

The logo for ASCIA (Australasian Society of Clinical Immunology and Allergy Inc.) features the word "ascia" in a bold, blue, lowercase sans-serif font. Above the letter 'i' is a stylized orange and red splatter graphic.

australasian society of clinical immunology and allergy inc.

# Allergy and Immune Diseases in Australia (AIDA) Report 2013

The aim of this report is recognition of these conditions as prioritised chronic diseases and a National Health Priority Area in Australia

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## Aim

The aim of this report is to have allergy and immune diseases recognised by government as one of the 7 most important and prioritised chronic disease groups and a National Health Priority Area in Australia (see table below).

National Health Priority Areas (NHPA)	National Chronic Disease Strategy
Asthma	Asthma
Cancer control	Cancer
Cardiovascular Health	Heart, stroke and vascular disease
Diabetes mellitus	Diabetes
Arthritis and musculoskeletal conditions	Osteoarthritis, rheumatoid arthritis and osteoporosis
Obesity	Chronic and end-stage kidney disease (2013)
Injury prevention and control	
Mental health	
Dementia	
Proposed additional NHPA	Proposed additional NCDS
Allergy and immune diseases (2014)	Allergy and immune diseases (2014)

### References:

[www.aihw.gov.au/national-health-priority-areas/](http://www.aihw.gov.au/national-health-priority-areas/)  
[www.health.gov.au/internet/main/publishing.nsf/Content/chronic](http://www.health.gov.au/internet/main/publishing.nsf/Content/chronic)

# Fast Facts

## WHAT ARE THE CURRENT PROBLEMS?

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1. **Allergy and immune diseases (immunodeficiency and autoimmune diseases) are among the fastest growing chronic conditions in Australia.**
2. Almost 20% of the Australian population has an **allergic disease** and this prevalence is increasing.
3. Hospital admissions for **anaphylaxis** (severe life threatening allergic reaction) have increased 4 fold in the last 20 years.
4. **Food-induced anaphylaxis** has doubled in the last 10 years and 10% of infants now have an immediate food allergy.
5. **Immunodeficiency diseases** are serious, potentially life threatening conditions that are increasing in number and complexity.
6. Delay in diagnosis of **immunodeficiency disease** leads to poor health outcomes and premature death.
7. **Autoimmune diseases** affect 5% of Australians and are more common than cancer or heart disease.
8. There are over 100 different **autoimmune diseases** that affect Australians and lead to significant disability.
9. There is a lack of public awareness about the impact and **appropriate management** of allergy and immune diseases.
10. **Access to care** is difficult, even in metropolitan areas, due to the high number of patients and low number of appropriately trained health care professionals, resulting in long waiting times to see a specialist.

## WHAT ARE THE SOLUTIONS?

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1. **Allergy and immune disease should be recognised as one of the most important chronic disease groups and a National Health Priority Area in Australia, which will:**
  - Enable projects relating to these diseases to be eligible to apply for grants specific for chronic diseases and National Health Priority Areas.
  - Improve management and prevention strategies for these diseases.
2. **Development of a national allergy and immune diseases model of care which will address:**
  - Improved access to care and accurate diagnosis for patients with allergic and immune diseases.
  - Access to affordable and cost-effective therapies.

## What is ASCIA?

The Australasian Society of Clinical Immunology and Allergy (ASCIA) is a not-for-profit professional medical organisation, comprised predominantly of clinical immunology and allergy medical specialists. These specialists manage patients with allergy and immune diseases. The ASCIA membership also includes other medical practitioners, scientists and allied health professionals (mainly nurses and dietitians) who work in the areas of allergy and immunology.

The mission of ASCIA is to advance the science and practice of clinical immunology and allergy, by promoting education and the highest standard of ethical medical practice.

ASCIA has provided a range of education resources for physicians and patients since 1999, followed soon after by several position statements, guidelines and action plans. In recent years, ASCIA commenced developing online and face to face training in response to a growing need for accurate and consistent information. ASCIA consults the ASCIA membership and key stakeholder organisations to ensure all resources developed are evidence based and appropriate to meet the needs of the end-user. To date:

- ASCIA e-training courses have been accessed by over 100,000 participants across Australia.
- ASCIA anaphylaxis training for schools and childcare has been provided as face to face training to school and childcare staff in Western Australia and New South Wales.
- ASCIA anaphylaxis training for health professionals has been provided as face to face training to pharmacists, general practitioners, nurses and paediatricians in most regions in Australia.
- ASCIA allergic rhinitis, immunotherapy and food allergy training courses have also been provided to pharmacists, general practitioners, nurses, paediatricians and dietitians across Australia.

For more detailed information about ASCIA resources including training resources, please refer to the supplementary document “**ASCIA Education Report**”.

As a non-government organisation, ASCIA's educational activities are dependent on members donating their unpaid time for resource development, funding derived from membership fees, small educational grants from some state governments for specific projects and unrestricted educational grants from industry (providers of unrestricted educational grants have no input into resource content or development). ASCIA does not currently receive any funding from the federal Australian government.

**For ASCIA to be able to maintain existing resources and continue to develop urgently needed new resources, government (both state and federal) support is required.**

## Priority Actions

### SHORT TERM

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- Interim funding to sustain ASCIA education initiatives, particularly e-training. These resources provide a valuable education service and are unable to be maintained by ASCIA without further funding.
- Funding for an oral food allergen challenge database. This database would enable to collection of oral food challenge data nationally and enable greater standardisation of protocols and research across centres.
- Funding for an immunodeficiency database to replace the superceded ASCIA primary immunodeficiency database. The new database needs to include both primary and secondary immunodeficiency diseases.

### MEDIUM TO LONG TERM

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- The development of a Model of Care for Allergy and Immune Diseases to provide a framework for best practice management in Australia.

## Overview of Allergy and Immune Diseases

**Allergy and Immune Diseases** are all immune system disorders and encompass allergic, immunodeficiency and autoimmune diseases. They are increasing in prevalence and complexity, and are a mounting public health issue in Australia. Refer to Appendix C for more detailed information explaining these diseases.

- **Allergic diseases** occur when a person's immune system reacts to substances that are normally harmless. These substances are known as allergens and can be found in foods, airborne particles such as dust mite or pollens, insect venoms and medications.
- **Immunodeficiency diseases** are either inherited (e.g. primary immunodeficiency diseases) or acquired (e.g. secondary immunodeficiency diseases) conditions in which the immune system does not function correctly to protect against microbes, leading to increased risk of potentially life threatening infections and cancers.
- **Autoimmune diseases** are a broad range of related diseases in which a person's immune system produces an inappropriate, detrimental response against its own cells, leading to damage to healthy tissue.

### ALLERGIC DISEASES

Allergies are the fastest growing chronic diseases in Australia and include food/insect/drug allergies (including life threatening reactions call anaphylaxis), asthma, allergic rhinitis (hay fever) and eczema.

- 4.1 million Australians (19.6% of the population) have at least one allergic disease<sup>1</sup>.
- Allergic diseases most commonly present in children and adolescents<sup>2</sup> and often persist into adulthood.
- 10% of Australian infants have proven food allergy<sup>3</sup>, one of the highest incidences internationally.
- Hospital admissions for anaphylaxis have increased 4-fold in the last 20 years<sup>4</sup>.
- Drug-induced anaphylaxis deaths have increased 300% over the last decade in Australia<sup>5</sup>.
- 18% of Australians have allergic rhinitis<sup>1</sup> with significant impact on quality of life<sup>6</sup>. Patients with allergic rhinitis are three times more likely to have asthma and more than 80% of allergic asthmatics have allergic rhinitis<sup>7</sup>.
- It is predicted that by 2050 the number of patients affected by allergic diseases in Australia will increase by 70% to 7.7 million<sup>1</sup>.

### IMMUNODEFICIENCY DISEASES

- The prevalence of primary immunodeficiency diseases (PID) is estimated to be 1 in 1200<sup>8</sup>.
- These are serious, potentially life-threatening conditions in which the immune system functions poorly, leading to multiple infections, chronic ill health and increased risk of cancer. These may be inherited or acquired later in life.
- Secondary immune deficiency is increasing as a result of medical treatment for other diseases<sup>9</sup>, underlying diseases (e.g. cancers) and poor nutrition in at risk populations.

### AUTOIMMUNE DISEASES

- Autoimmune diseases currently affect 5% of Australians<sup>10</sup>.
- There are over 100 different autoimmune diseases. Some common autoimmune diseases include lupus, rheumatoid arthritis, other connective tissue disorders, multiple sclerosis and coeliac disease.
- The prevalence of autoimmune diseases is estimated to be greater than heart disease or cancer<sup>11</sup>.

### COSTS ASSOCIATED WITH THESE DISEASES

Allergy and immune diseases have a significant cost to the individual and the community:

- In 2005, the total financial cost of allergic diseases alone was estimated to be approximately AU\$30 billion (ASCIA Access Economic Report 2007), comprising \$1.1 billion in direct health system expenditure, \$7.1 billion due to lost productivity and \$21.3 billion due to lost wellbeing (disability and premature death).
- In per capita terms, this amounts to a total cost of approximately \$7,400 per person with allergies per annum.

## Recognition as a Prioritised Chronic Disease Group

Allergy and immune diseases should be recognised as a prioritised chronic disease group as they align completely with the criteria used by the National Chronic Disease Strategy<sup>12</sup> as exemplified below:

Criteria	Diseases		
	Allergic	Autoimmune	Immunodeficiency
Have complex and multiple causes	✓ Genetic and environmental factors. Early feeding/exposures. Multiple mechanisms.	✓ Researchers have identified over 100 different autoimmune diseases and suspect at least 40 additional diseases of having an autoimmune basis.	✓ Primary immunodeficiencies are a heterogeneous group of genetically inherited diseases affecting immune systems that increase risk of infection, autoimmunity, and cancer, with > 150 types described.
Usually have a gradual onset, although they can have sudden onset and acute stages	✓ Allergic rhinitis and eczema can have a gradual onset and can worsen with time.  Anaphylaxis or non-anaphylactic allergic reactions and asthma usually have a sudden onset of symptoms but the risk of accidental exposure and relapse is chronic.	✓ Chronic autoimmune diseases have a highly variable pattern but usually develop gradually and progress to acute or chronic illness and disability.	✓ Some patients will have a long history of increasing problems whereas others may present with sudden onset of life threatening infections.
Occur across the lifecycle, although they become more prevalent with older age	✓ Food allergies and eczema are more common in children but insect and drug allergy, asthma and allergic rhinitis are more common in older individuals.  Asthma occurs at all ages.	✓ Many occur across the lifecycle, particularly systemic autoimmune diseases such as systemic lupus erythematosus and vasculitis.	✓ Immunodeficiency diseases present in very severe form in infancy or may present with recurrent infections in later childhood or adult life. Repeated infections often lead to chronic organ disease.
Can compromise quality of life (QOL) through physical limitations and disability	✓ The effect of eczema on quality of life in children has been rated more significant than childhood diabetes.  Eczema and food allergy can also impact on growth, development and QOL. In adulthood conditions such as allergic rhinitis and eczema can impact significantly on a person's ability to work.	✓ These diseases can compromise QOL through inability to work, chronic affliction, co-morbid mental illnesses, particularly depression and anxiety, and disruption of social and family structures due to the tendency to afflict women of childbearing age.	✓ Patients will often develop poor nutrition, chronic lung disease and require frequent hospital admissions which can seriously impact on their QOL.  Complications from delay in diagnosis can impact on QOL and result in significant disability.
Are long term and persistent, leading to gradual deterioration of health	✓ With the exception of some food allergies (e.g. egg, milk, wheat), most of these disorders are long term and persistent, and can significantly compromise QOL.	✓ Most of these disorders are long term and persistent, and can significantly compromise QOL.	✓ Immune deficiencies lead to lifelong health problems resulting in increasingly poor health and decreased life expectancy.  Complications from delay in diagnosis can impact on QOL and result in significant disability.
While usually not immediately life threatening, they are the most common and leading cause of premature mortality	✓ Some can be immediately life threatening (e.g. anaphylaxis, the most severe form of allergic reaction).	✓ Autoimmune diseases are among the 10 leading causes of death for women in every age group up to 64 years of age. All ages are affected, with onset from childhood to late adulthood.	✓ If treated insufficiently, can result in premature death (e.g. primary immunodeficiency diseases) particularly with delayed diagnosis.

# Model of Care for Allergy and Immune Diseases

## CURRENT ISSUES

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- Timely access to appropriate care for allergy and immune diseases improves outcomes and quality of life (QOL), whilst delayed diagnosis or inappropriate treatment may lead to permanent complications such as chronic damage to lungs and other body organs or premature death in those with immune deficiency.
- A combination of population growth, increasing incidence of allergic and immune disease, an ageing workforce and limited training places for new specialists have led to longer waiting lists in specialist immunology/allergy services.
- A Model of Care for allergy and immune diseases is required as a matter of urgency. However, before this can be developed, it is essential that there is formal recognition of allergy and immune diseases as a prioritised chronic disease group and a National Health Priority Area.

## OBJECTIVES OF PROPOSED MODEL OF CARE FOR ALLERGY AND IMMUNE DISEASES

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- Provide a national framework for best practice management (care and prevention) in Australia.
- Assist in long term planning of resources to ensure sustainability of appropriate and effective strategies to improve patient outcomes and quality of life for those with allergy and immune diseases.
- Focus on a number of key areas that are based on the National Chronic Disease Action Areas (National Health Priority Action Council 2006) including:
  - Prevention and promotion;
  - Early detection and intervention
  - Integration and continuity of care; and
  - Self management.

Outcome measures need to be developed to evaluate the cost-effectiveness of a Model of Care for allergy and immune diseases, including process (e.g. education programs) and improvement of patient outcomes. This ideally will include the development of databases for specific conditions (e.g. anaphylaxis, immunodeficiency) and specialised procedures (e.g. oral food allergen challenges to confirm or exclude food allergy).

## WHAT WILL A MODEL OF CARE FOR ALLERGY AND IMMUNE DISEASES SUPPORT?

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- Access to early and accurate diagnosis based on best practice evidence and expert opinion including timely access to clinical immunology/allergy specialist services and ensuring that people with allergy and immune diseases receive the right care, at the right time, by the right team, in the right place;
- Access to affordable and cost-effective therapy including novel therapies;
- Community and medical education with access to health promotion and prevention programs for patients, carers and health professionals;
- A consumer-centred approach, the main focus being the improvement of QOL;
- Monitoring of population trends in risk factors for allergy and immune diseases;
- Local research to develop interventional strategies to reduce the burden of disease in the community;
- Future planning in terms of workforce and resources to ensure sustainability;
- A public health approach including strategies to reduce disease development, manifestation and complications through primary, secondary and tertiary prevention; and
- Improved service provision for all allergic conditions, primary immunodeficiency diseases; secondary immunodeficiencies (not HIV) and autoimmune diseases. Refer to Appendix E for more detailed information.

## APPENDIX A: Allergy and Immune Diseases

### Allergic diseases

- Food, insect and medication allergies
- Anaphylaxis (severe allergic reactions)
- Eczema
- Allergic rhinitis (hay fever) and allergic conjunctivitis
- Eosinophilic oesophagitis
- Non-allergic adverse food reactions (food intolerance)
- Latex allergy
- Allergic rhinitis (hay fever)
- Hypereosinophilia syndromes
- Urticaria/angioedema (hives, swellings)
- Asthma

### Immunodeficiency diseases

- Primary immune deficiency diseases include conditions such as various antibody deficiencies, severe T-cell disorders, combined immune deficiencies and rare specific immune conditions (e.g. Hereditary Angioedema).
- Secondary immune deficiency is increasing as a result of medical treatment for other diseases<sup>9</sup>, underlying diseases (e.g. cancers) and poor nutrition in at risk populations.

### Autoimmune diseases

- Systemic Lupus Erythematosus (SLE)
- Sjogren's syndrome
- Vasculitis
- Autoimmune thyroid disease
- Addison's disease
- Chronic active hepatitis
- Multiple sclerosis
- Myasthenia gravis
- Uveitis
- Vitiligo
- Polymyalgia rheumatica
- Mastocytosis
- Psoriasis
- Autoimmune neuropathy
- Alopecia areata
- Psoriatic arthritis
- Rheumatoid arthritis
- Crohn's disease
- Systemic sclerosis
- Diabetes type 1
- Ulcerative colitis
- Primary biliary cirrhosis
- Mast cell activation disorder (MCAD)

## APPENDIX B: Prevalence Data

Allergy and immune diseases affect approximately 1 in 3 Australians. Allergic and autoimmune diseases are increasing in prevalence. The table below indicates the current prevalence of common allergy and immune diseases.

Disease	Prevalence
<b>Allergy</b>	
- Anaphylaxis	3-60/100,000 patient years <sup>4</sup>
- Food allergy	10% of children < 1 year <sup>3</sup> 4-8% of children < 5 years <sup>13</sup> ~2% of adults <sup>13</sup>
- Eosinophilic oesophagitis	1 per 10,000 children <sup>14</sup> ~1% of adults <sup>14</sup>
- Insect allergy	~ 3% <sup>15</sup>
- Drug allergy	~1-2% <sup>16</sup>
- Latex allergy	~ 1% and higher in occupational exposure <sup>1</sup>
- Upper airway allergy	~15% <sup>17</sup>
- Asthma	~10% <sup>18</sup>
<b>Allergic and non-immunologic diseases of the nose and eyes</b>	
- Allergic rhinitis and non-allergic rhinitis	~ 18% <sup>19</sup>
- Nasal polyps	~ 0.5% <sup>1</sup>
- Allergic conjunctivitis	~10% <sup>20</sup>
- Chronic sinusitis	~7% <sup>17</sup>
<b>Allergic and immunologic diseases of the skin</b>	
- Atopic dermatitis (eczema)	~10% of children <sup>1</sup> ~7% of adults <sup>1</sup>
- Contact dermatitis	~1% <sup>1</sup>
- Urticaria and angioedema	~ 1/1000 <sup>1</sup>
<b>Autoimmune diseases</b>	5% <sup>10</sup>
<b>Primary immunodeficiencies</b>	1:1200 <sup>11</sup>
<b>Secondary immunodeficiencies</b>	No data available. Prevalence will continue to increase due to increased use of biological agents and other medical treatments, highlighting the importance of a database.

## APPENDIX C: Disease Overviews

### Allergic rhinitis (hay fever)

Allergic rhinitis, often known as hay fever affects around 1 in 5 people in Australia and New Zealand. It can affect children and adults. Individuals often self-treat allergic rhinitis and many sufferers and doctors and under-estimate its impact on day to day living. Allergic rhinitis in some individuals may lead to impaired concentration, impaired sleep, and reduced work, school or sporting performance. Medications used in allergic rhinitis can be expensive, and although allergen immunotherapy is available as a therapy, this is not subsidised in Australia.

### Anaphylaxis

Anaphylaxis is the most severe form of allergic reaction, usually occurring within 2 hours of exposure to the triggering agent. Food anaphylaxis presentations, particularly in children, to the hospital emergency department have doubled over the last 10 years, although death from anaphylaxis remains rare. This rise of food allergy has already had a significant impact on the food industry and in schools, where teachers are frequently requested or mandated to be educated in the management of allergic reactions. Insect venom anaphylaxis has decreased but drug related anaphylaxis and deaths from such events have increased in hospitals. It is likely in the next two decades rates of adult nut/shellfish anaphylaxis will rise, given children with these current allergies are unlikely to outgrow these particular food allergies.

### Atopic dermatitis (eczema)

Atopic dermatitis (also known as eczema) occurs in around 20% of infants<sup>1</sup>, and its prevalence is increasing worldwide. It is a chronic condition, with no cure. Eczema can profoundly affect the quality of life of patients and their families. It can lead to sleep deprivation, mood changes, impaired psychological functioning at work and school, embarrassment, social isolation and restriction of daily activities. The impairment of quality of life caused by eczema has been shown to be greater than other common conditions, such as asthma and diabetes (1). The financial cost to the individual and family can be significant.

### Autoimmune Diseases

Autoimmune diseases, affecting approximately 5% of individuals, are a broad range of related diseases in which a person's immune system produces an inappropriate response against its own cells, tissues and/or organs, resulting in damage. There are over 100 different autoimmune diseases. As a group, autoimmune diseases are the third leading cause of morbidity and mortality in the industrialised world, surpassed only by cancer and heart disease<sup>21</sup>.

### Drug Allergy

Allergic reactions to a large number of medicines can occur. Reactions to pain killers or arthritis tablets and antibiotics are the most common, but reactions have been described to many other medicines. Severity may range from mild rashes through to potentially life-threatening anaphylaxis. The inability to accurately diagnose drug allergy may result in the need to use more expensive medication.

### Food Allergy and Associated Syndromes

IgE mediated immediate food allergy is most commonly caused by 9 foods (cow's milk, egg, peanut, tree nuts, wheat, soy, sesame, fish and shellfish). Many of these foods are ubiquitous in the Western diet and difficult to avoid. Reactions range from mild to severe (anaphylaxis). There is currently no cure, although food desensitisation (immunotherapy) trials are in progress.

Non IgE mediated food allergy can result in a heterogeneous number of disorders, and can lead to poor growth, food restrictions, and abnormal eating behaviors. Management can be complex, involve a number of health professionals and frequent, invasive investigations. Rates of non-IgE mediated food allergies such as eosinophilic esophagitis, is rising in Australia<sup>22</sup>.

## **Immunodeficiency diseases**

Primary immunodeficiency (PID) diseases are a group of potentially serious disorders in which inherited defects in the immune system lead to increased infections. There are currently more than 250 PID diseases<sup>23</sup> with new disorders being described regularly. Certain severe PID diseases become apparent early in life, with only a short asymptomatic period after birth. Without an effective intervention, many result in irreversible complications and death before the end of the first year of life.

Secondary immunodeficiency diseases are more frequent than primary immune deficiencies. Secondary immunodeficiency diseases are due to problems of the immune system that are not genetic and are caused by external factors (e.g. severe malnutrition, immunosuppressive medication, chemotherapy). Secondary immunodeficiency diseases lead to an increased incidence of infection, malignancy or autoimmune disease, similar to primary immunodeficiency<sup>11</sup>.

## APPENDIX D: Stakeholder Consultation

The following stakeholders were consulted in the development of this document:

Organisation	Role	Website
Allergy & Anaphylaxis Australia	Patient support organisation	<a href="http://www.allergyfacts.org.au">www.allergyfacts.org.au</a>
Australian Support for Eosinophilic Disorders (AusEE)	Patient support organisation for those with eosinophilic gastrointestinal disorders	<a href="http://www.ausee.org/">www.ausee.org/</a>
Australasian College for Emergency Medicine	Medical College	<a href="http://www.acem.org.au/">www.acem.org.au/</a>
Australian College of Rural and Remote Medicine	Medical College	<a href="http://www.acrrm.org.au">www.acrrm.org.au</a>
Australian Medical Association	Medical association	<a href="http://www.ama.com.au">www.ama.com.au</a>
Australian Society of Ophthalmologists	Medical society	<a href="http://www.aso.asn.au">www.aso.asn.au</a>
Australian Society of Otolaryngology Head and Neck Surgery	Medical society	<a href="http://www.asohns.org.au">www.asohns.org.au</a>
Dietitians Association of Australia	Professional association	daa.asn.au
Eczema Association of Australasia	Patient support organisation	<a href="http://www.eczema.org.au/">www.eczema.org.au/</a>
HAE Australasia	Patient support organisation for those with hereditary angioedema	<a href="http://www.haeaustralasia.org.au/">http://www.haeaustralasia.org.au/</a>
Immunodeficiency Foundation of Australia	Patient support organisation	<a href="http://www.idfaustralia.org/">www.idfaustralia.org/</a>
Lupus Association	Patient support organisation	<a href="http://www.lupus.com.au">http://www.lupus.com.au</a>
National Asthma Council Australia	National asthma organisation	<a href="http://www.nationalasthma.org.au/">www.nationalasthma.org.au/</a>
Pharmaceutical Society of Australia	Professional society	<a href="http://www.psa.org.au">www.psa.org.au</a>
Pharmacy Guild of Australia	Professional guild	<a href="http://www.guild.org.au">www.guild.org.au</a>
Royal Australian College of General Practitioners	Medical College	<a href="http://www.racgp.org.au/">www.racgp.org.au/</a>
Royal Australasian College of Physicians	Medical College	<a href="http://www.racp.edu.au/">www.racp.edu.au/</a>
Rural Doctors Association of Australia	Medical association	<a href="http://www.rdaa.com.au">www.rdaa.com.au</a>
Society of Hospital Pharmacists of Australia	Professional society	<a href="http://www.shpa.org.au/">www.shpa.org.au/</a>
The Australasian Mastocytosis Society (TAMS)	Patient support organisation	<a href="http://mastocytosisaustralasia.com/">mastocytosisaustralasia.com/</a>

# APPENDIX E: Public Health Approach to Allergy and Immune Diseases

				LEVEL OF INTERVENTION		
				Primary prevention	Secondary prevention	Tertiary prevention
				STAGE OF DISEASE CONTINUUM		
				Well population	Affected, not symptomatic	Affected and symptomatic (established disease)
<b>Management and coordinated care</b>  All allergic and immunologic diseases	Governments, communities, physicians, other health care professionals and patient organisations commit to an educational plan to implement evidence based practices for prevention of allergic and immunologic diseases.	Adopt, distribute and implement peer endorsed best practice guidelines for the diagnosis and management of allergic and immunologic diseases and ensure application of these guidelines.  These guidelines should ensure: <ul style="list-style-type: none"> <li>• Appropriate testing and interpretation of results;</li> <li>• Appropriate treatment;</li> <li>• Appropriate education.</li> </ul> Individual to be assessed by an appropriately trained specialist in a timely manner based on specific needs.  Universal access to clinical immunology/allergy specialist services.  Universal access to written advice and other specialist services.  Access to evidence based screening testing if shown to be cost effective.	Adopt, distribute and implement peer endorsed best practice guidelines for allergic and immunologic diseases and ensure application of these guidelines which should include: <ul style="list-style-type: none"> <li>• Timely access to appropriately trained specialist</li> <li>• Need-specific patient referral and timely access to allied health professionals.</li> </ul> Provision of consumer support group information.  Develop identified pathways and/or service delivery models to enact a smooth transition from paediatric to adult immunology/allergy services.			
	Anaphylaxis	National communication and application of best practice prevention strategies such as infant feeding guidelines.	Confirmation of allergy and identification of causative allergens.  Access to oral food challenges (food allergy) to prove/disprove disease resolution and immunotherapy (stinging insect allergy only at this time).	On the day of discharge, the patient's general practitioner should receive: <ul style="list-style-type: none"> <li>• Appropriate communication of patient information.</li> <li>• Acute medical specialist opinion and advice.</li> <li>• A discharge summary.</li> </ul>		

		Enhance access to immunotherapy to treat anaphylaxis to the Australian Jack Jumper ant venom (very limited availability at this time without government subsidy).	<ul style="list-style-type: none"> <li>• A copy of the individual's ASCIA Action Plan for Anaphylaxis.</li> <li>• Allergy/immunology referral for assessment and education.</li> </ul> <p>Appropriate intervention strategies should be employed:</p> <ul style="list-style-type: none"> <li>• Immunotherapy for patients with severe insect sting allergy.</li> </ul>
Food allergy and associated syndromes	National communication and application of best practice prevention strategies including infant feeding guidelines to reduce the risk of disease development.	Confirmation of food allergy/associated disorder and identification of causative allergens (where appropriate).  Access to oral food challenges.	Access to ongoing screening for complications of the disease.  Access to oral food challenges.  Access to "immunotherapy" for food allergic individuals when available (probably within 5 years).
Drug allergy	Current prevention strategies include: <ul style="list-style-type: none"> <li>• HLA typing of patients considered at risk of drug allergy/adverse drug reactions.</li> <li>• Sensible antibiotic prescribing practices.</li> </ul>	Prior to administration of drugs HLA typing of patients considered at risk of drug allergy.  Access to drug challenges to prove safety of alternative medication and perhaps of implicated drug to prove/disprove allergy	On the day of discharge, the patient's general practitioner should receive: <ul style="list-style-type: none"> <li>• Appropriate communication of patient information,</li> <li>• Acute medical specialist opinion and advice,</li> <li>• A discharge summary.</li> </ul> <p>Implement strategies to prevent further exposure:</p> <ul style="list-style-type: none"> <li>• Computer alerts.</li> <li>• Medical bracelet worn by patient.</li> <li>• Addition of data to the PCEHR.</li> </ul>
Allergy (excluding food and drug allergy)	Appropriate intervention strategies should be employed: <ul style="list-style-type: none"> <li>• Immunotherapy for patients with allergic rhinitis in the prevention of asthma.</li> </ul>	Appropriate treatment of one allergic disease may prevent the development of other diseases and/or complications (e.g. appropriate treatment for allergic rhinitis may prevent chronic sinusitis, reduce the risk of developing allergic asthma and may reduce the risk of new sensitisation); appropriate treatment of atopic dermatitis may prevent infected eczema).	Immunotherapy for insect venom and aeroallergens if required.

<p>Primary immunodeficiency</p>	<p><b>Genetic counseling where appropriate</b></p>	<p>Universal newborn screening for early diagnosis of PID resulting in early treatment and prevention of disease complications including end organ damage and premature death.</p> <p>Treatment of disease manifestations where possible (e.g. immunoglobulin replacement, prophylactic antibiotic use).</p>	<p>Access to ongoing monitoring for complications of the disease.</p> <p>Implementation of infection prevention strategies (e.g. non-live vaccinations, prophylactic antibiotics etc).</p> <p>Implementation of infection prevention strategies (e.g. vaccinations, prophylactic antibiotics etc).</p>
<p>Secondary immunodeficiency</p>	<p>Current prevention strategies include:</p> <ul style="list-style-type: none"> <li>• Preventing malnutrition in susceptible populations (e.g. indigenous, elderly).</li> <li>• Preventing alcoholism.</li> <li>• Health professional knowledge of potential drug interactions and toxicities that can cause secondary immunodeficiencies.</li> <li>• Monitoring (e.g. regular blood investigations) to detect toxicity early</li> </ul>	<p>Review of patient's medical history including current medical therapies and possible adverse drug complications to proposed new drug therapies.</p> <p>Review of patient's medical history for conditions which may predispose them to secondary immune deficiencies to enable possible intervention (e.g. preventative treatment such as immunoglobulin replacement or pneumocystis prophylaxis).</p>	<p>Access to ongoing monitoring for complications of the disease.</p> <p>Implementation of infection prevention strategies (e.g. vaccinations, prophylactic antibiotics etc).</p>
<p>Autoimmune diseases</p>	<p>Current research suggests possible prevention strategies include:</p> <ul style="list-style-type: none"> <li>• Vitamin D supplementation.</li> <li>• Infant feeding advice.</li> </ul>		<p>Access to ongoing screening for complications of the disease.</p>
<p><b>Workforce development and training</b></p> <p>All allergic and immunologic diseases</p>	<p>Increase the number of clinical immunology/allergy specialists.</p>		
	<p>Improved level of education and training provided to all health professionals regarding primary, secondary and tertiary care of allergic and immunologic diseases.</p>		
	<p>Incorporate appropriate allergic and immunologic disease training into undergraduate training for health professionals as well as teachers, education assistants and childcare staff.</p>		
	<p>Improve workforce capacity including general paediatricians/physicians with an interest in allergy.</p>		
<p>Food allergy and anaphylaxis</p>	<p>Education and training of food service industry and Environmental Health Officers regarding allergens, allergic customers, accurate food labelling, complete disclosure of food ingredients and possible avenues of cross contamination with allergens.</p>		<p>Education and reinforcing activities regarding the acute management of anaphylaxis to improve quality and safety.</p> <p>Pathology laboratories in Australia should retain blood samples, stomach contents and</p>

			<p>food samples in all cases of known or suspected fatal anaphylaxis and asthma deaths.</p>
		<p>Australian hospitals and other institutions (e.g. aged care facilities) should provide allergy appropriate meals with confidence.</p> <p>Review food service issues in relation to the provision of meals for food allergic individuals, and for standardised training for food service/catering staff, catering managers and dietitians across Australian hospitals and other institutions.</p>	
<p><b>Education, Health Promotion and Awareness</b></p> <ul style="list-style-type: none"> <li>• Allergic Individuals</li> <li>• Parents and Carers</li> <li>• Community</li> </ul> <p>All allergic and immunologic diseases</p>	<p>Develop a sustainable education and awareness campaign that informs community members about allergic and immunologic diseases.</p>	<p>Increase awareness of treatments available to prevent further disease (e.g. immunotherapy).</p>	<p>Education of patient/carer regarding the management of allergic and immunologic diseases.</p>
<p>Food allergy and anaphylaxis</p>	<p>Develop a sustainable education and awareness campaign that informs community members about food allergy and anaphylaxis and teaches appropriate management, response behaviours and available therapies.</p>	<p>Education of food providers about reading labels, cross contamination and recognition of allergic reactions including anaphylaxis.</p> <p>Facilitate access to appropriate information to reduce the nutritional impact of food allergies and reduce the risk of accidental exposure.</p> <p>Educate people at risk of anaphylaxis and their carers about anaphylaxis and how to minimise the risk of exposure to known allergens and how to use the adrenaline autoinjector.</p>	<p>Individuals at risk of anaphylaxis to be provided with an adrenaline autoinjector and ASCIA Action Plan for Anaphylaxis to carry with them at all times.</p> <p>Facilitate access to appropriate information to reduce the nutritional impact of food allergies and reduce the risk of accidental exposure.</p> <p>Individual/carer to receive appropriate education, including how and when to use the adrenaline autoinjector.</p> <p>Facilitate access to information on available therapies including immunotherapy where appropriate.</p>

		<p>Strategies to change consumer and carer behaviour to increase the uptake of and compliance with risk management advices as provided by health professionals.</p> <p>Labelling of foods and availability of substitute foods.</p>	
<p>Primary immunodeficiency and autoimmune diseases</p>	<p>Develop a sustainable education and awareness campaign that informs community members about allergic and immune disorders.</p>	<p>Develop a sustainable education program for those with a family history of primary immunodeficiency diseases to encourage newborn screening.</p>	<p>Individuals/carers to be provided with, or have access to, required medications.</p> <p>Individual/carer to receive appropriate education, including how and when to use their medication (where required), and information on known toxicities of therapy, warning symptoms and the need for regular monitoring.</p>
<p><b>Research and Evidence Base</b></p> <p>All allergic and immunologic diseases</p>	<p>Continue to support and foster advances in the care and understanding of allergic and immunologic diseases.</p>		
	<p>Promote further research where there are gaps in knowledge.</p>	<p>Improved availability and consistency of application of evidence based guidelines for diagnosis and management of individuals with allergic and immunologic diseases.</p> <p>Improved testing methods for early identification of PID and autoimmune diseases.</p>	<p>Develop comprehensive clinical information systems or databases/registers for PID, oral food challenges and anaphylaxis.</p> <p>Evaluation of the effectiveness of current resources aimed at people with allergic and other immune disorders.</p>

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