co-ordinated manner. Funding bodies needed to recognise that immunology, microbiology, genetics and epidemiology were all complementary when researching allergic diseases. Longitudinal interventional studies were needed to pursue long term research goals, but these required funding which could be guaranteed for a number of years. Multidisciplinary projects were important for fostering translational research.

*Food allergies and intolerance (Professor Lack)*

Professor Lack explained that there was a wide range of adverse reactions to food, and only some of these were allergic. An allergic reaction had to involve an alteration within the immune system directed against the specific food protein. Food allergies could have a significant impact upon patients' quality of life, and caused symptoms ranging from skin rashes and swelling of the mouth, to anaphylaxis and death. Food allergies were particularly difficult to control in children, whose diets had to be constantly monitored by their parents.

The prevalence of food allergy in children was on the increase, but there were only eight paediatric allergists within the United Kingdom, a relatively small number compared to other European countries. This meant that parents often turned to complementary procedures such as Vega testing. However, Professor Lack felt that many complementary approaches were not clinically proven and could be dangerous. In addition, unnecessary food exclusion could lead to malnutrition and the development of conditions such as rickets or iron deficiency anaemia.

Professor Lack felt that current Government advice regarding food allergies was not sufficiently evidence-based. For example, studies had previously suggested that food allergen avoidance in infancy might prevent the development of food allergies, but more recent observations had suggested the opposite. Therefore the recommendation that pregnant women and infants should not be exposed to peanuts needed re-appraising. To investigate this further, Professor Lack had been granted funding from the Immune Tolerance Network for the LEAP study. The LEAP study would investigate whether the consumption or avoidance of peanuts in infancy could affect the development of peanut allergy.

Professor Lack thought that an evaluation was also needed of DH breastfeeding guidance, which recommended exclusive breastfeeding for the first six months to



protect against atopic disease. In summary, public health policies to prevent food allergies had not only been failing, but might have contributed to the problem. More funding was therefore needed to research these issues and formulate reliable public advice.

*Discussion and closing remarks (under Chatham House rules)*

Discussion was prompted by short presentations from Dr Ewan, Dr Scadding, Dr Mills, Ms McManus and Ms East. Discussion focussed on the following areas:

*Service provision*

Allergy patients often felt let down by NHS services, and parents did not know where to go for advice. Many doctors, nurses and dieticians did not recognise or understand allergy symptoms so could not appropriately treat them or refer patients to specialists. This was not only a waste of time and resources, but could prolong patients' discomfort or frustration, and could be dangerous if potentially fatal allergies were left undiagnosed. A general improvement in allergy training for GPs was therefore required.

To correctly diagnose and treat an allergic condition, diagnostic allergy tests had to be interpreted in the context of a patient's history, which required the skills of a specialist allergist. Allergy specialists were often needed to determine the cause of a patient's allergic reaction, to discover whether they suffered from multiple allergies, and to prescribe the appropriate treatment. However, many people who suffered from severe allergic reactions were not referred to allergy specialists because there was only a very small specialist workforce in comparison to the large clinical need.

Although the Department of Health had conceded the problem, its solution that PCTs should develop allergy services was not practical. In 2003, the Royal College of Physicians had recommended that one allergy centre should be established in each of the eight former NHS regions, which had been estimated to cost around £5.6 million per annum. Due to a lack of economists in clinics it was hard to estimate the financial impact of misdiagnosing and mistreating allergy. But in the long-term, it was felt that the indirect costs of undiagnosed allergies (such as the treatment of serious anaphylactic shocks and allergic complications following earlier misdiagnoses), would outweigh the initial costs of establishing allergy centres. The NHS therefore needed to develop better ways to analyse the cost-effectiveness of specialist allergy centres.

The provision of allergy services within the United Kingdom was very different to other European countries. In the United Kingdom, allergy treatment was split between many organ-based specialities, such as ENT, gastroenterology and dermatology; whereas Germany, for example, had a more cross-cutting multidisciplinary approach to allergy treatment. However, it was difficult to draw comparisons between countries because their medical systems had evolved in different ways.

*Allergy research*

Prevention was preferable to treatment so it was vital to prevent the "allergic march" and halt the increase in the prevalence of allergic conditions. Funding was needed for long-term research projects to investigate interventions that could reduce the risk of children developing allergies. As a large proportion of the population already suffered from some form of allergic disease, it was also

important to find general principles that could be implemented to prevent their conditions worsening.

Without a clinical infrastructure to inform a national database of allergy cases, it was hard to co-ordinate clinical research appropriately. Allergy research was complicated as the development of allergic conditions depended on a number of factors including a person's genotype, exposure to environmental substances, diet and immune reactions experienced in early life. Allergy research therefore had to be co-ordinated to cover all these aspects in an integrated manner, and needed to incorporate quantitative research, social science and clinical studies. However, funding for each of these fields came from different bodies, so a co-ordinated national strategy was needed. Asthma was the only allergic condition with a research council, so there was a need for a national research strategy for anaphylaxis, food allergies, allergic dermatitis and other allergic conditions.

Further research was needed into the role that early infections played in the development of food allergies. This would require the use of well defined animal models and model systems *in vitro*, complemented by focussed studies in humans.

#### *Burden of allergic diseases*

It was felt that the DfES did not adequately recognise the effect of conditions such as hayfever on children's academic performance. Conditions such as atopic dermatitis could cause major problems for many people at work, leading to temporary or permanent unemployment and financial difficulties. It was therefore important to consider the socio-economic burden of allergic diseases in addition to their health impact.

#### *Immunotherapy*

There was a spectrum of allergic diseases that ranged from the mild, such as hayfever, to the severe, such as anaphylaxis. Even at the mild end of the allergic spectrum, diseases such as hayfever could have a significant social impact on sufferers. Furthermore, a large proportion of asthmatic people also had rhinitis, and research had shown that the early treatment of rhinitis could prevent the development of asthma in later life. The use of immunotherapy to treat rhinitis was therefore crucial in halting the increase of asthma and other allergic diseases. A long-term cohort study was needed to compare the effectiveness of sublingual immunotherapy and pharmacotherapy in the treatment of allergic conditions.

#### *Complementary medicine and self-testing kits*

Some private practitioners offered non-conventional procedures to diagnose and treat allergic conditions, such as kinesiology, Vega testing and the "freedom technique." There was concern that practitioners who offered these treatments exploited vulnerable patients and did not provide a reliable diagnosis or treatment. This was not only expensive for patients, but could also be dangerous if they were incorrectly informed about their risk of reaction.

It was also felt that many self-testing allergy kits, and accompanying diagnostic services, did not provide a reliable diagnosis as they did not take into account the patient's symptoms or history. Stronger regulation of these services was therefore required.

## APPENDIX 5: VISIT TO THE MRC-ASTHMA UK CENTRE IN ALLERGIC MECHANISMS OF ASTHMA, EVELINA CHILDREN'S HOSPITAL

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13 December 2006

Members visiting the hospital were: Lord Colwyn, Baroness Finlay of Llandaff (Chairman), Lord May of Oxford, Lord Rea, Earl of Selborne, Viscount Simon, Lord Taverne. In attendance: Dr Christopher Johnson (Clerk), Miss Sarah Jones (Clerk), Professor A. B. Kay (Specialist Adviser), Dr Cathleen Schulte (Committee Specialist).

The Committee was welcomed to the hospital by Dr Edward Baker (Joint Director of Clinical Leadership and Medical Director, Guy's and St Thomas' NHS Foundation Trust), Professor Richard Trainor (Principal, King's College London), Professor Robert Lechler (Vice-Principal (Health), King's College London), Professor Gideon Lack (Head of Paediatric Allergy) and Professor Tak Lee (Director of the MRC-Asthma UK Centre). Parts of the hospital had been designed by children, who had named the floors and wards, and played a part in the design of the furniture.

### *Presentations*

Professor Trainor and Professor Lechler provided an overview of King's College London and how the Centre sat within the Health schools of the College. King's College London had more MRC centres than any other institution and placed great importance on asthma and allergy, hence its decision to partake in the development of the MRC-Asthma UK Centre for research. With regard to asthma and allergy, the most important area of research was translational work, which developed laboratory findings into practical treatments.

Professor Lee summarised the activities of the Centre which was a collaboration between the MRC, Asthma UK, King's College London, Imperial College London, and the NHS. The NHS provided a vital infrastructure and access to patients through the Guy's and St Thomas' NHS Foundation Trust, King's College Hospital Trust, Royal Brompton Hospital Trust and St Mary's Hospital Trust. This was the only centre of its kind in the country. Previously, research into allergic disorders had been fragmented between different units, but the development of the MRC-Asthma UK Centre meant that all the organisations had been able to combine their research strengths into one cohesive strategy for the first time. The centre employed 21 senior scientists of whom 11 were clinicians, and worked in partnership with a network of general practices in the East of London. Its mission was to make discoveries to inform new treatments and preventative strategies, and the priorities for research were informed by national consultations on asthma research convened by Asthma UK.

In addition, the Centre provided an environment for research training and had been awarded 10 PhD studentships by the MRC and Asthma UK. The Centre also supported NHS trainee allergists in partner hospital trusts by providing research experience. But although the centre was able to help train new allergy specialists, there were very few jobs within the NHS for them to take up.

Professor Lack explained that collaboration between clinicians and researchers was vital for translational research as it enabled clinical trials to be carried out in children, and allowed the fast tracking of discoveries into clinical practice. The

Children's Allergy Service at the hospital was extremely valuable as it could see 3,000 outpatients a year, and around 500 day-cases. The hospital employed three paediatric allergy consultants, three paediatric allergy nurses and a paediatric dietician. King's College London employed an additional nine clinical research staff, scientists, and administrative staff who worked side by side with the clinical team. Allergic disorders often crossed the boundaries of specialist consultants. Therefore the hospital arranged weekly multi-disciplinary meetings involving nurses, consultants and dieticians, and the paediatric allergy service held joint allergy clinics with other paediatric services (such as gastroenterology, every two weeks) and with adult allergy services. This integration of services was important as it enabled research into the way in which lifestyle modifications in childhood could reduce the risk of allergy in later life.

Discussion focussed on the following points:

- There were various types of asthma which needed to be treated in different ways. Although steroids were a common treatment for most types of asthma, "steroid resistant asthma" was resistant to this treatment. Current knowledge of this topic was limited, so further research was needed to develop an understanding of the various phenotypes, and to establish which patients responded to which treatments.
- When the hospital had first opened, the majority of patients had been referred from local GPs. Over time there had been an increase in the number of tertiary referrals, and the number of referrals from outside London. There had also been an increase in the number of referrals from departments such as dermatology, gastroenterology, and ENT, which demonstrated the unmet need for allergy services. The number of complex allergy cases, where children were allergic to multiple allergens and suffered from multiple allergic disorders, had also increased.
- The capacity for allergy treatment needed to be increased. There was no framework for allergy treatment within the NHS, so the disease burden was not fully known. When allergy specialists completed their training there was a lack of jobs in the NHS for them to enter, and the relative paucity of allergists in the United Kingdom meant that there were few people who could adequately train specialists and GPs. It was felt that PCTs did not have the money or resources to solve this problem, and as the full disease burden of allergic disorders was still unknown, PCTs would not be able to judge the services needed.
- Allergy was not coded as a single disease for research purposes; the majority of funding was provided for asthma research. Allergy funding in general was focussed on projects examining the mechanisms of allergic diseases and, while this was essential, it was felt that additional funding should be allocated for research into clinical treatments. There was also a need to research allergy prevention and to establish reliable advice for the public on issues such as peanut allergy prevention.
- It was felt that research into allergic diseases was justified because most of the conclusions did not recommend difficult, expensive solutions which would be unobtainable. Instead, the findings of allergy research usually recommended changes in lifestyle behaviours such as diet, smoking or pet ownership, which members of the public could easily and quickly respond to.

- There was not enough data on the costs of allergy treatment. This needed to be addressed even though some aspects would be hard to measure. For example, a course of immunotherapy was very expensive and had to be administered by a specialist, but the effects were long-term and so could reduce the need for future treatments. Therefore immunotherapy could potentially save the NHS money in the long-term.

### *Tour of the hospital*

The Committee visited the “Snowy Owl” unit, a clinical trials unit dedicated to the prevention and treatment of asthma and other allergic disorders in childhood. The unit had the capacity to evaluate 30 participants enrolled in clinical trials every week. The Committee talked to a young boy who was extremely allergic to egg. Because of the risk of anaphylaxis, this boy and many others received routine vaccinations in the controlled environment of the clinical trials unit, so that any reactions could be dealt with immediately.

Dr George Du Toit (Consultant) and Professor Lack briefed the Committee on recent research into food allergies. Cross-sectional epidemiological studies in countries such as Israel, had demonstrated that early peanut consumption during childhood was associated with a low rate of peanut allergy in the population. Professor Lack and his research team were testing these cross-sectional findings in the LEAP study, which intended to enrol 480 infants who suffered from either egg allergy and/or eczema who were aged 4–11 months. Half the participants would receive a diet which regularly contained peanut protein, whilst the other half would avoid peanut. The study intended to monitor these children until the age of five, to assess whether peanut consumption or avoidance caused an increased risk of developing peanut allergy. If the results showed that introduction of peanut at an early age helped to protect against allergy, then current DH advice which recommended peanut avoidance for infants, might actually have been contributing to the increase in peanut allergy prevalence.

Dr Adam Fox (Consultant), Dr Susan Chan (Consultant), Ms Patricia Kane (Asthma nurse), Ms Judith Searle (Asthma nurse) and Ms Hasita Prinja (Paediatric dietician) welcomed the Committee to the outpatient unit. It was vital that children received regular allergy testing because some allergies could be outgrown, rendering allergen avoidance unnecessary. For a diagnosis to be reliable, the results of allergy tests had to be analysed in the context of the patient’s history.

Finally, the Committee met a seven year old hayfever sufferer who had been referred to the hospital by a paediatrician in Oxford. The boy suffered so acutely from sore eyes and itchy throat that he could not even play outside at school. Skin prick tests were carried out to establish which allergens caused a reaction, and it was suggested that the boy might receive sublingual immunotherapy in the future. This was a convenient treatment which would not require the patient to attend hospital, would reduce his reaction to the specified allergen, and could also possibly prevent the development of other allergic conditions.

## APPENDIX 6: VISIT TO BERLIN AND MUNICH, GERMANY

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Members visiting Germany were: Baroness Finlay of Llandaff (Chairman), Baroness Perry of Southwark, Lord Rea. In attendance: Miss Sarah Jones (Clerk), Professor A. B. Kay (Specialist Adviser), Dr Cathleen Schulte (Committee Specialist).

### Wednesday 24 January

#### *Allergie Centrum, Charité, Berlin*

The Charité university hospital was split between three different sites across former East and West Berlin. Allergy patients were treated in the Allergie Centrum which had two different parts: adults were largely treated in the Department of Dermatology and Allergy, whereas children were treated in the Department of Paediatric Pneumology and Immunology. The Committee visited both of these sites.

#### *Department of Dermatology and Allergy, Universitätsmedizin Berlin*

##### *Presentation by Professor Torsten Zuberbier, Head of the Department*

The Committee was welcomed by Professor Zuberbier who outlined the way in which allergy was treated. Allergology training in Germany was offered as a sub-specialty. Approximately 70 per cent of the allergologists were dermatologists, but the sub-specialty was also practiced by ENT physicians, pneumologists and immunologists. The Department of Dermatology and Allergy treated adults with allergic diseases and employed two doctors trained in internal medicine who could treat patients with multi-organ symptoms. However, the treatment of some allergies required the expertise of other specialists, so patients with severe asthma were referred to the pneumology department and patients with suspected food allergies were referred to the gastroenterology department. Professor Zuberbier did not think there was any need for allergology to be a separate specialty, but felt that it was more important to encourage communication between specialists.

As in the United Kingdom, it was felt that GPs in Germany were not adequately trained to correctly diagnose or treat allergic conditions. But unlike the English system, German patients could usually refer themselves to specialists directly; a cost-effective strategy which did not waste GP appointment time. However, as a university hospital, the Charité dealt with the most complex cases of allergy and only received patients referred by specialists.

Professor Zuberbier noted that allergic diseases were on the increase in Western Europe and often severely impaired patients' quality of life. However, only a small percentage of people who felt they suffered from an allergy truly did, and a paradox existed whereby every medical practitioner knew the term "allergy" but only around 10 per cent of patients were treated correctly. Allergic conditions also had an impact on the economy. The treatment of many allergic diseases was relatively cheap but, if left untreated, the social and economic costs of days lost at work or school could be far greater.

As Head of the European Centre for Allergy Research Foundation, Professor Zuberbier explained how the Foundation aimed to improve the knowledge, research and awareness of allergies throughout Europe, and thereby reduce their burden. The Foundation provided training programmes for physicians, educated

patients and established an international platform for research. It also granted “quality seals” to products and services which took the needs of allergy sufferers into account, and thus enabled consumers to choose between products easily. The seal had been granted to products such as cosmetics, cleaning agents and foodstuffs, and also to services such as restaurants and hotels. “Allergy friendly” hotels which had been granted the seal of approval had pet-free levels within the building, clear food warnings on menus, and “allergy free” rooms with wooden floors, dust mite protective bed covers and other features aimed to reduce allergen levels.

Professor Zuberbier also described several other international organisations. The GA<sup>2</sup>LEN co-ordinated research programmes and produced standardised procedures for allergy diagnosis and treatment. It consisted of 27 clinical and experimental research institutes and two patient organisations (the EAACI and the European Federation of Allergy). The EAACI consisted of 39 national societies, as well as academic researchers and clinicians. Its work included the promotion of basic and clinical research, the provision of training and promotion of good patient care. The European Federation of Allergy was a network of patient organisations which focussed specifically on the needs of allergy patients and their carers.

#### *Tour of the Department*

Approximately 100,000 outpatients were seen in the Department each year, of which around 16,000 were allergy cases. The clinic also had the capacity to treat 54 inpatients at any one time, which was important because it was often necessary to observe patients for an extended period of time after treatment. For example, some patients suffered a reaction over four hours after a skin provocation test, so the Department usually kept these patients overnight. As a university hospital, the teaching, clinical and research facilities were all in close proximity which had many benefits. For example, biopsies could be transferred quickly to the laboratory for analysis, and the training young doctors received could be informed by the latest clinical developments.

Obtaining a correct diagnosis was vital, and in many patients it was important to rule out allergy as a possible cause of symptoms. As an example, the Committee observed a consultation with a man who suspected he was allergic to local anaesthetic. He had once suffered pain after receiving local anaesthetic and a patch test several years ago had shown that he was allergic, so therefore his dentist would not treat him using local anaesthetic. Although it was thought very unlikely that this man was allergic to local anaesthetic, patch tests and lung function tests were prescribed in order to rule out the possibility. If these proved to be negative it would then reassure the dentist and allow the patient to live a more normal life.

#### *Presentation by Mr Federico Grego, Director of Laboratorios Leti*

Mr Grego explained that allergy training was offered as a monospecialty in Spain; doctors had to undergo four years of specialised training to qualify as allergists, of which there were approximately 1,300 within the state medical system and private clinics. GPs referred serious or “difficult to treat” allergy patients to these specialists. Although allergists in Spain prescribed immunotherapy widely, only around 10 per cent of the allergic population received the treatment because other physicians did not offer it. Mr Grego estimated that around 25 per cent of the immunotherapy treatments offered were sublingual, and expected this figure to increase in the future, although subcutaneous immunotherapy remained the preferred treatment option for the majority of allergists. He conceded that

immunotherapy was expensive: a course in Germany could cost €450–1300 per year, and some patients required treatment for three years. However, the effects of immunotherapy lasted for many years, reducing the need for further medication, so it was felt to be a cost-effective strategy in the long term.

*Presentation by Professor Margitta Worm, Deputy Head, Allergie Centrum, Charité*

Professor Worm described an Anaphylaxis Register which had been established in 2006 to monitor the frequency of anaphylactic cases, increase awareness, and provide educational programmes in how to deal with anaphylaxis. An internet-based surveillance questionnaire for doctors had been validated, and 30 centres across Germany, Austria and Switzerland were involved in reporting cases. By December 2006, the register had received reports of 174 cases of anaphylaxis in patients ranging from two months to 84 years old. 54.2 per cent of these patients were women and the mean age was 39 years. From the initial data collected, the most common causes of anaphylaxis appeared to be insect stings, various foods (including vegetables, fruits, tree nuts and peanuts), and medicines such as painkillers. A large proportion of anaphylaxis incidents appeared to happen in the home.

The Anaphylaxis Register was still in its infancy, but in the future it planned to involve all allergists across Germany, and aimed to develop a national task force for anaphylaxis. The project also aimed to develop educational programmes and wanted to expand its reporting network across the whole of the EU.

*Department of Paediatric Pneumology and Immunology, Charité-Virchow-Klinikum, Humboldt University Berlin*

*Presentation by Professor Ulrich Wahn, Head of the Department*

Professor Wahn welcomed the Committee and led a tour of the outpatients unit. Children with allergic conditions were treated by paediatricians with a subspecialty in allergology. The clinic saw many patients with lung deficiency problems for which a variety of tests were offered, including cold-air challenges, treadmill trials and lung function tests. The clinic also carried out a large range of allergy diagnostic procedures such as allergen challenges, skin prick and patch tests, and various treatments including immunotherapy.

It was estimated that one in four children suffered from an allergic condition of some kind, and the “allergic march” meant that many of those might progress to develop more serious allergic conditions such as chronic asthma. Sensitisation to food was often the first indicator that a child would develop other allergies in later life, so early diagnosis was vital. An atopic allergy at a young age indicated that the allergy was likely to persist, whereas a non-atopic allergy suggested that the allergy symptoms might reduce at around eight to nine years of age.

Compared to the United Kingdom, specific immunotherapy was used to a much greater extent in Europe. Germany prescribed around 700,000 courses a year and France prescribed around 500,000, whereas the United Kingdom only prescribed around 5,000 per year. Professor Wahn commented that in European countries such as France, a high proportion of these treatments were administered sublingually, but sublingual immunotherapy was almost unavailable within the United Kingdom.



*Presentation by Professor Kirsten Beyer, Co-ordinator of the European Anaphylaxis Initiative*

Professor Beyer introduced two different European initiatives which had been developed to monitor allergy and anaphylaxis: EuroPrevall and the GA<sup>2</sup>LEN Anaphylaxis Initiative (GAIN).

EuroPrevall was an EU-funded project which had been established to monitor the prevalence, basis and burden of food allergy across Europe, in order to improve the quality of life for food allergic patients. Over the next four years the project aimed to develop methods to improve the diagnosis of food allergies, to investigate the role of diet, environment and infection on the development of food allergy, and to train a new generation of allergists in food allergies.

Professor Beyer noted that food allergies tended to peak in prevalence at around one to two years of age and a trans-European birth cohort had therefore been established in 2005 to examine the patterns and causes of food allergies in infants. The aim was that the cohort would include 9,000 babies born between September 2005 and February 2007 at nine centres in Germany, Greece, Iceland, Italy, Lithuania, the Netherlands, Poland, Spain and the United Kingdom. It was hoped that the results of the cohort study would help to elucidate the mechanisms involved in the development of food allergies, and would allow an analysis of the impact that food allergies have on quality of life and the economy.

The GAIN was established in January 2007 with three main aims: to develop an educational program for patients, relatives and healthcare workers; to raise awareness of anaphylaxis amongst the public; and to co-ordinate a European registry for anaphylactic reactions. It was noted that anaphylaxis could be fatal and often involved more than one organ system including the skin, respiratory, neurological, cardiovascular or gastrointestinal systems. The majority of patients were not correctly treated. Although adrenaline could be life-saving the majority of children were not prescribed this treatment, and the poor quality of patient education meant that this treatment was used incorrectly in the majority of cases.

*Presentation by Dr Susanne Lau, Co-ordinator for aspects of paediatric allergology in the GA<sup>2</sup>LEN network*

Dr Lau outlined the work of the European GA<sup>2</sup>LEN birth cohort co-operation which aimed to examine different birth cohorts within Europe. Birth cohort studies were particularly useful because they were longitudinal and therefore detected cause-effect relationships. They were also the best study design for diseases that began in infancy. The objectives of the co-operation were to describe the different designs and methods used within birth cohorts across Europe and to identify the strengths and weaknesses of each of them.

The project examined 19 birth cohort studies carried out in various centres across Europe. Most of the studies had examined similar factors and tended to suggest that family history, tobacco smoke exposure, pet ownership and nutrition all had an effect on allergy development. However, the practices used to assess these were not standardised so the various methodologies made international comparisons difficult. Therefore the project was trying to standardise methodologies for future studies, and was attempting to harmonize the procedures used for follow-up work to existing birth cohorts.

**Friday 26 January***Department of Dermatology and Allergology, Technical University Munich**Presentation by Professor Johannes Ring, Head of the Department*

The Committee was welcomed by Professor Ring, who explained that the Department was part of the Technical University Munich and its situation near other university Departments, such as pharmacology, allowed close collaboration between specialists.

The clinical problems surrounding allergies arose because allergic conditions involved multiple organs and often exhibited manifold, subjective symptoms. Allergic conditions could be chronic, of variable intensity, and could alter as the patient matured. Professor Ring thought that over the last 20 years, the number of more complex cases had increased, and many allergic conditions also had a psychosomatic influence.

The prevalence of allergic disease in both children and young adults was on the increase. Possible hypotheses for this included the hygiene hypothesis, altered genetic susceptibilities, changes in allergen exposures and environmental pollution. An increased awareness of allergic conditions, and improved diagnostic tests, may also have been partly responsible for the increase in reported allergy cases over the last 50 years. Although there was an abundance of hypotheses it was not known which, if any, were correct and the true reason for the increase in allergy had still not been determined.

Professor Ring commented that allergic conditions were often incorrectly thought to be minor inconveniences, but there were several types of allergic emergency that could be life threatening. These included angioedema, uterine contractions (a condition suffered by pregnant women which could be fatal for the baby), and anaphylactic shock.

Some of the molecular mechanisms of allergic diseases had been elucidated. For example, the progression of eczema appeared to be linked to the development of the epidermal skin layer, and some of the genetic complexes involved in this had been discovered. Specific IgE antibodies present in the serum of allergic individuals had also been characterised. However, now that the mechanisms were relatively well understood, future research needed to focus on broader issues such as why allergy was on the increase, whether the brain played a role in allergy and what made a substance an allergen. Further preventative work was also needed, and possible strategies for the future included true “vaccination” for children with a family history of allergy, and environmental planning with hypoallergenic plants or animals. Professor Ring emphasised the fact that every patient was different, so individually tailored management plans would need to be used in the future.

*Presentation by Professor Markus Ollert, Head of Laboratory*

Professor Ollert outlined the procedures used for allergy diagnosis. These ranged from bedside techniques, such as taking a family history, physical examination and skin tests, to laboratory tests such as IgE measurements and provocation tests.

The “component-resolved approach” to diagnosis and treatment was being developed, which tested the reactivity of patients to various components of an allergen. This technique was mostly used to assess allergy to bee and wasp venom. The genetic sequences from the venom were cloned and the appropriate nucleotide sequences characterised. These were then expressed in insect cells to

produce recombinant allergens, against which patient serum was tested. It was felt that the component-resolved approach could not only be useful for diagnostic purposes, but recombinant allergens could also be used in specific immunotherapy. In the future, immunotherapy treatment using hypoallergenic “fusion molecules” containing several allergens at once, could prove more cost-effective than the prescription of different treatments for each allergen. However, work was still needed to determine which molecules could be used, how their performance could be improved and how the treatment could be refined.

*Presentation by Professor Ulf Darsow, Clinician*

Professor Darsow outlined the various ways in which allergic diseases could be managed in Germany. It was vital to correctly diagnose the allergic disease, as the type and severity of the condition determined the type of treatment that was required. Where possible, allergen avoidance was the most basic approach to manage allergies. Basic medication such as nasal sprays, corticosteroids and antihistamines were also needed to manage symptoms in many cases.

For some patients, allergen avoidance and medication did not adequately control their disease, so specific immunotherapy was prescribed. This treatment was widely used in Germany for the treatment of allergic rhinoconjunctivitis, insect venom anaphylaxis and bronchial asthma. Professor Darsow noted that the WHO placed great value by specific immunotherapy as it was the only treatment which could influence the natural course of allergic disease. Of all the patients that presented to the clinic with allergy to insect venom, approximately 90 per cent would receive immunotherapy, and around 90 per cent of those people would be successfully desensitised. However, there was a small proportion of patients that were refractive to immunotherapy treatment.

*Presentation by Professor Heidrun Behrendt, Head, Centre for Allergy and Environment*

Professor Behrendt introduced the Centre for Allergy and Environment (the ZAUM), which was a research unit within the Technical University Munich, founded by the Bavarian government in 1999. The purpose of the centre was to investigate the impact of biogenic and anthropogenic environmental factors on the development, maintenance and aggravation of allergic diseases, in order to provide evidence for preventative or regulatory interventional strategies. The centre had access to patients and clinical expertise through its affiliation with the Department of Dermatology and Allergology. Access to environmental measurements was provided by its association with the National Research Centre for Environment and Health. The centre ran an environmental medicine outpatient clinic and also had four laboratory research groups.

Professor Behrendt outlined current research into two types of environmental substances—biogenic compounds, such as pollen associated lipid mediators (PALMs), and anthropogenic adjuvants:

Under natural conditions, pollen grains functioned as allergen carriers that released allergens when they came into contact with aqueous mucosal membranes such as the airway. Recent research had shown that pollen grains also contained lipid mediators which were released upon contact with the membranes. It was thought that these mediators recruited and activated complexes within the body which contributed to allergic inflammation, so the PALMs might therefore contribute to the elicitation phase of allergic reactions. Further research was therefore being carried out into the role of these PALMs in allergy development.

The centre was also carrying out research into the role of anthropogenic adjuvants such as PAHs and VOCs. These adjuvants had a carbonaceous core to which other compounds could be absorbed. It was thought that substances such as diesel exhaust particles, which were allergic sensitizers, could be absorbed into these particles and in this way they could act as mediators in allergy development. The role of pollution in the development of allergy could therefore be extremely important.

*Tour of the ZAUM and the Department of Dermatology and Allergology*

Professor Behrendt led a tour of the clinical and experimental research facilities of the ZAUM. The Committee viewed the pollen trap and cascade impactor used to measure pollen and allergen levels, and Members were given the opportunity to talk with researchers about their work.

The Committee viewed the facilities at the allergy clinic and observed patients receiving skin tests and provocation tests. Patients who received immunotherapy at the clinic often received a concentrated course of treatment over several days. The risk of adverse reaction following immunotherapy treatment meant that it was important to keep patients overnight so that their response could be monitored.

*Presentation by Professor Erika von Mutius, Head of Asthma and Allergy  
Outpatient Clinic, University Children's Hospital, Ludwig Maximilians University  
Munich*

Professor von Mutius described the results of various studies which had examined the environmental causes of allergy. Some studies had suggested that early exposure to low levels of microbial compounds could protect against the development of allergic conditions, an idea which had been developed in the "hygiene hypothesis." For example, children brought up on farms in rural Germany, Austria and Switzerland had been shown to have a lower prevalence of atopy, hayfever and asthma compared to other children. This was thought to be due to the close proximity of animals and consumption of dairy milk during pregnancy and infancy on these farms.

To analyse these ideas further, Professor von Mutius was co-leading the Gabriel study with Professor Cookson (Imperial College London). This was an EU-funded project involving 150 scientists from 14 European countries, which aimed to examine how genetic and environmental interactions contributed to the development of allergic diseases in over 40,000 individuals. It was noted that the analysis of large and complicated datasets had previously been extremely difficult, but recent developments in genomics and bioinformatics had made analysis of such interactions much simpler. It was hoped that by elucidating the genetic and environmental interactions, preventative advice regarding the environment could be developed in the future.

## **APPENDIX 7: VISIT TO ALLERGY THERAPEUTICS, WORTHING**

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Members visiting Allergy Therapeutics were: Lord Broers, Lord Colwyn, Baroness Finlay of Llandaff (Chairman), Lord Rea, Earl of Selborne, Lord Taverne. In attendance: Miss Sarah Jones (Clerk).

### **2 February 2007**

The Committee was welcomed by Mr Keith Carter, Chief Executive Officer. The company had previously traded under the Bencard brand, and SmithKline Beecham, before a management buy-in during 1998 had formed Allergy Therapeutics.

Mr Ray Keeling, Head of Supply Operations, outlined the different types of products the business supplied. The company produced a range of therapeutic medicines, provocation solutions, skin prick and patch tests, but focussed mainly on specific immunotherapy. He noted that although immunotherapy had largely been developed in the United Kingdom, the NHS made very little use of the treatment. Allergy Therapeutics therefore sold most of its products abroad. In addition to standard products kept in stock, the company also produced named-patient products, manufactured as a “semi-stock,” to which three or four allergens could be added according to each patient’s prescription.

Dr Bev Lees, Head of Science, gave a brief overview of the research and development program at Allergy Therapeutics. The company had developed PollinexQuattro, an ultra-short course of subcutaneous immunotherapy, to treat seasonal allergic rhinitis with only four pre-seasonal injections over three weeks. It was claimed that the adjuvants, 3-deacylated monophosphoryl lipid A (MPL<sup>®</sup>) and L-tyrosine, within the product enabled it to be effective within such a short course. Three formulations of PollinexQuattro had been developed to treat rhinitis caused by either grass, tree or ragweed pollens. The product was available on a named-patient basis in Austria, Germany, Greece, Italy, Portugal, Spain and the United Kingdom. However, it still awaited the results of phase III clinical trials and the MHRA would then need to approve it before it could be used routinely within the NHS. The company also had other PollinexQuattro treatments on the market as named-patient products, which were used to treat allergies to rarer substances such as olives and plantain.

Mr Rick Poland, Production, Engineering and Technical Manager, described the process of converting raw pollen into a series of dilutions for immunotherapy treatments. Various pollens were imported from around the world, and each had to obtain a certificate of analysis before it could be used. This certificate verified that the pollen was not contaminated and helped to ensure that the treatment would be safe and effective.

The company referred to immunotherapy products as “vaccines.” This term was used because the treatments modified the immune system. However, the treatments were therapeutic vaccines (which aimed to suppress the immune response once a disease had developed) rather than prophylactic vaccines (which induced the immune system to prevent diseases occurring).

The Committee was given a tour of the Noon Building, a new manufacturing facility which had opened in January 2007. The licensed manufacturing facility could produce a range of sterilised parenteral products, and the building also contained the inspection, labelling, packaging and despatch operations. The Committee viewed individual workstations where named-patient products were

prepared. Video surveillance and computer systems had been installed in each station to monitor production of the treatments.

Dr Murray Skinner, Development Manager, described how the development team devised and supported new and existing products and practices used within the company. The team's work included the validation of assays used in research, obtaining scientific data to support the company's manufacturing processes, and supporting trials to ensure that products met the standards required of them.

Mr Carter noted that the majority of allergy treatments used in the United Kingdom, such as antihistamines and corticosteroids, only offered short-term relief from symptoms and worked during the final stages of an allergic reaction. But immunotherapy modified the immune system to interrupt the beginning of the allergic reaction and could prevent the symptoms of allergic disease for many years. Although initially expensive, it was thought that immunotherapy could therefore save the NHS money in the long-term. Furthermore, studies had suggested that the use of immunotherapy in rhinitis patients could prevent the development of asthma, which could produce a further saving in terms of treatment costs.

Mr Carter felt that immunotherapy was not used in the United Kingdom as much as it could be, partly because it involved long courses of injections, and partly because some clinicians were fearful of adverse systemic reactions. The company had therefore invested heavily in the development of PollinexQuattro because it believed that the treatment could answer both of these problems, and felt that in the future all specialists in secondary care should be able to administer it. However, it would not be suitable for use by GPs.

## **APPENDIX 8: VISIT TO ODENSE AND COPENHAGEN, DENMARK**

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Members visiting Denmark were: Lord Colwyn, Baroness Finlay of Llandaff (Chairman), Lord Haskel, Baroness Perry of Southwark. In attendance: Miss Sarah Jones (Clerk), Professor A. B. Kay (Specialist Adviser), Dr Cathleen Schulte (Committee Specialist).

### **Thursday 22 March**

#### *Odense University Hospital (OUH)*

##### *Presentation by Mr Peter Frandsen, Medical Director*

The Committee was welcomed by Mr Frandsen, who explained that the hospital was organised into four centres containing 31 clinical departments, with around 85 wards, 1,150 beds and an additional 120 rooms in a “patient hotel.” The hotel was a useful facility with a more relaxed atmosphere than the main hospital. It could be used for women expecting a normal birth, all cases of breast surgery, all patients with eye disease and also for some patients undergoing hip and knee replacements. There were also rooms available for parents of children who were admitted as inpatients, and for relatives of patients who had travelled a long distance to the hospital.

##### *Presentation by Mr Poul-Erik Svendsen, First Deputy President, Southern Denmark Regional Council*

Mr Svendsen outlined how health services were co-ordinated at a national and local level within Denmark. From 1 January 2007, the country’s 13 traditional counties had been replaced by five new administrative regions, and the 270 municipalities had merged to create 98. The aim of this huge reform had been to create a new Denmark where citizens received better services, and the most important area of responsibility for the new regions was the organisation of the national health service.

National health targets were set by the Ministry of Interior and Health Affairs, whilst preventative strategies, treatments and health personnel were managed by the National Board of Health. However, responsibility for the treatment sector and allocation of the health budget had been devolved down to the municipalities and regions. The municipalities and regions ran the hospitals and entered into agreements with GPs, specialists and dentists about payments. OUH was one of three university hospitals in Denmark. The hospital was the natural choice for the inhabitants of Region Southern Denmark, but also received patients from other regions of Denmark who chose to be treated there. Patient satisfaction was high and over 80 per cent of medical research in the region was being carried out at the hospital.

##### *Presentation by Dr Arne Høst, Head of Department of Paediatrics, OUH*

Dr Høst described allergy, atopy and the different types of hypersensitivity reactions that could be either allergic or non-allergic. Epidemiological studies had shown that some allergic reactions peaked in prevalence during childhood and then became less common. For example, atopic dermatitis peaked around age one, and food allergies peaked around one to three years of age. Asthma tended to

increase in prevalence until around age 15, and the prevalence of allergic rhinitis rose dramatically between the ages of three to 10 years.

A number of long-term birth cohort studies had been carried out in Denmark where follow-up assessments were needed many years later. Funding for this had come from the National Board of Health, the Danish Medical Research Council and local funding boards. There had also been good co-operation with local GPs who often referred patients to researchers for these studies. The 1985 Odense birth cohort study monitored 1,749 infants born at OUH during the first year of life, and showed that of the children who displayed cow's milk allergy as infants, 88 per cent of them had recovered by three years of age, and 97 per cent of them had recovered by 10 years of age. The children who suffered from non-IgE-mediated allergic reactions tended to have a good prognosis, whereas the children with IgE-mediated cow's milk allergy had a higher risk of the allergy persisting, and a higher risk of developing other food allergies, inhalant allergies, asthma or rhinoconjunctivitis.

Research facilities at university hospitals, and sustained levels of funding, were vital for important interventional studies. The current evidence base led clinicians to recommend that all infants should be exclusively breastfed until at least four months old, but otherwise no special diet was recommended for pregnant or lactating women. For high-risk infants (who had a family history of allergy), if a milk supplement was needed during the first four months then a documented hypoallergenic formula was recommended.

*Presentation by Dr Tine Hansen, Consultant, Allergy Centre, OUH*

Dr Hansen explained that hypersensitivity reactions, which included allergies, placed a huge burden on the patient as well as the economy and social services. Asthma cases in the year 2000 cost Denmark approximately DKK1,100 million in medical treatment, and DKK800 million due to work absences or early retirement. It was therefore extremely important to prevent hypersensitivity disorders.

Allergology required the treatment of many different conditions, often involving multiple organ systems, both in children and in adults. Different kinds of specialists were therefore needed and patients were often sent between several different departments. From 1982 until 2004, Denmark had offered a three-year sub-specialty training in allergology under the internal medicine specialism. However, in 2004 this sub-specialty was stopped, and since then allergology had functioned as a sub-specialty within other specialties such as dermatology, internal medicine, pulmonology or paediatrics. There was no official training programme or certificate in allergology, although the scientific societies made guidelines and education programmes. GPs received no structured education about allergology.

In 2005, the "Allergy Network" was established on a voluntary basis. The Network included representatives from different organ specialty groups, and worked towards developing common clinical guidelines and investigation programmes. It had developed a training course for specialists which awaited funding, to standardise allergology training, allow collaboration between specialties and provide evidence-based, updated education. A training course for GPs had also been developed to provide a common national programme for GPs, and had been funded by the Ministry of Interior and Health Affairs. A standard presentation was used at each course presented by a standard group of specialists, to provide high quality education that was identical in each region, although the GPs could participate to apply the information in a more local context.



Following the recent reorganisation of the Danish regions, the Allergy Network saw an opportunity to optimize collaboration and set out its vision of how allergy services could be improved in terms of education, use of resources and treatments. The network aimed to train all medical practitioners in allergology so that most patients could be dealt with by GPs. It was thought that GPs should be able to refer patients to specialists in practices or hospital departments, and close collaboration between these sectors could form a regional allergy team. The network claimed that three specialist allergy centres were needed in the country to treat complicated or rare allergic diseases and carry out research and education. So far, only one of these specialist services had been created, at Odense University Hospital. There were plans to develop a second centre in Copenhagen soon, but the creation of a third allergy centre at Aarhus awaited the construction of a new hospital.

*Tour of the Department of Dermatology and Allergy Centre*

Professor Carsten Bindslev-Jensen, Head of the Department, led the Committee on a tour of the facilities at the Allergy Centre. The importance of challenge tests was noted, as patients who had not received an appropriate diagnosis often avoided substances unnecessarily. Confirmation that the patient was not truly allergic to a substance, or that an allergy had been outgrown, allowed a significant social burden to be lifted from them. This was also of economic value. Doctors reported that a high proportion of patients believed they were allergic to penicillin, but only around one in six actually were. Alternative antibiotics were a lot more expensive than penicillin, so investigation of these patients was therefore extremely worthwhile.

When an allergy was confirmed, it was also important to establish the severity of the reaction, which could often only be found using challenge tests. For example, the Committee met one girl who suffered from peanut allergy, who had a positive skin prick test and high levels of IgE, so avoided all peanut products. However, the challenge test had shown that she could tolerate low levels of peanut, and could therefore consume foods with peanut traces and peanut oils. There was a danger that other food products, such as sprouts or hazelnuts, could cross-react with peanut proteins to produce an allergic reaction, so it was also important to test the girl for sensitivity to these substances. These types of detailed studies allowed specific advice to be issued to different patients and enabled them to live a more normal life.

The result of every challenge, cross-reaction, skin test and treatment was recorded within the hospital database and a blood sample of the patient was kept. This was immensely useful for further research. It was noted that there was a difference in attitude regarding research in England and Denmark; in Denmark it was largely accepted that every patient who presented for treatment would enter into the clinical trial.

*Presentation by Professor Carsten Bindslev-Jensen, Head, Department of Dermatology and Allergy Centre*

Professor Bindslev-Jensen noted that the prevalence of allergic diseases was still increasing in Denmark, with 40 per cent of the population being skin prick test positive to an allergen. With increased awareness of allergic diseases, more people were also reporting to doctors with symptoms of allergic conditions. Professor Bindslev-Jensen felt that attention should be focussed on the severe and most complicated cases, such as peanut, tree nut and occupational allergy and

anaphylaxis. Complex allergies involved a number of organs, so no single specialist could deliver top class diagnosis and treatment in all of those fields.

The Allergy Centre had therefore been created in 2001 to deal with multi-organ, complex conditions, whether occupational or private, in both adults and children. The Centre was formed in collaboration with the Departments of Dermatology, Paediatrics, Internal Medicine, Occupational Medicine, Clinical Chemistry and Clinical Immunology. The number of staff employed by the Centre included four specialists, two or three registrars, seven nurses and lab technicians. This allowed specialised treatment of even the most complex cases, and placed the needs of the patients centrally, ensuring the best possible utilisation of resources.

The organisation of allergy services in the Southern Denmark Region resembled a pyramid-like model involving three different levels. At level one, the GP saw 80 to 90 per cent of allergy patients in primary care. Level two consisted of specialist practices or county hospital departments which dealt with around 5 to 15 per cent of patients. Then at level three, around 1 to 5 per cent of patients, who had complex or severe allergies, were referred to the Allergy Centre and other departments in the university hospital. The aim of the allergy centre was to diagnose and treat patients, and then refer them back to their GPs or district hospitals with appropriate advice for both the patient and GP.

Collaboration between the different levels was therefore essential, and the knowledge passed down from the Allergy Centre helped to educate the local GP and specialist workforce. The Allergy Centre made its standard operation procedures available to GPs which contained basic information about allergic diseases, outlined the type of samples that should be taken for each condition, and offered guidance about where to refer cases of allergy. An example of when inter-level collaboration had been important was in 2004, when it was discovered that many patients had suffered severe reactions following grass immunotherapy treatments. The Allergy Centre alerted all the GPs, specialists and hospital departments in the Region, established a hotline, and allowed GPs to refer any cases to the centre which they were uncomfortable treating themselves.

The work of the allergy centre was varied, and involved challenges to foods, drugs, and occupational substances, allergy testing *in vivo* such as skin prick tests or patch tests, and *in vitro* allergy tests such as the measurement of IgE levels. The treatments offered included allergen avoidance advice, immunotherapy and pharmacological treatments. In addition the clinic was involved in several research projects such as the Danish Allergy Research Cohort and GA<sup>2</sup>LEN research programmes.

The Allergy Centre also worked with patient organisations to organise holidays for families in locations completely free of allergens. Schools in asthma, eczema and food allergy had been organised in collaboration with other departments and the Asthma and Allergy Association (a patient organisation), to educate patients about how to cope with allergy in everyday life.

In discussion, it was debated whether allergy should be treated by separate specialists in a co-ordinated centre, such as in Denmark, or by allergy mono-specialists. It was felt that the appropriate model of service delivery in each country depended on the individual history of its health system. It was noted that allergists in Italy received training in many different fields, including paediatrics, dermatology and respiratory medicine, so the allergology specialty was justified and allergologists worked with paediatricians to provide most of the care.

However, it was suggested that in countries where allergologists did not receive this range of training, allergy should be treated by organ specialists with an interest in allergy. In Germany, most allergy expertise was provided by dermatologists and paediatricians. The system employed by the Allergy Centre at OUH, where many organ specialists cooperated in allergy treatment, was a similar model of service delivery to that used in France and Germany.

It was noted that the Allergy Centre did not detract from routine allergology performed by organ specialists. Instead, the role of the Centre was to investigate more complex cases and avoid multiple referrals between specialists. The staff at the Allergy Centre often investigated patients' histories and decided whether immunotherapy should be used, but then referred the patients back to organ specialists or GPs to administer the treatments.

## Friday 23 March

### *ALK-Abelló*

#### *Presentation by Dr Peder Anderson, UK Director*

Dr Anderson briefly introduced ALK-Abelló, a small- to medium- sized pharmaceutical company. It claimed to be the world leader in specific allergen immunotherapy, holding around 32 per cent of the market share. Around 50 per cent of the products it produced were subcutaneous immunotherapy treatments, 25 per cent were sublingual immunotherapy and another 25 per cent were adrenaline autoinjectors.

Dr Anderson estimated that around five million people in the United Kingdom were allergic to grass pollen to some extent, but that due to a lack of service provision many people relied upon suboptimal treatments over the counter at pharmacies. It was thought unlikely that allergy services in the United Kingdom would be improved soon due to the shortage of allergy specialists, and Dr Anderson thought that subcutaneous immunotherapy would never be used in primary care due to the need for administration by specialists. The company had therefore developed sublingual immunotherapy tablets in the hope that these may eventually enable GPs in the United Kingdom to treat allergy using immunotherapy.

#### *Presentation by Dr Jørgen Nedergaard Larsen, Senior Scientist*

Dr Larsen outlined the scale of the allergy problem in Europe. Every allergy patient was different and could potentially suffer from several allergic diseases at once. Common comorbid conditions included hayfever, asthma, eczema, food allergy and urticaria. The mucosa in the airway functioned as one organ, so similar allergic symptoms often presented in the eyes, lungs and nose. Although the common view was that allergy presented as several diseases with overlapping symptoms, Dr Larsen therefore felt it was more useful to view allergy as one disease, with several different manifestations.

Immunotherapy was the only treatment which stopped the symptoms of allergy on a long-term basis. It could not be viewed as a "cure" because allergy symptoms could still be provoked following immunotherapy if high doses of allergen were applied. However, it rendered the patient tolerant enough of the allergen for everyday life. The efficacy of subcutaneous immunotherapy was good. There was a clear dose-response efficacy relationship, but the allergen dose that could be

administered during immunotherapy was limited, due to the increasing risk of adverse reaction with increased doses.

The company had gained product licenses for subcutaneous immunotherapy products within several European countries but had virtually given up seeking product licences in the United Kingdom because it felt that the MHRA was resisting the approval of this treatment. However, its products could still be used within the NHS if they were imported on a named-patient only basis. The company's focus in the United Kingdom had turned to sublingual immunotherapy as the safety profile of this treatment was good and it allowed patients to treat themselves at home. Grazax, a tablet form of immunotherapy for the treatment of grass pollen allergy, had been granted a product license in the United Kingdom in 2007.

#### *Tour of the Research Department*

The Committee was given a tour of the research facilities by Dr Michael Spangfort, Director of Research.

Preclinical research data was needed to receive a product license in the United States and also contributed to applications for product registrations in Europe. Compared to human studies, the use of the mouse as a clinical model allowed more parameters to be investigated, so a rhinitis mouse model had been developed. Research was being carried out into the mechanisms involved in sublingual immunotherapy, and adjuvants were being tested for the next generation of sublingual products.

#### *Presentation by Dr Rowena Holland, Marketing Manager*

Dr Holland began by outlining how respiratory allergic disorders impaired patients' quality of life. Within the United Kingdom, the shortage of specialist allergy centres meant that the use of subcutaneous immunotherapy was minimal, and patient surveys had shown that many patients felt that the treatments they received had only a partial or poor effect on their symptoms. Trials of Grazax had shown that the sublingual immunotherapy product was effective at reducing symptoms and improved sufferers' quality of life. Dr Holland claimed that when quality adjusted life years were taken into consideration, the product had been shown to be cost-effective compared to other treatments and was not associated with risks of anaphylaxis. After being granted a product license by the MHRA, it was hoped that this product would be used within the NHS, but the long-term effects of the product were still under investigation.

#### *National Board of Health*

##### *Presentation by Dr Else Smith, Acting Medical Director, National Board of Health*

Dr Smith welcomed the Committee to the National Board of Health and outlined the healthcare problems the country faced. The National Board of Health was a semi-independent agency within the Ministry of Interior and Health Affairs. It acted as an advisory body to ministers, parliament and public authorities, but the Ministry had no instructive authority over the Board, so the political functions of the Ministry were separated from the health strategies.

Healthcare in Denmark was financed through general taxes. The National Board of Health co-ordinated national health policies and regulated personnel in the health services. However, the allocation of funding towards local prevention work

and the provision of healthcare services was decentralised, managed locally by the five regions and 98 municipalities. The former Ministry of Health Affairs, now the Ministry of Interior and Health Affairs, had recently produced a national strategy, *Healthy throughout Life* which set out targets and strategies for improving public health from 2002–2010. The overall aim of the project was to increase life expectancy free of illness for everyone at all ages. Included in this strategy were eight major groups of non-communicable diseases which the Ministry felt needed to be targeted, and one of these was hypersensitivity, including asthma and allergy. Although the Ministry had set strategies, it was the National Board of Health which would have to issue guidelines in order to tackle the rise in allergic conditions.

*Presentation by Dr Jette Blands, Senior Medical Officer, National Board of Health*

Dr Blands outlined the ways in which the National Board of Health tried to monitor the prevalence of allergy. The National Health Interview Surveys from the National Institute of Public Health showed that there had been a large increase in the number of self-reported and parent-reported cases of asthma, wheeze, hayfever and allergic rhinitis over the last decade in Denmark. It was not clear whether the number of cases was still on the increase, but it did not look like it was on the decline. The Danish National Patient Registry contained information about all patient contact with clinical hospital departments, but GPs did not register their cases so there was still a great need to improve data collection on a national level.

As many factors contributed to allergy development it was difficult to decide how to distribute resources. Possible targets for prevention strategies included working conditions, diet, smoking and the indoor and outdoor environment. The Board provided information and guidance for families, day-care centres and schools, in addition to producing guidelines for healthcare professionals. Information was often displayed on the National Board of Health website<sup>156</sup> to enable easy access.

The Board also engaged in partnerships, such as the Food Allergy Project in 2003. This project was a collaboration between the Danish Veterinary and Food Administration, the National Food Institute, the Asthma and Allergy Association and the National Board of Health. The outcome of the project was the production of eight booklets regarding food allergies and hypersensitivities, and a conference for primary care nurses and doctors about food hypersensitivity in children. The project had also established a dedicated website<sup>157</sup> regarding food allergy which was aimed at the public, but which was also useful for healthcare personnel. The website contained information about food allergy, shopping, the pollen season and possible allergen cross-reactivities.

The reform of the Danish regions and municipalities had provided the Board with an opportunity to develop guidelines for allergy care and prevention. The pyramid model of service provision for patients with chronic diseases stratified them according to their individual needs. This meant that most allergy patients should be managed in primary care. For this management to be successful it was important for healthcare personnel of different disciplines and levels to work co-operatively.

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<sup>156</sup> See [www.sst.dk](http://www.sst.dk).

<sup>157</sup> See [www.foedevareallergi.dk](http://www.foedevareallergi.dk).

*Presentation by Professor Jeanne Duus Johansen, Director, National Allergy Research Centre for chemical substances in consumer products*

Professor Johansen described the work of the National Allergy Research Centre for chemical substances in consumer products. The Centre had been developed in 2001 by a steering group consisting of the National Board of Health and the Environmental Protection Agency, and carried out research purely into contact allergies. Contact allergens were low-molecular weight chemicals, organic substances or metals, and were frequently found in consumer products such as fragrances, preservatives, hair dyes or jewellery, as well as at work. It was estimated that around 20 per cent of the population suffered from contact allergy, that the majority of sufferers were women, and that contact dermatitis was especially common in younger people.

The staff at the Centre consisted of the Director, 10 researchers and an IT specialist. It was important to maintain contact with clinicians who dealt with contact allergy on a regular basis, so the Centre was supported by the Department of Dermatology and Department of Respiratory Medicine at the Gentofte University Hospital, and the Department of Dermatology at OUH. The Centre carried out research into allergens contained within consumer products, and studied the details of clinical cases in order to develop prevention strategies. The National Board of Health supported a clinical database of dermatitis cases. The details of around 4,000 cases were received each year from 10 centres across the country, including university hospitals and private clinics. This assisted the surveillance of national targets, monitoring of interventional strategies, and the development of clinical guidelines and standards of care.

The Centre was also involved with consumer protection work and clinical experiments carried out at the Centre had led to allergenic products being removed from the market.

Research areas at the Centre included:

- work on hair dyes and semi-permanent tattoos to identify the allergens contained within them, and the threshold levels at which these substances were safe
- investigation into chromium allergy, as chromium on the leather of shoes and gloves had been shown to act as a potent allergen for a small group of individuals. The unit had measured the gene expression patterns of patients to aid diagnosis in the future, and also carried out preventative work
- examination of perfumes and fragranced products. It was noted that perfumes were applied to the skin but were also inhaled, so for this research it was important to work with both respiratory and dermatological clinicians.

*Presentation by Dr Janne Sommer, Asthma and Allergy Association Denmark*

The Asthma and Allergy Association Denmark was a patient organisation established in 1971 which aimed to improve the lives of people affected by asthma and allergies, and helped them to make informed judgements about treatments. It had 14,000 members and ran activities through 22 local branches, but from 1990 a central office had been established to co-ordinate its work and initiate major national initiatives. The Association was funded partly by private organisations and

partly by grants from the National Board of Health which supported activities such as the patient counselling service.

The Association offered a range of services which included a free telephone hotline offering professional counselling, a free weekly newsletter, a members' magazine and a large website with detailed information for patients, relatives and healthcare workers. The Association organised patient schools, family days and seminars which educated children and adults about how to manage allergic conditions on a day-to-day basis, and also ran a product evaluation service which worked with industry to improve the quality of products sold to the public.

The Association was also the only non-governmental, not-for-profit organisation in the EU which ran a large pollen monitoring program. The Association worked in collaboration with the Institute of Environmental Health and aerobiological groups to trap, identify and count pollen across the country. Daily counts of the six greatest allergological pollens were communicated to the public via free emails and the website. Pollen forecasts for birch, grasses and mugwort were also distributed on the internet or in leaflets, and enabled allergic patients to plan events avoiding the peak pollen seasons. As pollen levels in the air were affected by meteorological conditions on a global level, international co-operation between governments and meteorological groups would be needed to improve services in the future.

## APPENDIX 9: VISIT TO THE ALLERGY CLINIC, ADDENBROOKE'S HOSPITAL, CAMBRIDGE

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Members visiting Addenbrooke's Hospital were: Baroness Finlay of Llandaff (Chairman), Lord Haskel, Lord Rea, Viscount Simon, Lord Soulsby of Swaffham Prior, Lord Taverne. In attendance: Miss Sarah Jones (Clerk), Professor A. B. Kay (Specialist Adviser).

### 27 March 2007

The Committee was welcomed to the hospital by Mr Robert Winter, the Medical Director of Addenbrooke's Hospital. It was noted that allergy service provision in the United Kingdom was orders of magnitude behind that of other European countries, due to a shortage of specialist allergists and the small number of dedicated allergy clinics. The clinic at Addenbrooke's was very popular with patients, as staff could deal with the whole spectrum of allergic disease, ranging from the mild to the potentially fatal.

Mr Richard Sunley, Director of Operations highlighted the difficulties faced when developing allergy services. The importance of allergy as a specialty was not fully recognised, so it was a struggle to convince local commissioners to invest in allergy training and services. Because the clinic at Addenbrooke's had become well established, local GPs knew to direct referrals there, and the clinic received patients from the whole of the East of England region.

For many patients, the clinic aimed to diagnose their condition, prescribe a course of action, and then refer them back to their GP for treatment. However, this was not appropriate for all patients. For example, children who had suffered anaphylaxis were given follow-up appointments at the clinic every 18 months in order to reassess their condition. This was something that GPs should not manage.

Dr Pamela Ewan, Director of the allergy clinic, outlined the nature and extent of allergic diseases in the United Kingdom and the ways in which they were treated. In contrast to the large clinical burden, there was a relatively small specialist workforce, with only 26.5 full-time equivalent consultants, seven trainees and little knowledge in primary care.

The allergy clinic at Addenbrooke's was established in 1988 with one consultant. The high demand for the service had quickly become evident, but it had been difficult to find funding to increase the number of staff. Funding for a second consultant had not been granted until 2001, and a third consultant specialising in paediatric allergy began at the clinic in 2006. Two other consultants worked part-time at the clinic, but these posts were not permanent as funding again was a problem. In addition to the consultants, the clinic also employed one trainee, two specialist allergy nurses and three allergy trained clinic nurses.

The clinic trained specialist registrars in allergy and ran short training courses for local GPs once or twice a year. It was felt that an important part of GP education was provided during everyday work. For example, telephone conversations between GPs and staff at the clinic avoided unnecessary referrals, and follow-up letters written by consultants provided feedback and helped to educate GPs. It was noted that over the last 10 years, this dialogue between primary and secondary care had greatly improved the pattern and appropriateness of referrals the allergy clinic received.



The clinic also carried out research and maintained a large clinical database of the patients treated, including 2,000 with nut allergy, 760 with venom allergy and over 100 who had suffered anaphylaxis during general anaesthesia. The database included details of the allergens which caused patients' reactions, the severity of their reactions, and the results of any diagnostic tests. This enabled the clinic to monitor local trends and evaluate allergenic risk factors, as well as assess the effectiveness of diagnostic tests, management plans and various treatments.

The Committee observed patient consultations carried out by Dr Pamela Ewan, Dr Shuaib Nasser and Dr Andrew Clarke. Many of the patients seen at the clinic had severe allergies, or suffered from an allergy which caused multiple illnesses. Some had travelled considerable distances to receive treatment at the clinic and many had been unable to get help elsewhere in the NHS. The clinic had developed model systems for the diagnosis and management of a wide range of conditions. Children with nut allergies received a comprehensive management plan which included written guidance on avoidance, a written treatment plan and training in how to administer emergency medication. Model letters for schools had also been constructed, which could be personalised for each patient, to educate teachers and other staff about the child's condition.

For patients who suffered anaphylaxis during general anaesthesia, it was essential to carry out specialised drug allergy investigations to identify the culprit drugs and prevent future reactions. It was also important to exclude any drugs which did not cause a reaction and which would therefore be safe for future use. Dr Ewan noted that drug allergy patients who did not get referred to specialist allergy clinics were often given little information about their condition and were confused about how to protect themselves from further reactions. But at the allergy clinic, following the appropriate tests, the patients were sent a letter which clearly explained the substances to which they were allergic, and explanatory notes were also forwarded to the patients' GPs and other consultants.

Several anaphylactic patients told us that the information they received from GPs about their emergency medication was poor. Many patients who had been prescribed adrenaline autoinjectors did not understand under what circumstances to use them, or administered them incorrectly. The clinic therefore spent time educating patients and relatives about how to use the adrenaline autoinjectors correctly, and administration of the treatment was practiced using "dummy pens."

The importance of regular assessments was also noted, especially in children who could potentially outgrow allergies. If regular IgE antibody tests and skin prick tests indicated that an allergy was being outgrown, challenge tests were sometimes prescribed. These tests involved the administration of increasing amounts of allergen to assess whether the child was still allergic. If the allergy was found to have been outgrown, it would therefore remove a large burden from the parent and child who would otherwise have avoided the allergen unnecessarily.

Patients suffering from bee or wasp venom anaphylaxis were unable to effectively avoid the allergens, so desensitisation treatments were often offered at the clinic for these individuals. Subcutaneous immunotherapy courses took three years to complete, with intervals between treatments increasing over time. Due to the risk of adverse reaction, it was necessary to monitor patients for an hour after administering the treatment. Immunotherapy was therefore a time-consuming course of treatment, especially if the patient travelled a long distance to reach the hospital, but its effects could last for many years and might even last an entire lifetime. Patients' quality of life was also greatly improved once the fear of anaphylaxis was removed. Patients with severe hayfever and other allergies were

also desensitised at the clinic if medication had not controlled their symptoms adequately.

## APPENDIX 10: ACRONYMS AND GLOSSARY

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### Acronyms

ACF	Academic Clinical Fellowship
AEDS	Atopic Eczema/Dermatitis Syndrome
AIDS	Autoimmune Deficiency Syndrome
ALSPAC	Avon Longitudinal Study of Parents And Children
ARIA	Allergic Rhinitis and its Impact on Asthma
ASA	Advertising Standards Authority
BBSRC	Biotechnology and Biological Sciences Research Council
BCAP	Broadcast Committee of Advertising Practice
BOHRF	British Occupational Health Research Foundation
BRC	British Retail Consortium
BSACI	British Society for Allergy and Clinical Immunology
CAP	Committee of Advertising Practice
CIEH	Chartered Institute of Environmental Health
CL	Clinical Lectureship
COMEAP	Committee on the Medical Effects of Air Pollutants
COSHH	Control of Substances Hazardous to Health 2002 (as amended) Regulations
COT	Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment
CSM	Committee on Safety of Medicines
DCLG	Department for Communities and Local Government
Defra	Department for Environment, Food and Rural Affairs
DEP	Diesel Exhaust Particle
DfES	Department for Education and Skills
DH	Department of Health
DIN	Doctors Independent Network
DWP	Department for Work and Pensions
EAA	Extrinsic Allergic Alveolitis
EAACI	European Academy of Allergology and Clinical Immunology
ECRHS	European Community Respiratory Health Survey
EFA	European Federation of Allergy
ELSPAC	European Longitudinal Study of Pregnancy And Childhood
ENT	Ear, Nose and Throat
EU	European Union

FSA	Food Standards Agency
GAIN	GA <sup>2</sup> LEN Anaphylaxis Initiative
GA <sup>2</sup> LEN	Global Allergy and Asthma European Network
GP	General Practitioner
GPRD	General Practice Research Database
GPwSI	General Practitioners with a Special Interest
GSK	GlaxoSmithKline
HIV	Human Immunodeficiency Virus
HPA	Health Protection Agency
HSE	Health and Safety Executive
IFR	Institute of Food Research
IIDB	Industrial Injuries Disablement Benefit
ISAAC	International Study of Asthma and Allergies in Childhood
IVD	<i>in vitro</i> Diagnostic Device
LACORS	Local Authorities Coordinators Of Regulatory Services
LEAP	Learning Early About Peanut allergy
MCS	Multiple Chemical Sensitivity
MHRA	Medicines and Healthcare products Regulatory Agency
MRC	Medical Research Council
NHS	National Health Service
NICE	National Institute for Health and Clinical Excellence
NO <sub>2</sub>	Nitrogen Dioxide
O <sub>3</sub>	Ozone
OSCHR	Office for Strategic Coordination of Health Research
OUH	Odense University Hospital
PAH	Polycyclic Aromatic Hydrocarbon
PALM	Pollen Associated Lipid Mediator
PCT	Primary Care Trust
PPD	Para-Phenylenediamine
RCGP WRS	Royal College of General Practitioners Weekly Returns Service
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995
RPSGB	Royal Pharmaceutical Society of Great Britain
SNOMED-CT	Systemized Nomenclature of Medicine classification system
SO <sub>2</sub>	Sulphur Dioxide

THOR	The Health and Occupation Reporting network
UK	United Kingdom
VOC	Volatile Organic Compound
WHO	World Health Organization

## Glossary

Adrenaline	A “fight or flight” hormone released from the adrenal glands when danger threatens. Used to treat anaphylaxis because it reverses the effects of histamine
Allergen	A substance which causes an allergic reaction
Allergy	An exaggerated, adverse reaction of the immune system to an external agent
Alveolus (pl. alveoli)	Spherical outcroppings at the ends of the respiratory bronchioles which are the primary sites of gas exchange with the blood
Anaphylaxis	An acute hypersensitivity reaction, often due to an allergy, in which there is a massive release of histamine throughout the body
Antibody	A protein produced by the immune system which binds in a “lock and key” fashion to a specific antigen (or allergen)
Antigen	A substance which produces an immune response (involving antibody production)
Antihistamine	A drug which antagonises the actions of histamine
Atopy	An atopic individual has the hereditary predisposition to produce IgE antibodies against common allergens
Autoimmune	An immune response against an individual’s own antigens
Bronchiole	A small branch of the windpipe which conveys air to and from the lungs
Bronchus (pl. bronchi)	A large branch of the windpipe which conveys air to and from the lungs
Coeliac disease	A disease of the bowel that is caused by an allergy to gluten
Corticosteroid	An agent with potent anti-inflammatory properties
EPIDERM project	A scheme run by The Health and Occupation Reporting network to monitor the prevalence of occupational skin disorders
Hypersensitivity	An abnormal sensitivity to a stimulus. Often used specifically to describe an exaggerated immune response to an external substance
Hypoallergenic	A substance with a low potential to cause allergy

IgE	A class of antibodies produced in atopic individuals, which binds to mast cells and basophils (a type of white blood cell) and initiates an allergic reaction after interaction with a specific allergen
IgG	A class of antibodies produced as part of the normal immune response to a wide variety of external substances including micro-organisms and foods
Immunotherapy	The administration, over time, of increasing doses of an allergen to which a person is sensitive, in order to desensitise the allergic individual
Intolerance	An abnormal response to an external substance (such as food) which does not involve the immune system
Mast cell	A cell which is present in virtually all tissues which contains granules packed with histamine and other agents. It is activated by IgE and allergen during an allergic reaction
Polymorphism	A naturally occurring variation between genetic sequences of different individuals
Prophylactic	An agent which protects or prevents
SWORD	Surveillance of Work-related and Occupational Respiratory Disease; a scheme run by The Health and Occupation Reporting network to monitor the prevalence of occupational respiratory disorders
T helper 1 (Th1) cell	A type of immune cell involved in autoimmune disease and in killing certain intracellular organisms
T helper 2 (Th2) cell	A type of immune cell involved in atopic allergic disease and certain parasitic infections
Translational research	The clinical application of scientific, laboratory based, medical research. Often referred to as “bench to bedside” research



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